

# Meliadine Interim Closure and Reclamation Plan - Update 2022

Final Report

Agnico Eagle Mines Limited





Mining & Metallurgy

01 | 13 | 2023

Report > Original > Rev. 00

Internal ref. 682731-5000-4EER-0001



# List of Revisions

	Revision				Revised	Remarks	
#	Prep.	Rev.	App.	Date	pages	Remarks	
PA	AC / ALN	AL	ALN	2022-12-05	All	Issued for internal revision	
PB	AC / ALN	AL	ALN	2022-12-23	All	Issued for Client comments	
00	AC / ALN	AL	ALN	2023-01-13	All	Final	

## Notice to Reader

This document contains the expression of the professional opinion of SNC-Lavalin Inc. ("SNC-Lavalin") as to the matters set out herein, using its professional judgment and reasonable care. It is to be read in the context of the agreement dated May 17th, 2021 (the "Agreement") between SNC-Lavalin and Agnico Eagle Mines Limited (the "Client") and the methodology, procedures and techniques used, SNC-Lavalin's assumptions, and the circumstances and constraints under which its mandate was performed. This document is written solely for the purpose stated in the Agreement, and for the sole and exclusive benefit of the Client, whose remedies are limited to those set out in the Agreement. This document is meant to be read as a whole, and sections or parts thereof should thus not be read or relied upon out of context.

SNC-Lavalin has, in preparing estimates, as the case may be, followed accepted methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgment and reasonable care, and is thus of the opinion that there is a high probability that actual values will be consistent with the estimate(s). Unless expressly stated otherwise, assumptions, data and information supplied by, or gathered from other sources (including the Client, other consultants, testing laboratories and equipment suppliers, etc.) upon which SNC-Lavalin's opinion as set out herein are based have not been verified by SNC-Lavalin; SNC-Lavalin makes no representation as to its accuracy and disclaims all liability with respect thereto.

To the extent permitted by law, SNC-Lavalin disclaims any liability to the Client and to third parties in respect of the publication, reference, quoting, or distribution of this report or any of its contents to and reliance thereon by any third party.

Meliadine Interim Closu	re and Reclamation Plan – Update 2022	Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# **Table of Content**

			Page
1.0	Introd	uction	9
1.1	Genera	al Description of the Meliadine Mine Site	9
1.2	Purpos	se and Scope of the Interim Closure and Reclamation Plan	14
	1.2.1	Purpose of the ICRP	14
	1.2.2	Description of the proponent	15
1.3	Goal o	f the Closure and Reclamation Plan	16
1.4	Closur	e and Reclamation Planning Team	17
1.5	Engag	ement	18
1.6	Regula	atory Instruments for Closure and Reclamation	19
	1.6.1	Applicable regulatory guidelines	19
	1.6.2	Concordance between the Water Licence Requirements and the ICRP	20
2.0	Projec	t Description	23
2.1	Location	on and Access	23
2.2	Site Hi	story	23
2.3	Site G	eology and mining methods	24
2.4	Meliad	ine Extension Summary	26
	2.4.1	Meliadine Extension Mine Plan	26
	2.4.2	Mine Facilities	29
	2.4.3	Project Alternatives	34
3.0	Projec	t Environment	35
3.1	Atmos	35	
	3.1.1	Climatic Conditions	35
	3.1.2	Climate Change	36
	3.1.3	Air Quality	37
	3.1.4	Noise	40
3.2	Physic	al and Terrestrial Environment	40
eliadine	Interim Clo	sure and Reclamation Plan – Update 2022	Original -V.00
22/01/1	2	692731 5000 /EED 0001	Tachnical Bana



	3.2.1	Topography and drainage basin	40
	3.2.2	Surficial Geology	41
	3.2.3	Bedrock Geology	41
	3.2.4	Geological Hazards and Seismicity	42
	3.2.5	Permafrost	43
	3.2.6	Hydrogeology	43
	3.2.7	Surface Water Hydrology	44
3.3	Chemi	cal Environment	46
	3.3.1	Soil Chemistry	46
	3.3.2	Sediment Quality	47
	3.3.3	Surface Water Quality	48
	3.3.4	Groundwater Quality	49
	3.3.5	Geochemical Characterization	52
3.4	Biolog	ical Environment	53
	3.4.1	Vegetation Habitat	54
	3.4.2	Aquatic Biota and Habitat	55
	3.4.3	Wildlife	56
3.5	Social	Environment	58
	3.5.1	Traditional Activities	58
	3.5.2	Inuit Qaujimajatuqangit and Traditional Knowledge	59
	3.5.3	Cultural, Archaeological and Paleontological Resources	59
4.0	Perma	anent Closure and Reclamation	61
4.1	Definit	ion of Permanent Closure and Reclamation	61
4.2	Perma	nent Closure and Reclamation Requirements	61
	4.2.1	Rankin Inlet Facilities	62
	4.2.2	Transportation Roads and Quarries	67
	4.2.3	Underground	75
	4.2.4	Open Pits	79
	4.2.5	Waste Rock Storage Facilities and Overburden	85
	4.2.6	Tailings Storage Facilities	90
Meliadine	e Interim Clo	osure and Reclamation Plan – Update 2022	Original -V.00
2023/01/	13	682731-5000-4EER-0001	Technical Report



	4.2.7	Water Management Structures	
	4.2.8	Site Buildings and Equipment	
	4.2.9	Waste Management Facilities	
	4.2.10	Description of Project Alternatives	
5.0	Progres	ssive Reclamation	
5.1	Definition	on of Progressive Reclamation	
5.2	Opportu	nities for Progressive Reclamation	
	5.2.1	Rankin Inlet Site Facilities	
	5.2.2	Transportation Routes and Quarries	
	5.2.3	Underground	
	5.2.4	Open Pits	
	5.2.5	Waste Rock Storage Facilities	
	5.2.6	Tailings Storage Facilities	
	5.2.7	Water Management Facilities	
	5.2.8	Site Buildings and Equipment	
	5.2.9	Waste Management Facilities	
6.0	Tempo	rary Closure	
6.1	Tempor	ary Closure Goal and Closure Objectives	
6.2	Tempor	ary Closure Activities	
	6.2.1	Short-term Temporary Closure	
	6.2.2	Long-term temporary closure	
6.3	Tempor	ary Closure Monitoring, Maintenance, and Reporting	
6.4	Tempor	ary Closure Contingency Program	
6.5	Operation	onal Monitoring Strategies	
6.6	Tempor	ary Closure Schedule	
7.0	Integra	ted Schedule of Activities	
8.0	Post-C	osure Site Assessment	
8.1	Closure	and Post-Closure Monitoring Strategies	
8.2	Reportii	ng135	
9.0	Financi	al Security	



9.1 Proposed Payment Schedule	137
10.0 Personnel	139
11.0 References	140
List of Tables	
Table 1-1: NWB Water Licence and NIRB Project Certificate for M	eliadine20
Table 1-2 : Concordance between the Water Licence Requirement	s and the ICRP Sections21
Table 2-1 : Meliadine Extension Mine Development Sequence	27
Table 2-2 : Life of Mine Summary of All Deposits	28
Table 3-1 : Estimated Mine Site Monthly Climate Characteristics	36
Table 3-2 : Estimated Mine Site Extreme 24-our Rainfall Events	36
Table 3-3 : Annual Average Temperature Estimates from 2020 to 2	202137
Table 3-4 : Annual Average Adjusted Precipitation Estimates from	2020 to 202137
Table 3-5 : Ambient Air Quality Standards, Objectives and Guidelin	nes for NO <sub>2</sub> and SO <sub>2</sub> 38
Table 3-6 : Maximum Lake Depths	41
Table 3-7 : Summary of Predicted and Measured Annual Water \ Lake for the Meliadine Mine	· · · · · · · · · · · · · · · · · · ·
Table 3-8 : Comparison of Groundwater Sampling Conducted in M	eliadine51
Table 4-1: Closure Objectives and Criteria – Rankin Inlet Facilities.	64
Table 4-2: Closure Objectives and Criteria – Transportation Roads	and Quarries71
Table 4-3: Closure Objectives and Criteria – Underground	76
Table 4-4: Closure Objectives and Criteria – Open Pits	81
Table 4-5 : Pit Flooding Volume	83
Table 4-6: Closure Objectives and Criteria – Waste Rock Storage I	Facilities87
Table 4-7: Closure Objectives and Criteria – Tailings Storage Facil	ities92
Table 4-8: Proposed Meliadine Extension Water Management Infra	astructure98
Table 4-9: Closure Objectives and Criteria – Water Management S	tructures100
Table 4-10: Closure Objectives and Criteria – Site Buildings and Ed	quipment107
Table 4-11: Closure Objectives and Criteria – Waste Management	Facilities119
eliadine Interim Closure and Reclamation Plan – Update 2022	Original -V.00
023/01/13 682731-5000-4EER-0001	Technical Repor



Table 4-12: Proposed Backfill Tonnage and Volume in Exhausted Pits	123
Table 4-13 : Alternative Pit Flooding Volume	124
Table 6-1 : Short-term Temporary Closure Activities	129
Table 6-2 : Long-term Temporary Closure Activities	130
Table 7-1 : Meliadine - Closure and Post-Closure Main Phases	133

# List of Figures

Figure 1-1 : Meliadine Mine Site Location	11
Figure 1-2 : Meliadine Mine Site Location	12
Figure 1-3 : Meliadine Mine Approved and Meliadine Extension Footprint	13
Figure 2-1 : Meliadine Mine claims, leases and concessions	25
Figure 2-2 : Meliadine Extension Infrastructure - General Map	31
Figure 2-3 : Meliadine Extension Infrastructure Discovery Site - General Map	32
Figure 2-4 : Rankin Inlet Infrastructure General Map	33
Figure 4-1 : All Weather Access Road (AWAR) General Map	68
Figure 4-2 : Bypass Road General Location	69
Figure 4-3 : Road to Discovery	69
Figure 4-4 : Roads to future operation areas (deposits)	70
Figure 4-5 : Meliadine Mineral Processing Flowsheet	105
Figure 4-6 : Operation Landfill (Stage 1) Location	113
Figure 4-7 : Landfarm Locations	116

Meliadine Interim Closu	re and Reclamation Plan – Update 2022	Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# List of Appendices

Appendix A: Glossary of Terms and Definitions

Appendix B: List of Acronyms, Abbreviations, Units and Symbols

Appendix C: Record of Engagement

Appendix D: Regulatory Instruments

Appendix E: Permafrost Map

Appendix F: Meliadine Geology, Seismic Zone, Groundwater Flow and Bathymetry

Appendix G: Ecological Land

Appendix H: Operation, Closure and Post Closure General Site Layout

Appendix I: Closure Integrated Schedule

Appendix J: Financial Security Cost Estimate Assumptions and RECLAIM 7.0 Spreadsheets

Meliadine Interim Closu	Original -V.00	
2023/01/13 682731-5000-4EER-0001		Technical Report



# **Document Control**

Version	Date	Section	Page	Revision	Author
1.0	April 2015	All	All	Preliminary Closure and Reclamation Plan Prepared in Support for the Water Licence application for Meliadine Mine	Agnico Eagle Mines Limited
00	December 2019	All	All	Meliadine Interim Closure and Reclamation Plan - Update 2019	SNC-Lavalin
00	June 2020	All	All	Reclamation Work and Costs Submitted in support of the Waterline for Treated Groundwater Effluent Discharge application	SNC-Lavalin
03	April 2021	All	All	Meliadine Interim Closure and Reclamation Plan – Update 2020 Submitted to NWB as part of the Meliadine Water Licence Amendment	SNC-Lavalin
0	July 2022	All	All	Conceptual Closure Plan for Meliadine Extension Submitted to NIRB as part of the Meliadine Extension Final Environmental Impact Statement (Appendix D18)	Agnico Eagle Mines Limited
00	January 2023	All	All	Meliadine Interim Closure and Reclamation Plan – Update 2022 Submitted to NWB as part of the Meliadine Extension Water Licence Amendment	SNC Lavalin

Meliadine Interim Closu	re and Reclamation Plan – Update 2022	Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### 10 Introduction

# 1.1 General Description of the Meliadine Mine Site

The Meliadine Mine site, which is 100% owned by Agnico Eagle Mines Limited (Agnico Eagle) is located in the Kivallig region, Nunavut, approximately 30 km south of Rankin Inlet as shown on Figure 1-1. The Meliadine Mine is located within the Meliadine Lake watershed of the Wilson Water Management Area (Nunavut Water Regulations Schedule 4) (AEM, 2015a). Located in the peninsula between the east, south, and west basins of Meliadine Lake (63°1'23.8" N, 92°13'6.42"W), on Inuit Owned Lands, the mine site is accessible by plane via the Rankin Inlet Aerodrome.

Figure 1-2 presents the location of Meliadine Mine in relation with the other Agnico Eagle Nunavut mine sites.

The Meliadine property is divided as Meliadine West property and Meliadine East property. These areas were divided geographically by the Meliadine Lake at 547500 E. Meliadine West contained Tiriganiaq, Wesmeg, Pump, F Zone, and Wolf deposits, whereas Meliadine East contained the Discovery deposits and other regional gold showings (AEM, 2015a).

Since its approval in 2015 by the Nunavut Impact Review Board (NIRB), Agnico Eagle has continued to extend its knowledge and validation of the gold deposits around the Meliadine Mine by way of additional exploration. As a result, an improved project, collectively referred to as Meliadine Extension, is being proposed. Meliadine Extension will extend the life of the mine from 2032 to 2043 and will add the following to the Water Licence (2AM-MEL1631):

- open pit mining of F Zone, Wesmeg, Pump, and Discovery deposits and associated infrastructure;
- underground mining and associated saline water management infrastructures at the Pump, F Zone, and Discovery deposits:
- development of a new portal and associated infrastructures in the Tiriganiaq-Wolf area to improve access to and expand the existing Tiriganiaq underground mine;
- construction and operation of a windfarm of up to 11 turbines to reduce greenhouse gas (GHG) emissions;
- use of additional borrow pits and quarries to replace depleted sources and build a road to the windfarm, Tiriganiaq-Wolf portal, road to Discovery and other deposits; and
- as an alternative for the future, should it be required, use of exhausted open pits to store tailings and/or waste rock to complement the current waste management strategy.

Proposed changes to the approved footprint are illustrated on Figure 1-3.

Already approved infrastructures such as the mill, camp, AWAR, water treatment complex, tank farm, landfarm, fuel farm, the laydown area in Rankin Inlet, the tailings storage facility (TSF), and waste rock storage facilities (WRSFs) will continue to be used. Additional infrastructures such as a windfarm, additional wings for the camp, additional landfarms, and additional fuel tanks are proposed as part of Meliadine Extension.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13 682731-5000-4EER-0001		Technical Report



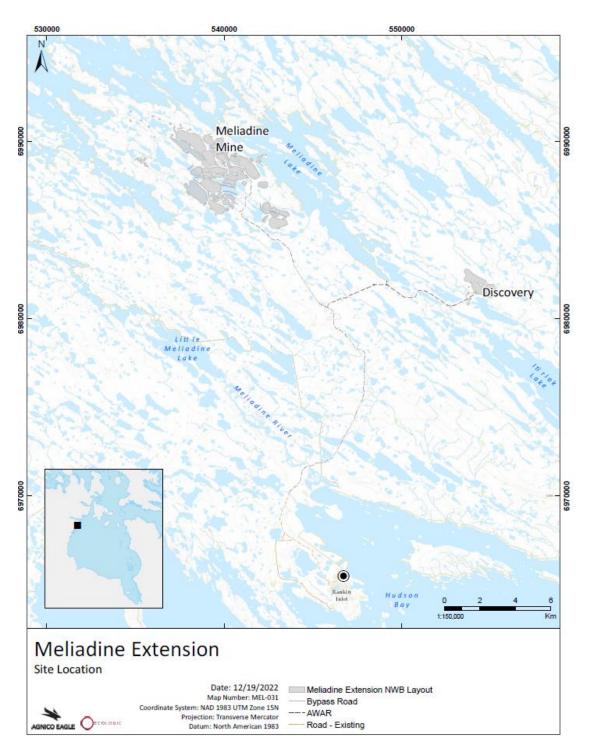
The closure period of Meliadine Extension will commence in 2044. The open pits will be flooded at closure when open pit mining is completed. Flooding is planned to spread over a 7-year period. The post-closure period will commence in 2051 once water quality objectives in the pit lakes are met.

Mining facilities for the Meliadine Extension includes ore stockpiles and pads, an extension of the approved TSF, WRSFs, and a water management system that includes collection ponds, water diversion channels, retention dikes/berms, a saline water treatment plant, an effluent water treatment plant, a water treatment plant and a treated groundwater discharge waterline.

The present Meliadine Interim Closure and Reclamation Plan 2022 (Meliadine ICRP 2022) is based on the Meliadine Extension and is being submitted to the NWB as part of the Water Licence (2AM-MEL1631) Amendment.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

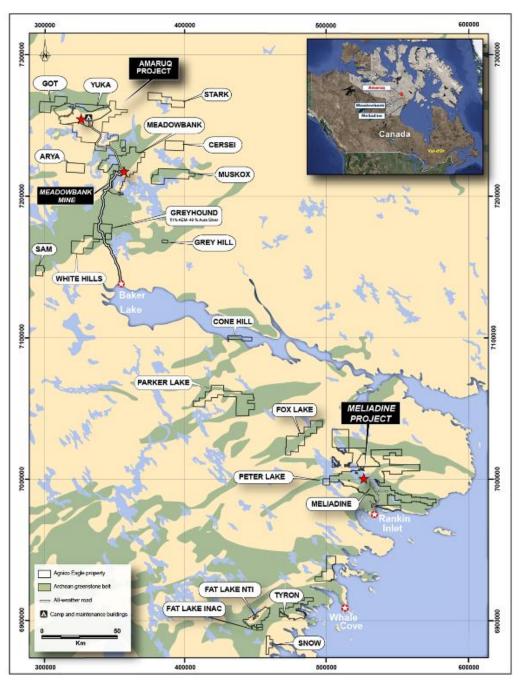




**Figure 1-1: Meliadine Mine Site Location** 

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



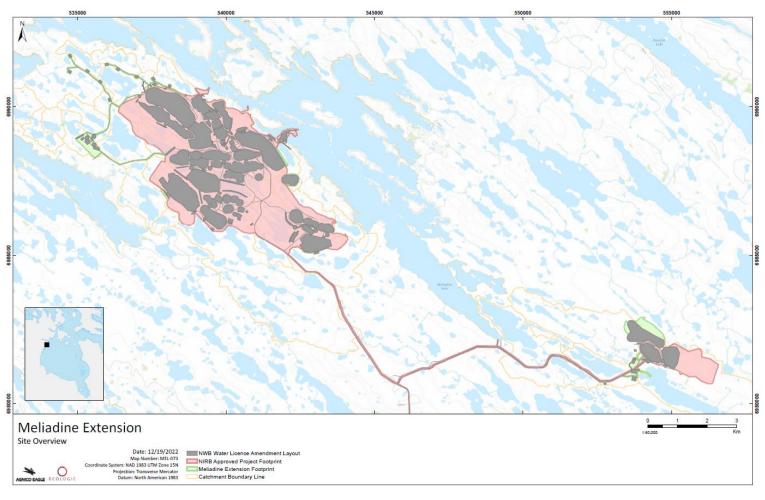


Source : AEM website

**Figure 1-2: Meliadine Mine Site Location** 

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	2023/01/13 682731-5000-4EER-0001	





Source: AEM 2022c

Figure 1-3 : Meliadine Mine Approved and Meliadine Extension Footprint

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# 1.2 Purpose and Scope of the Interim Closure and Reclamation Plan

## 1.2.1 Purpose of the ICRP

This document presents the third version of the ICRP for the development phase of the Meliadine Extension to support the Water Licence Amendment application.

This ICRP, based on the Meliadine Extension life of mine, provides increasing levels of detail on the closure and reclamation of individual project components and details for components which are to be progressively reclaimed earlier in the mine life.

The ICRP document is the main reference to be used throughout the closure engineering process for the development of the Final Closure and Reclamation Plan. This document does not include detailed engineering closure designs, or specific post-closure monitoring programs as these will be developed in the future. However, a view of the current closure concepts for each area of the mine site and the plans to advance these designs are provided.

The focus of this ICRP for the Meliadine Extension is to:

- Provide closure objectives for the mine components;
- Describe closure options for temporary and permanent closure;
- Identify uncertainties related to the proposed closure objectives, options, or criteria;
- Identify post-closure monitoring requirements and responsibilities for the selected closure activities;
- Predict the likelihood of potential post-reclamation risks to the environment and human and wildlife health; and
- Estimate the closure and reclamation costs.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## 1.2.2 Description of the proponent

The proponent of the Meliadine Mine

Agnico Eagle Mines Limited (Agnico Eagle)

is:

The address for the proponent is: Meliadine Gold Project - Agnico Eagle

145 King Street East, Suite 400

Toronto, Ontario M5C 2Y7, Canada

The Mine site is located at: latitude 63°1'23.8"N, longitude 92°13'6.42"W

(UTM 6988500N, 540250E, NAD83, Zone 15)

Territory of Nunavut, Canada

Acting on behalf of the proponent: SNC-Lavalin Inc. (SLI)

> Mining and Metallurgy 455 René-Levesque West Montreal (Qc) Canada H2Z 1Z3

The contact persons for the Meliadine

Mine:

Matt Gillman, Meliadine Environment Superintendent

Agnico Eagle Mines Limited

Meliadine Division Nunavut, Canada

Email: matt.gillman@agnicoeagle.com

Manon Turmel, Permitting & Regulatory Affairs

Superintendent

Agnico Eagle Mines Limited

Email: manon.turmel@agnicoeagle.com

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# 1.3 Goal of the Closure and Reclamation Plan

Permanent closure is defined as the final closure of the mine site after mining has ceased. Permanent closure is typically a planned event, the timing of which is dependent on the life of mine. The closure approach for the project, as well as specific closure activities at each project facility, is guided by the intended end land use of the area. Based on stakeholder and local community consultation to date, the intended end land use for project-affected areas is a return to the "natural" state. As such, closure activities are focused on decommissioning mine components so that they blend into the existing landscape to the extent possible.

Agnico Eagle is committed to responsible mining practices for the protection of human, wildlife and aquatic life health, and for minimizing impacts on the environment. Agnico Eagle intends to leave behind a positive community and environmental legacy. The closure goal as described in the Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest (AANDC/MVLWB, 2013), is to return the mine site and affected areas to viable and, wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and with human activities. The four (4) closure principles of physical stability, chemical stability, no long-term active care requirements, and future use (including aesthetics and values) support the closure goal:

- Physical stability: The components of the reclaimed site should be built or modified at closure so that they do not erode, subside or move under extreme design events, and therefore do not pose a threat to humans, wildlife, or environmental health and safety;
- Chemical stability: The components of the reclaimed site should be chemically stable so as to prevent adverse soil, water and air quality effects that might pose a risk to humans, wildlife or environmental health and safety;
- No long-term active care requirements: Any project component that remains after closure does not require long-term active care and maintenance. Thus, any post-closure monitoring can only continue for a defined period of time. Physical and chemical stability will help ensure achievement of this principle; and
- Future use and aesthetics: The reclaimed site should be compatible with the surrounding lands at the completion of the reclamation activities.

These broad objectives were used to support the identification of closure objectives that are specific to the Project. These specific objectives are:

- Physically and chemically stable lands and waters at the reclaimed Meliadine site that are safe for human, wildlife and aquatic life;
- Lands and waters at the reclaimed Meliadine site that allow for traditional uses;
- Final landscape guided by pre-development conditions and traditional knowledge;
- Post-closure conditions that, where appropriate, do not require a continuous presence of Mine staff until a walk-away condition is achieved.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	2023/01/13 682731-5000-4EER-0001	



# 1.4 Closure and Reclamation Planning Team

The strategy used by Agnico Eagle is an integrated approach consisting of a consortium between the Meliadine departments, the corporate office and Engineering consultant firms. This multidisciplinary team will form the Reclamation Planning Team, which will be responsible for coordinating activities and projects related to closure. The Reclamation Planning Team will oversee the review of the ICRP, developing the Final Closure and Reclamation Plan and communicate its content to all departments of the Meliadine Mine. The communication effort is intended to provide a sufficient level of awareness among operations staff as to the importance of closure and reclamation activities on Meliadine Mine development. The team members are comprised of Environment and Permitting Departments staff members for now. External support for the development of the plan is currently provided by SNC Lavalin Inc. for the development of the Meliadine ICRP 2022, although other consultants and contractors may be involved in the preparation of the subsequent ICRP and/or the final plan.

The Reclamation Planning Team will ensure to:

- Take leadership of the Closure Project and develop a work environment characterized by open communication, commitment, dedication to safety and continuous improvement;
- Liaise with departments and manage inter-company relationships;
- Take responsibility for the staffing and organization of the studies required for the interim and final closure and reclamation plans;
- Respect the schedule and permitting requirements;
- Identify closure risks and opportunities;
- Manage documentation; and
- Provide services in an ethical manner that is consistent with the Agnico Eagle corporate policies and its professional reputation.

Furthermore, Agnico Eagle has developed a Responsible Mining Management System (RMMS) Standard. The RMMS supports the application of Agnico Eagle's Sustainable Development policy. All Agnico Eagle Divisions must implement the RMMS outlined in the current standard at all their sites. Sites include operations, exploration, projects, offices, and closed sites. The application of RMMS does not take precedence over site-specific statutory and permitting requirements. The primary focus of this system is to provide an integrated framework for the management of health, safety, environmental and social acceptability performance. This standard applies to all phases of mining projects including closure and postclosure phases.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# 1.5 Engagement

Since Agnico Eagle acquired the Meliadine Mine in July 2010 from Comaplex Mineral Corporation, Agnico Eagle has actively engaged and consulted stakeholders throughout the Kivalliq region and adjacent jurisdictions. Consultations are reported annually by Agnico Eagle and consultation for the Meliadine Extension is provided in Water Licence Amendment application (Appendix C of AEM 2022),

Community information sessions and consultations made possible through in-person meetings have long been the standard for Agnico Eagle Nunavut's project development and operations teams. When the pandemic made these existing communication methods more challenging, by the instauration of travel restrictions, public health guidelines and southern employees required to guarantines, innovative thinking led the way towards identifying an alternative option to reach a broad audience during those changing times.

Agnico Eagle created a Virtual Meeting Room (VMR) for the Meliadine Extension to foster an open, transparent, and respectful dialogue with all communities of interest, which went live to the public on June 28, 2021 (https://meliadinevmr.agnicoeagle.com/). The website, which is completely accessible in both English and Inuktitut, allows meaningful information sharing, as well as to get feedback. Information is available on the Meliadine Extension, how we have engaged with the communities, our plans for water management, the protective measures that we implemented to protect aquatic life, and our efforts to introduce TK and IQ in our operations.

The VMR was used for public consultation on the Meliadine Extension via public meetings and Focus Group meetings between June 18 and June 25, 2021. This innovative way of engaging allows participants to have access to additional information after the engagement sessions and to provide additional comments, answer surveys or simply browse through the content once again at their own pace. The VMR will be used as part of engagement activities to communicate, gather feedback, and provide updates on the Meliadine Extension, in addition to in-person meetings, and will be continually updated and accessible 24/7.

Throughout 2021 and 2022, Agnico Eagle hosted various public meetings, focus groups, and meetings with stakeholders to provide the communities with Meliadine Extension information and answer their questions, and identify their concerns and feedback with regards to the Meliadine Extension.

Agnico Eagle continues to actively conduct public consultation/participation with local organizations and residents of the nearby communities. Activities include community meetings, meetings with the Rankin HTO, meetings with the Meliadine Community Liaison Committee in Rankin Inlet, interviews conducted with Elders in Kivalliq communities on a variety of topics and site tours for Rankin Inlet residents. Consultations with local communities are reported annually by Agnico Eagle through the Meliadine Annual Report (AEM, 2018, 2019, 2020a, 2021a, 2022b).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# 1.6 Regulatory Instruments for Closure and Reclamation

## 1.6.1 Applicable regulatory guidelines

The ICRP follows applicable regulatory guidelines, the principles of which are described in:

- Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories (AANDC/ MVLWB, 2013);
- Mine Site Reclamation Guidelines for the Northwest Territories (AANDC, 2007);
- Abandonment and Reclamation Policy for Inuit Owned Lands (QIA);
- Mine Site Reclamation Policy for Nunavut (AANDC, 2002);
- Environment Canada, Environmental Code of Practice for Metal Mines (Environment Canada, 2009);
- Abandoned Military Site Remediation Protocol (AMSRP) (INAC 2008).

The Meliadine Mine is located within the Nunavut Territory and is thus subject to the regulatory processes established under the applicable laws and regulations of Canada and of Nunavut. The Meliadine Mine is subject to the Federal and Territorial Acts and Regulations listed below:

- Arctic Waters Pollution Prevention Act and Regulations;
- Canadian Environmental Act and Regulations;
- Fisheries Act and Regulations;
- Metal and Diamond Mining Effluent Regulations;
- Navigable Waters Protection Act and Regulations;
- Nunavut Agreement and Regulations;
- Nunavut Waters and Nunavut Surface Rights Tribunal Act and Regulations;
- Territorial Lands Act and Regulations;
- Nunavut Environmental Protection Act and Regulations;
- Nunavut Transportation of Dangerous Goods Act and Regulations; and
- Nunavut Mine Health and Safety Act and Regulations.

The Amended NWB Water Licence and the NIRB Project Certificate for Meliadine details are found in Table 1-1. In addition, a list of the known Federal and Territorial Acts and Regulations applicable to the ICRP and a list of all Authorizations for the Meliadine Mine are found in **Appendix D**.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Table 1-1: NWB Water Licence and NIRB Project Certificate for Meliadine

Authorization	Issuing Authority	Note
NWB Type A Water Licence 2AM-MEL1631 NWB Type A Water Licence 2AM-MEL1631 Emergency Amendment NWB Type A Water Licence 2AM-MEL1631 Amendment 001	Nunavut Water Board (NWB)	For Meliadine Mine
NWB Type A Water Licence 2AM-MEL1631 Amendment 002	Nunavut Water Board (NWB)	For Meliadine Extension
NIRB Project Certificate No.006, approval received in 2015 NIRB Project Certificate No.006, Amendment 001 NIRB Project Certificate No.006, Amendment 002	Nunavut Impact Review Board (NIRB)	Amendments and additions to Terms and Conditions of Project Certificate to reflect significant modifications to the Meliadine Gold Mine Project as proposed in the Saline Effluent Discharge to the Marine Environment proposal and amendments to reflect implementation of project monitoring and reporting requirements
Reconsideration Project Certificate No.006 (anticipated – to be determined by NIRB)	Nunavut Impact Review Board (NIRB)	For Meliadine Extension

## 1.6.2 Concordance between the Water Licence Requirements and the ICRP

Agnico Eagle was granted a Type A Water Licence 2AM-MEL1631 in April 2016 (NWB, 2016). This licence authorizes Agnico Eagle to use water and dispose of waste associated with the mining of the Tiriganiaq deposit and milling undertakings at the Meliadine mine site. The Licence sets out several conditions with respect to Agnico Eagle's right to alter divert or otherwise use water for the purpose of mining. Specifically, in Part J, the Licence stipulates the conditions applying to abandonment, reclamation and closure. A summary of the specific requirements listed within the Water Licence applicable for the ICRP are provided in Table 1-2. The development of a closure and reclamation plan is also a requirement of the NIRB Project Certificate 006.

On June 23, 2021, the Minister approved the Type A Water Licence 2AM-MEL1631 Amendment (NWB, 2021) which included updated total dissolved solids (TDS) thresholds to Meliadine Lake, increase of annual freshwater consumption, additional laydown area, additional landfarm, updated waste management strategy, construction of access roads, and an updated ICRP.

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022		
2023/01/13	682731-5000-4EER-0001	Technical Report	



Table 1-2 : Concordance between the Water Licence Requirements and the ICRP Sections

Part/Condition	Water Licence Requirements	Corresponding Sections in the ICRP
	The Board has approved the document entitled Preliminary Mine Closure and Reclamation Plan, dated April 2015, under Part B, Item 12. The Licensee shall submit to the Board for approval, within six (6) months of Commercial Operation, an Interim Closure and Reclamation Plan prepared in accordance with the Mine Site Reclamation Guidelines for the Northwest Territories, 2007 and consistent with the INAC Mine Site Reclamation Policy for Nunavut, 2002.  The Plan shall include the following:  a. Detailed description, including maps and other visual	All sections of the ICRP  Sections 3.0
	representations, of the pre-Construction conditions for each site, accompanied by a detailed description of the proposed final landscape, with emphasis on the reclamation of surface drainage over the restored area;	Section 4.0
	b. A description of how progressive reclamation will be employed and monitored throughout the life of the mine, plus	Section 4.0
	reclamation scheduling and coordination of activities with the	Section 5.0
	overall sequence of the project; details of reclamation scheduling and procedures for coordinating reclamation activities within the overall mining sequence and materials balance;	Section 7.0
Part J-1	c. Implications of water quality model re-calibration results on discharge strategy and any adaptive management measures that may be required;	Section 4.2.4, 4.2.5, 4.2.6, 4.2.7
	d. An evaluation of closure and reclamation measures for each mine component, including the goals, objectives, closure criteria and the rationale for selection of the preferred measures;	Section 4.0
	e. A comprehensive assessment of materials suitability, including geochemical and physical characterization, and schedule of availability for reclamation needs, with attention to cover materials, including maps where appropriate, showing sources and stockpile locations of all reclamation construction materials and any Water related mitigation required during implementation;	Section 3.3.5 Section 4.0
	f. An assessment and description of any required post-closure treatment for drainage Water that is not acceptable for discharge from any of the reclaimed mine components;	Sections 4.2.4, 4.2.5, 4.2.6, 4.2.7
	g. Contingency measures for all reclamation components including action thresholds that are linked to the monitoring programs;	Section 4.0
	h. Monitoring programs to assess reclamation performance and environmental conditions including monitoring locations for	Section 8.0

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022		
2023/01/13	682731-5000-4EER-0001	Technical Report	



Part/Condition	Water Licence Requirements	Corresponding Sections in the ICRP
	surface Water and groundwater, parameters, schedules and overall timeframes; i. QA/QC procedures for managing all waste disposal areas; j. A list of non-salvageable materials and disposal locations; k. Rock storage facility closure design plans and sections including the types of material placed and volumes; l. Underground mine plans and sections, including the areas of backfill, the type of material placed and volumes; m. Protocol for the disposal of any contaminated soil at closure; n. An assessment of the long-term physical stability of project components; o. A detailed criteria for the final breaching of the Dam(s); p. A revised closure and reclamation cost estimate; and q. A detailed implementation schedule for completion of reclamation work.	Section 4.2.5, 4.2.6, 4.2.9 Section 4.2.9 Section 4.2.5 Sections 2.4.1, 4.2.3 Section 4.2.9 Section 4.0 Section 4.2.7 Section 9.0 Section 7.0
Part J-8	The Licensee shall implement progressive reclamation, including progressive covering of the tailings, and re-vegetation if practically possible.	Section 5.0 Section 7.0
Part J-9	The Licensee shall notify the Board in writing, at least sixty (60) days prior to any intent to achieve Recognized Closed Mine status.	Section 2.4.1 Section 7.0
Schedule I	Monitoring programs according to Table 2	Section 8.0

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022		
2023/01/13	682731-5000-4EER-0001	Technical Report	



#### **Project Description** 2.0

## 2.1 Location and Access

The Meliadine Mine site is in the Kivalliq region, Nunavut, approximately 30 km south of Rankin Inlet as shown in Figure 1-1. The Meliadine Mine is primarily situated on Inuit Owned Lands (Figure 2-1) and administered by the KivIA (surface rights) on behalf of the Inuit Beneficiaries as designated under the Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in right of Canada (Nunavut Agreement).

The Meliadine Mine involves pre-development, construction, operation, and closure, including decommissioning and the rehabilitation of a conventional gold mine.

The mine site access is via the All-weather Access Road (AWAR) from Rankin Inlet, which provides yearround access. Employees are flown to the Rankin Inlet airport and then via bus to the Mine site. Meliadine Mine relies on marine transportation to the harbor at Itivia in Rankin Inlet via Hudson Bay for most of its supplies including fuel, construction and operation equipment, materials and consumables, including dangerous goods, food, household goods and other non-perishable supplies.

# 2.2 Site History

In late 2010, Agnico Eagle announced that it planned to accelerate the pace of advanced exploration at the Meliadine West property given the encouraging drilling results. Agnico Eagle subsequently reopened the underground decline and advanced a second bulk sample from underground in 2011, increased the number of operating diamond drills, and modified and expanded the exploration camp and associated facilities (sewage treatment, potable water treatment, power generation, etc.) to allow exploration to continue yearround. Exploration continued during the environmental assessment. Diamond-drilling was required to better define existing mineral resources and to find new resources on the minerals claims. In 2011, condemnation drilling was required to confirm that the mine buildings and other infrastructure were not planned on top of potential new ore zones (AEM, 2015c).

The construction phase started in the last quarter of 2015 ending in 2019. The mine construction period focused primarily on-site preparation and the construction of infrastructure, with some mining activities (advancement of the mine ramp) occurring at the Tiriganiaq underground mine. Operation started after commissioning was completed at the end of Q2 2019.

The NIRB issued a Project Certificate No.006 in February 2015 (amended in February 2019 and January 2022), setting out the terms on which the Meliadine Mine could proceed. In March 2017, Agnico Eagle and the KivIA signed the Inuit Impact Benefit Agreement (IIBA) for the Meliadine Mine. Through the agreement, both Agnico Eagle and the KivIA are intent on ensuring that business opportunities, employment and training opportunities arising from this mine will benefit the Inuit of the Kivallig Region.

Agnico Eagle was granted a Type A Water Licence 2AM-MEL1631 in April 2016. At that time, Agnico Eagle only applied for the Type A Water Licence required to proceed with the Tiriganiaq deposit. As indicated at that time, amendments are required to proceed with the other deposits, as part of this application (Meliadine Extension) included in Project Certificate No.006. The Water Licence was amended in June 2021 which included updated TDS, threshold to Meliadine Lake, increase of annual freshwater consumption, additional

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022		
2023/01/13	682731-5000-4EER-0001	Technical Report	



laydown area, additional landfarm, updated waste management strategy, construction of access roads, and an updated ICRP.

At this time, Agnico Eagle is seeking approvals and permits required to proceed with mining of the deposits that were not included in the Water Licence (Meliadine Extension) and associated approved activities. As mentioned above, Project Certificate No.006, including the Meliadine Extension deposits, has been issued in 2015.

# 2.3 Site Geology and mining methods

The information as presented below is extracted from the Agnico Eagle website and from the Meliadine Mine Technical Report (AEM, 2015b).

The Meliadine Mine is located near the western shore of Hudson Bay in the Kivalliq District of Nunavut and includes seven (7) gold deposits, six (6) of which are part of the current mine plan. The 111,357-hectare property covers an 80-kilometre-long greenstone belt. The Figure 2-1 presents the area of the site including the claims, leases and subsurface Nunavut Tunngavik Incorporated ("NTI") concessions. The current mineral reserves are mainly in the Tiriganiag deposit at underground and open pit depths, and consist of 4.067 million ounces of gold in proven and probable reserves (20.75 Mt at 6.1 g/t) as of December 31, 2019 (AEM website, Mineral reserves).

Commercial production began at Meliadine in mid-May 2019. The mine produced 191,113 ounces gold in 2019. Agnico Eagle anticipates that mining at Meliadine will be carried out through several underground mining operations and open pits over the life of the mine. There are numerous opportunities to create additional value at Meliadine, both at the mine and on the large regional land package (AEM website).

Archean volcanic and sedimentary rocks of the Rankin Inlet greenstone belt underlie the property. The rock layers have been folded, sheared and metamorphosed. They trend west-northwest, dip steeply to the north, and have been overturned. The rock units are truncated by the Pyke Fault, a regional structure that extends the entire 80-km length of the property (AEM website).

The Pyke Fault and associated secondary structures (i.e., the Lower Fault) appear to control gold mineralization on the property. Along the fault is a series of oxide iron formations that host six (6) of the seven (7) Meliadine mine deposits currently known. The deposits consist of multiple lodes of mesothermal quartz-vein stockwork, laminated veins and sulphidized iron formation mineralization. The northern, magnetite-rich Upper Oxide iron formation hosts the Tiriganiag zone, the largest deposit to date with a strike length of approximately 3.0 km at surface and a known depth of 800 m, as well as the Wolf North and Discovery zones. The southern, weakly magnetic Lower Lean iron formations contain the F Zone, Pump, Wolf Main and Wesmeg deposits. Normeg is hosted by mafic volcanics and is located between the Wesmeg and Tiriganiag zones (AEM website).

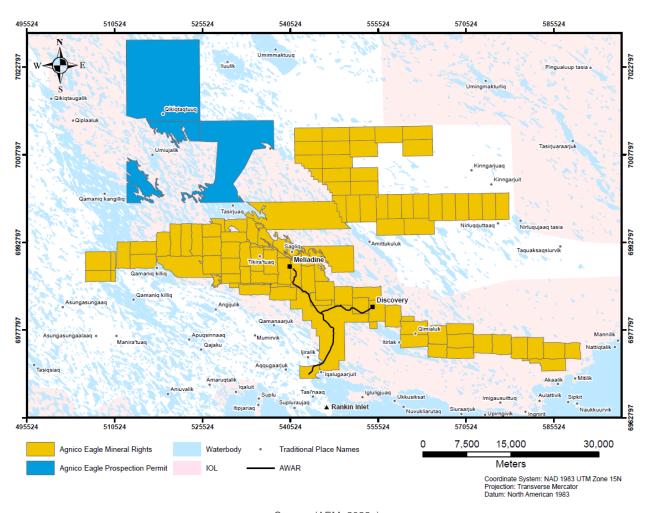
The deposits are all within 5 km of Tiriganiaq except for Discovery, which is 17 km east-southeast of Tiriganiaq. Each of these deposits has mineralization within 120 m of surface, making them potentially mineable by open pit methods. They also have deeper mineralization that could potentially be mined with underground methods, which are currently being considered in various studies (AEM website).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Appendix F presents the regional and local geology maps for Meliadine. The Tiriganiaq-Westmeg-Normeg schematic geological cross-section and the Tiriganiaq composite longitudinal section are also presented.

As presented in the Meliadine Extension FEIS Addendum (AEM, 2022c), open pit and underground mining will continue at the Pump deposit, F Zone deposit and Discovery deposit. Underground mining will also occur at the Tiriganiaq-Wolf mining area.



Source: (AEM, 2022a)

Figure 2-1: Meliadine Mine claims, leases and concessions

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	2023/01/13 682731-5000-4EER-0001	



# 2.4 Meliadine Extension Summary

The Meliadine Extension primarily consists of amending the Water Licence 2AM-MEL1631 to include the mining of Pump, F Zone, Wesmeg, and Discovery deposits that were previously assessed and approved for open pit mining activities by NIRB. Based on the additional geological information collected since the 2014 FEIS, Agnico Eagle refined the open pit and underground mine designs and reviewed the infrastructure required to support mining activities.

As part of the Water Licence Amendment Application, Agnico Eagle is proposing the following changes:

- underground mining and associated saline water management infrastructures at the Pump, F Zone, and Discovery deposits that were previously assessed and approved for open pit mining activities by NIRB;
- development of a new portal and associated infrastructures in the Tiriganiaq-Wolf area to improve access to and expand the existing Tiriganiaq underground mine;
- construction and operation of a windfarm of up to 11 wind turbines, to reduce GHG emissions (Project Certificate No.006 T&C 9);
- use of additional borrow pits and quarries to replace depleted sources and build a road to the windfarm, Tiriganiaq-Wolf portal, road to Discovery and other deposits; and
- extension of the operation phase (LOM) by 11 years to 2043.
- As an alternative, Agnico Eagle is also seeking approval, should it be required, to use exhausted open pits to store tailings and waste rock to complement the current waste management strategy.

#### 2.4.1 Meliadine Extension Mine Plan

Meliadine operations started after commissioning was completed at the end of the second quarter of 2019 and with the Meliadine Extension, it will now span approximately over 24.5 years (Q2 2019 to 2043). Mining activities are expected to end in Year 24 (2043) and ore processing is expected to end in Year 25 (2043).

Closure will extend for 7 years as pits are being re-flooded, from 2044 to 2050. Consistent with the 2014 FEIS (AEM, 2014), most removal or demolition of buildings and infrastructure will occur at the end of the operation phase and would be done in the first two years of decommissioning. Reclamation work should be completed within 3 to 4 years of the closure. The filling of open pits with water would extend until the end of the closure phase. During closure, all saline water will be pumped to the underground. Surface contact water as well as local runoff and precipitation will be stored in the pits to enhance reflooding activities. Active reflooding will be conducted with water to be pumped from Meliadine Lake. There will be no discharge into Meliadine Lake or to Itivia Harbour during this phase.

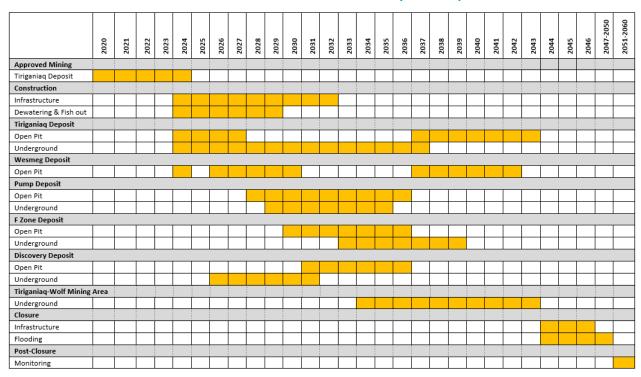
Post-closure will be initiated when flooded pits are reconnected to the surrounding environment and will last 10 years, from 2051 to 2060.

Table 2-1 summarizes the Meliadine Extension development schedule and Table 2-2 summarizes the quantities to be mined from the open pit and underground mining operations and the mine waste to be managed.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



**Table 2-1: Meliadine Extension Mine Development Sequence** 



Source: (AEM, 2022c)

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022		
2023/01/13	682731-5000-4EER-0001	Technical Report	



**Table 2-2: Life of Mine Summary of All Deposits** 

Year	Mine Year	Total Ore Open Pit (t)	Total Waste Rock Open Pit (t)	Total Ore Underground (t)	Total Waste Rock Underground (t)	Total Saline WRSF (t)	Total Tailings Stored in TSF (t)	Total Overburden (t)
2020	1	201,105	2,424,133	1,722,231	832,179	-	857,637	693,226
2021	2	209,456	1,506,696	1,853,757	708,224	-	1,043,775	3,349,130
2022	3	805,698	2,593,910	1,795,949	668,700	-	1,036,149	1,221,917
2023	4	522,170	4,268,265	1,784,634	791,648	-	1,258,243	1,194,525
2024	5	1,162,317	4,680,005	1,914,255	836,442	-	1,439,030	623,602
2025	6	1,335,751	5,333,152	1,875,054	872,577	113,528	1,446,644	787,056
2026	7	1,682,088	3,062,755	1,830,249	979,387	161,238	2,354,955	2,225,166
2027	8	869,780	6,916,269	2,021,221	1,174,276	389,231	2,334,117	2,087,886
2028	9	777,060	9,286,915	2,509,795	1,125,163	97,855	2,273,527	1,918,261
2029	10	919,527	10,669,542	2,621,861	1,067,906	-113,930	2,319,689	350,370
2030	11	1,227,191	8,313,774	2,304,465	1,209,051	206,807	2,339,819	2,432,426
2031	12	788,971	9,470,241	2,193,953	1,108,828	205,988	2,290,915	1,716,222
2032	13	741,908	9,583,821	2,391,155	1,006,758	170,896	2,338,642	1,655,221
2033	14	613,935	10,383,475	2,226,433	677,785	272,678	2,333,300	989,498
2034	15	793,675	11,206,325	2,167,472	512,589	173,643	2,350,769	-
2035	16	695,610	8,978,764	2,265,949	601,856	258,072	2,361,679	2,217,665
2036	17	1,479,607	8,636,056	2,479,570	521,334	120,250	2,366,867	1,818,870
2037	18	567,985	5,949,811	2,390,134	587,040	-46,785	2,541,827	5,373,987
2038	19	1,252,010	10,728,043	1,335,433	297,488	-487,112	3,102,500	19,947
2039	20	1,676,609	10,323,391	1,171,605	96,872	-422,359	3,102,500	-
2040	21	1,727,495	7,379,533	546,805	153,786	-	3,102,500	2,790,454
2041	22	670,280	10,152,255	540,649	41,862	-	3,102,500	1,171,814
2042	23	1,098,670	10,791,759	419,008	-	-	3,093,632	-
2043	24	631,021	1,936,032	176,847	-	-	808,256	-
To	otal (t)	22,449,918	174,574,923	42,538,482	15,871,751	351,609	51,599,471	34,637,243
Tota	al (Mt)	22.4	174.6	42.5	15.9	1.1	51.6	34.6

Source: (AEM, 2022c)

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022		
2023/01/13	682731-5000-4EER-0001	Technical Report	



#### 2.4.2 Mine Facilities

This section presents list of all facilities require to support the mining operation at the Meliadine site and in Rankin Inlet, including the new infrastructures required for the Meliadine Extension. The detail description of the facilities is presented in Section 4.0. Figure 2-2 and Figure 2-3 shows the current and planned main infrastructures at the Meliadine Mine. Figure 2-4 presents the main infrastructures in Rankin Inlet. The AWAR and the Bypass road are presented on Figure 4-1 and Figure 4-2 of the next section.

Existing infrastructure has been developed from previous bulk sampling programs, which were completed in the 2008 by Comaplex and 2011 by Agnico Eagle. The pre-existing site infrastructure was regulated by the NWB under the Water Licence 2BE-MEP1318 (Meliadine East Project) (expired 2018-10-31) and the Water Licence 2BW-MEL1215 (expired 2015-05-31). The existing facilities at the mine site, which are also covered in this ICRP, include:

- An exploration camp, located on the shore of Meliadine Lake, approximately 2.3 km north-east of the Tiriganiag deposit;
- An underground portal; and
- A core shack and storage building remaining from a previous exploration camp (Meliadine East; the decommissioning of the Meliadine East camp on Atulik Lake began during the summer of 2010 and was completed by spring 2011).

The existing infrastructures located directly at the Meliadine site are listed below:

- An underground mine (Tiriganiaq Underground), including an underground total suspended solids (TSS) removal plant;
- Two (2) open pits (Tiriganiag Pit 1 and Tiriganiag Pit 2);
- A mineral processing facility, which includes a crusher plant, process plant, and paste backfill plant;
- Two (2) waste rock storage facilities (WRSFs);
- A tailings storage facility (TSF);
- Sewage treatment plant (STP);
- Water treatment systems;
- Supporting infrastructure, including gated access, emulsion plant and storage facility, potable water treatment plant, permanent camp, maintenance and on-site storage areas, power plant, fuel storage, incinerator, landfill, landfarm, water management system, water intake and diffuser, a temporary overburden stockpile and ore stockpile facilities and laydown area facilities;
- Transportation routes on site including internal access and haul roads;
- Roads to future operation area (deposits), included in the Meliadine FEIS;
- All Weather Access Road (AWAR);
- Quarries and borrow pits.

Meliadine Interim Closu	re and Reclamation Plan – Update 2022	Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



For the Meliadine Extension, the following infrastructures will be added to the Meliadine Mine:

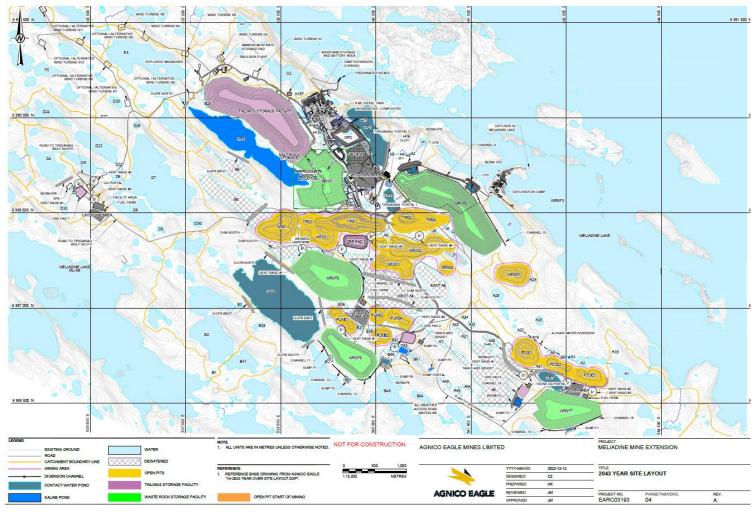
- Sixteen (16) additional open pits (for a total of 18 pits, TIR03 TIR04, WES01, WES02, WES03, WES04, WES05, WN01, PUM01, PUM02, PUM03, PUM04, FZ001, FZ002, FZ003, DIS01);
- Four (4) additional underground mines (for a total of 5, Pump UG, F Zone UG, Discovery UG, Tiriganiag-Wolf UG);
- Five (5) additional surface waste rock storage facilities are added (WRSF 5, 6, 7, 8, 9) and an
- Four (4) temporary saline waste rock storage facilities at Pump, F Zone, Discovery and Tiriganiaq-Wolf). These facilities will be backfilled to the UG mines by the end of operations
- Additional berms, dikes and channels to manage the water around the new infrastructure.
- Additional borrow pits and quarries to replace depleted sources and build a road to the windfarm, Tiriganiag-Wolf portal, road to Discovery and other deposits; and
- Installation of up to eleven (11) wind turbines. Five (5) wind turbines will be constructed during the first phase of construction (2024) and six (6) more during the second phase. It is assumed that the additional six (6) wind turbines shall be installed three (3) years following the start of Meliadine Extension (2027), however the actual date is to be confirmed.

The Rankin Inlet Site Facilities are located about 30 km south of the mine site. The Rankin Inlet facilities act as a transfer point and temporary storage for all dry freight and fuel materials arriving by barge prior to overland shipment to the mine site via the AWAR. The infrastructures present in Rankin Inlet that belong to the Meliadine Mine are:

- Fuel storage facility;
- Laydown and material storage area;
- Barge structure;
- Saline effluent pipeline and diffuser for saline trucked water at Itivia;
- Waterline for treated groundwater effluent discharge into marine environment;
- Bypass road around the hamlet of Rankin Inlet, and AWAR.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



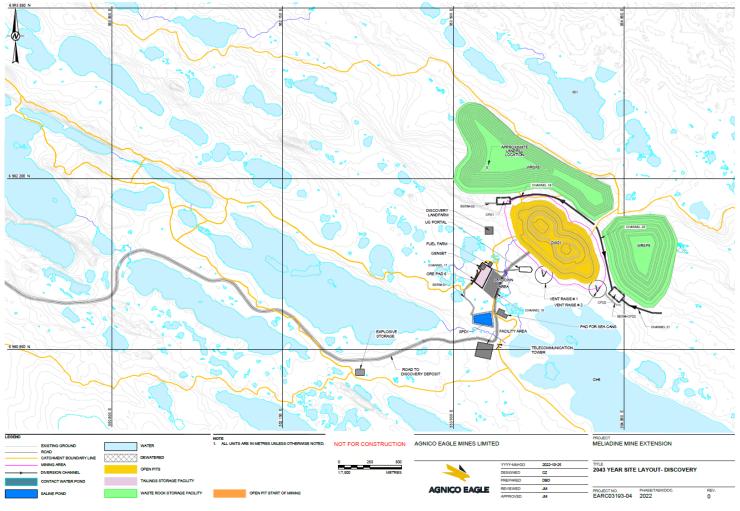


Source: Provided by AEM

Figure 2-2 : Meliadine Extension Infrastructure - General Map

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



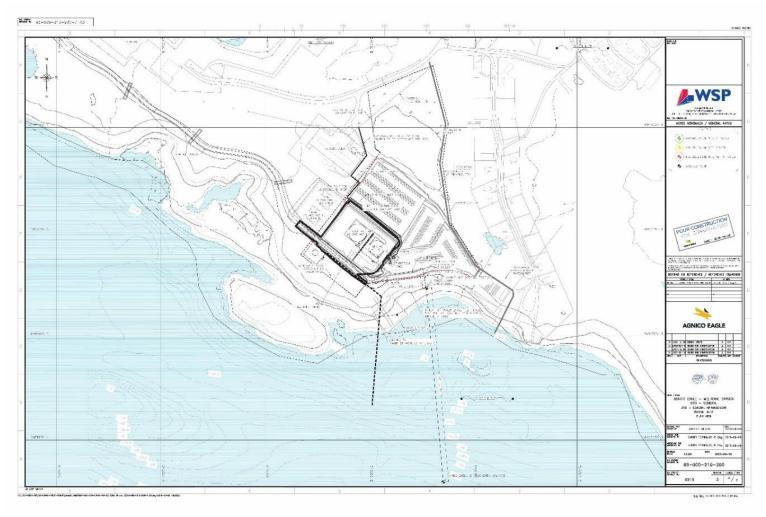


Source: Provided by AEM

Figure 2-3: Meliadine Extension Infrastructure Discovery Site - General Map

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report





Source: Provided by AEM

Figure 2-4 : Rankin Inlet Infrastructure General Map

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### 2.4.3 Project Alternatives

Agnico Eagle completed an explicit analysis of all the reasonable identified means of carrying out the Meliadine Mine components or activities, including the "no-go" alternative, as presented in detail in the 2014 FEIS (AEM, 2014).

The alternative assessment approach employed by Agnico Eagle recognizes that community preferences are important, and that positive and negative effects on valued components of the ecosystemic and socioeconomic environments must be carefully weighed in selecting the preferred alternative. The process gives due consideration to the vulnerability of the Arctic ecosystem, the potential for extension of the mine life, reclamation and closure, and potential for cumulative effects.

Agnico Eagle also uses adaptive management as part of the precautionary approach and is part of the larger of decision-making processes. Agnico Eagle will continue to follow the Adaptive Management Plan as part of the Meliadine Extension Water Licence Amendment.

As part of the Meliadine Extension, to ensure appropriate long-term planning to optimize the site footprint, Agnico Eagle is assessing the potential for in-pit slurry tailings deposition as an alternative to the dry stacking method currently employed. Agnico Eagle is also considering placing waste rock in mined out (exhausted) pits. In-pit disposal would improve the current economics and mine planning and reduce overall freshwater consumption during closure reflooding. Moreover, in-pit disposal would reduce the surface area impacted by reducing the footprint of the WRSF.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### **Project Environment** 3.0

This section provides a detailed description of the pre-disturbance conditions and the current development status of the Meliadine Mine. The Mine Environment details presented herein were extracted from the main documents listed below:

- Final Environmental Impact Statement (FEIS), Volume 1 to 10 (AEM, 2014), including;
  - Permafrost Baseline Studies (SD 6-1) (AEM, 2014);
  - Terrestrial Synthesis Baseline (SD 6-2) (AEM, 2014);
  - Geochemistry Baseline (SD 6-3) (AEM, 2014);
- Meliadine Preliminary Closure and Reclamation Plan (AEM, 2015a);
- Meliadine Interim Closure and reclamation Plan (SLI, 2019);
- Type A Water Licence Main Application Document (AEM, 2015c);
- Meliadine Gold Mine FEIS Addendum Environmental Assessment of Treated Groundwater Effluent Discharge into Marine Environment (AEM, 2020b);
- Meliadine Division Meliadine Extension FEIS Addendum (AEM, 2022c)

# 3.1 Atmospheric Environment

#### 3.1.1 Climatic Conditions

The Meliadine Mine is located in an arid arctic environment that experiences extreme winter conditions, with an annual average temperature of -10.4°C. The monthly average temperature ranges from -30.9°C in January to +10.5°C in July, with above-freezing averages for only 4 months of the year (i.e., June to September). The Meliadine Mine is underlain by thick and continuous permafrost, except under larger waterbodies where taliks can exist. Winds are moderate to strong and generally originate from the northnorthwest and the north. Mean monthly wind speeds are typically between 19 kilometres per hour (km/hr) and 29 km/hr, with an average of 22.3 km/hr.

The annual average total precipitation at the Meliadine Mine is 430 millimetres per year (mm/year) and falls almost equally as snow and rainfall. Average annual evaporation for small waterbodies in the Meliadine Mine area is estimated 40-45% of the total precipitation between June and September. The average annual loss of snowpack to sublimation and snow redistribution is estimated to vary between 30-35% of the total precipitation for the winter period and occurs between October and May (Okane, 2021).

Table 3-1 summarizes the estimated monthly climate characteristics used for the Meliadine Extension climate modelling.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



**Table 3-1: Estimated Mine Site Monthly Climate Characteristics** 

Month	Month	onthly Air Temperature (°C)		Monthly P	ecipitation
Month	Minimum	Average	Maximum	mm	(days)
January	-33.9	-30.3	-26.7	17	27
February	-33.7	-30.1	-26.4	17	25
March	-29.2	-24.9	-20.7	22	27
April	-20.4	-15.9	-11.4	29	22
May	-8.9	-5.6	-2.3	30	21
June	0.7	4.4	8.1	32	15
July	6.4	10.8	15.1	46	16
August	6.4	9.8	13.2	59	18
September	1.4	3.9	6.4	53	21
October	-7.1	-4.5	-1.8	57	27
November	-20.7	-16.9	-13	39	27
December	-29.1	-25.3	-21.7	25	28
Annual	-14.0	-10.4	-6.7	426	272

Source: Summary of average climate parameters for the 39-year (1981-2020) Meliadine historical climate database with adjusted precipitation (Tetra Tech 2021 and Okane 2021)

Table 3-2 summarizes the extreme 24-hour rainfall events derived for the mine site intensity-durationfrequency curves established from the regional Rankin Inlet rainfall observation.

Table 3-2: Estimated Mine Site Extreme 24-our Rainfall Events

Return Period (Years)	24-hour Precipitation (mm)
2	29.9
5	40.1
10	45.7
20	50.5
50	56
100	59.9

Source: Tetra Tech (2021)

# 3.1.2 Climate Change

In October 2014, after the issuance of the 2014 FEIS, the Intergovernmental Panel on Climate Change's (IPCC) adopted four new Representative Concentration Pathways (RCPs) to replace the Special Report on Emission Scenarios (SRES) that was used for the 2014 FEIS climate change assessment (IPCC 2014). As such, the Meliadine Extension climate change analysis was conducted under Representative Concentration Pathway (RCP) to represent greenhouse gas concentration trajectories as described in volume 5, section 5.4 of this FEIS Addendum.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



RCP4.5 was selected as the Meliadine Extension climate change base case in all the models and designs. The RCP4.5 climate change database for Meliadine Extension was developed following the recommendations outlined on the Canadian Climate Data and Scenarios (CCDS) website, which is wholly supported by Environment and Climate Change Canada (ECCC). Refer to Section 5.3 of the Meliadine Extension FEIS Addendum for details on climate change predictions for Meliadine Extension.

#### 3.1.2.1 Temperature

Temperatures at Meliadine Extension are anticipated to rise at approximately 0.06°C/year relative to historical averages for RCP4.5, an average annual temperature of approximately -4.6°C over the last 30 years of the climate change database from 2020 to 2120 (Okane 2021).

A summary of annual average temperature for 2020 to 2120 is presented in Table 3-3.

Table 3-3: Annual Average Temperature Estimates from 2020 to 2021

Climate Change Scenario	Climate Normals 1981 to 2020 (°C)	<b>2020 to 2050</b> (°C)	2050 to 2090 (°C)	2090 to 2120 (°C)
RCP 4.5 *	-10.4	-7.7	-5.9	-4.4

<sup>\*</sup>Meliadine Extension base case climate change scenario, Source: Okane (2021)

## 3.1.2.2 Precipitation

Precipitation Normals for the Meliadine Extension were adjusted for missing data and for gauge undercatch and evaporation due to wind effect (Okane 2021a). Historic precipitation Normals were used to create the site-specific RCP4.5 climate change database for Meliadine Extension, following the recommendations outlined by (CCDS) online tool, which is wholly supported by ECCC.

Precipitations predictions for Meliadine Extension are anticipated to increase approximately 0.7 mm/year (70 mm total increase over 100 years) for RCP4.5. A summary of annual average adjusted precipitation for 2020 to 2120 is presented in Table 3-4 (Tetra Tech 2021).

Table 3-4: Annual Average Adjusted Precipitation Estimates from 2020 to 2021

Climate Change Scenario	Climate Normals 1981 to 2020 (mm)	2020 to 2050 (mm)	2050 to 2090 (mm)	2090 to 2120 (mm)
RCP 4.5 *	430	415	451	486

<sup>\*</sup>Meliadine Extension base case climate change scenario, Source: Tetra Tech 2021

## 3.1.3 Air Quality

Baseline air quality presented in the 2014 FEIS was obtained using ECCC National Air Pollution Surveillance Network. The air quality was representative of undisturbed natural area. Readings were very low and well below the given air quality standards.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Air quality monitoring is ongoing at the Meliadine Mine. Constituents monitored include NOx, SO2, total suspended particulates (TSP), PM<sub>10</sub>, PM<sub>2.5</sub>, and dust.

Calculated annual average concentrations of NO2 and SO2 were well below the Nunavut Ambient Air Quality Standards (NAAQS) and the 2014 FEIS maximum predicted values. 2020 was the fourth full year of monitoring for gaseous compounds.

Dustfall results are mostly within Alberta Environment's Ambient Air Quality Guidelines for recreational and industrial areas (Air Quality Monitoring Report in Agnico Eagle 2021c). In 2020, one of 40 on-site samples exceeded the recreational guideline, and no sample exceeded the industrial guideline. Historically, an increase in measured dustfall rates has occurred since mid-2017 when the construction period began, as anticipated. Despite increasing site activity, levels of dustfall at site perimeter monitoring stations are generally well within Alberta recreational guidelines, with exceedances occurring in a maximum of 4% of total dustfall samples in any given year since that time. Along the AWAR, annual average rates of dustfall have only exceeded the Alberta recreational guideline at the 25-metre distance as expected in the 2014 FEIS.

Dust suppressant in the form of calcium chloride has been applied along the AWAR and road watering has been conducted around the site in previous years. Results of dustfall monitoring indicate that these best management practices are being effectively implemented to minimize emissions.

Suspended particulates (TSP, PM<sub>2.5</sub>, and PM<sub>10</sub>) monitoring results to date have been below maximum concentrations predicted in the 2014 FEIS and regulatory guidelines. Concentration of metals of concern to the Meliadine Mine in TSP (cadmium and iron) were less than 2014 FEIS-selected health-based screening values and 2014 FEIS maximum model predictions in all samples.

Incinerator stack testing has been ongoing since Project Certificate issuance in 2015 and all results to date have been below GN standards for mercury, dioxins, and furans.

Target concentrations published by the CAAQS were updated since the 2014 FEIS to include stricter targets for 2020 and 2025. The 2014 FEIS used the NAAQS as criteria. Agnico Eagle has included both the 2020 and 2025 CAAQS targets in its NO2 and SO2 predictive modelling. Table 3-5 summarizes CAAQS for NO2 and SO<sub>2</sub>.

Compound	Averaging Period	2014 FEIS (NAAQS)	2020 CAAQS	2025 CAAQS
NO <sub>2</sub> (μg/m <sup>3</sup> )	1-hr	400	113 <sup>b</sup>	79 <sup>b</sup>
	24-hr	200	N/A	N/A
	Annual	60 <sup>a</sup>	32°	22.5°
SO <sub>2</sub> (μg/m <sup>3</sup> )	1-hr	450	183 <sup>d</sup>	170 <sup>d</sup>
	24-hr	150	N/A	N/A

30a

Table 3-5: Ambient Air Quality Standards, Objectives and Guidelines for NO<sub>2</sub> and SO<sub>2</sub>

Annual

<sup>(</sup>b) Canadian Ambient Air Quality Standard is 113 μg/m³ from December 2017 through December 2024 and 79 μg/m³ as of January 2025 (Government of Canada 2017a); compliance based on a three-year average of the annual 98th percentile of the daily 1-hour maximum concentration (D1HM).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

13<sup>e</sup>

10.5e

<sup>(</sup>a) Arithmetic mean value



- (c) Canadian Ambient Air Quality Standard is 32 μg/m³ from December 2017 through December 2024 and 22.5 μg/m³ as of January 2025 (Government of Canada 2017a); compliance based on a one-calendar-year average of all the 1hour average concentrations.
- (d) Canadian Ambient Air Quality Standard is 183 μg/m<sup>3</sup> from October 2017 through December 2024 and 170 μg/m<sup>3</sup> as of January 2025 (Government of Canada 2017b); compliance based on a three-year average of the annual 99th percentile of the daily-maximum 1-hour average concentrations.
- (e) Canadian Ambient Air Quality Standard is 13 μg/m³ from October 2017 through December 2024 and 10.5 μg/m³ as of January 2025 (Government of Canada 2017b); compliance based on a one-calendar-year average of all the 1hour average concentrations.

#### 3.1.3.1 Air Quality Monitoring Program

Air quality monitoring focuses on measuring airborne particulates, dustfall, and gaseous compounds (NO2 and SO2) during construction and operations (AEM, 2021b).

The objectives of the air quality monitoring program during operations are (AEM, 2021b):

- To verify the predicted concentrations of TSP, PM<sub>10</sub> and PM<sub>2.5</sub>; and
- To verify that the mitigation measures considered integral to the Meliadine Mine are being incorporated as planned and are effective.

Dynamic particulate monitoring for the Meliadine site includes intermittent 24-h sampling for TSP, PM<sub>10</sub> and PM<sub>2.5</sub> using Partisol Sequential Air Samplers. In addition to the dynamic monitoring for suspended particulates, a dustfall monitoring program has been implemented at the mine site to measure deposition rates of particulate matter. Unlike the active samplers, dustfall collection is a passive program that provides a measure of all particulates that would be directly deposited onto vegetation, soil, and water in the vicinity of the Meliadine Mine (AEM, 2021b). The dustfall rates measured at the dustfall stations are analyzed for indications of increasing trends or measured concentrations above the applicable air quality guideline, as well as spatial and temporal trends. The conclusions of this analysis are presented yearly in the annual report. In accordance with Condition 2 of the Project Certificate, Agnico Eagle will monitor NO2 and SO2 at two (2) onsite locations throughout the construction and operations phase of the project, with passive NO<sub>2</sub>-SO<sub>2</sub> samplers (AEM, 2021b).

In accordance with Term & Condition 1c of the Project Certificate, snowpack monitoring for contaminants will be conducted annually, to assist in predicting the impact of contaminants released in snowmelt on the water quality in Meliadine Lake (AEM, 2021b).

Air quality monitoring includes analysis of dustfall in thirteen (13) locations, as well as NO2 and SO2 in two (2) 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, PM2.5, and PM<sub>10</sub>), but sample collection only occurred for a three-month period (AEM, 2020a). Available results for all parameters are compared to regulatory guidelines and FEIS predictions, and spatial and temporal trends are assessed.

The air quality monitoring plan for closure will be developed in the future, based on the operation monitoring plan and results.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



### 3.1.4 Noise

As presented in the Meliadine Extension FEIS Addendum (AEM, 2022c), the baseline information collected prior to development of the Meliadine Mine is described in the 2014 FEIS (Agnico Eagle 2014). Baseline noise levels were representative of undisturbed environment as human activity in the study areas was minimal (35 dBA). Some measurements were also collected closer to Rankin Inlet where noise levels were measured in the 45-52 decibel (dBA) range.

A total of 20 locations were identified within the Site Study Area (SSA) and Local Study Area (LSA) as being at risk of receiving noise emissions. Modelling exercises and monitoring strategies for the existing environment are based upon limiting the impact on those 20 noise receptors. Monitoring data from Meliadine's noise monitoring plan collected since 2016 shows sounds levels at selected stations within the predictions and site noise criterion.

#### Noise monitoring 3.1.4.1

The objective of the noise monitoring program at Meliadine is to measure noise levels at five (5) previously determined monitoring locations over at least two 24 h periods. All noise monitoring stations are near seasonally occupied cabins, which were identified as being the most sensitive receptors in the noise impact assessment (AEM, 2014, Volume 5). The program aims to confirm the predictions made in the FEIS regarding Meliadine Mine impacts on area noise levels, and in doing so, determine if supplemental or alternative mitigation strategies are required to reduce noise emissions from the Meliadine Mine (AEM, 2021c).

As described in the Noise Abatement and Monitoring Plan (AEM, 2021c), the program includes a Noise Abatement Plan (NAP) and Noise Monitoring Plan (NMP). The NAP describes how noise abatement is incorporated into the Meliadine Mine, while the NMP describes the annual ambient noise monitoring program. Together, the NAP and NMP are designed to control potential Project noise impacts on Points of Reception (PORs) located in the Meliadine Mine area. If the noise monitoring confirms excessive Project associated noise levels exist, the monitoring data will be used to determine where the NAP requires improvement and if additional monitoring activities are required.

# 3.2 Physical and Terrestrial Environment

# 3.2.1 Topography and drainage basin

As presented in the 2022 FEIS (AEM, 2022c), topography and lake bathymetry characteristics for the Project presented herein are from the Permafrost Thermal Regime Baseline Report . The dominant terrain in the Project area comprises glacial landforms, such as drumlins (glacial till), eskers (gravel and sand), and lakes. A series of low relief ridges composed of glacial deposits-oriented northwest-southeast control the regional surface drainage patterns. The same topography was assumed for Meliadine Extension.

The Tiriganiag, F Zone, Pump, and Wesmeg deposits are located on a large peninsula separating the east and west basins of Meliadine Lake. The Discovery deposit is located south and east of Meliadine Lake. Bathymetry surveys of critical lakes included in the Meliadine Extension modelling are presented in Table 3-6 and result from new bathymetry survey performed in 2019 (Agnico Eagle 2019).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



**Table 3-6: Maximum Lake Depths** 

Area	Lake	Maximum Lake Depth <sup>(a)</sup> (m)
	B4	2.0
	B5	3.0
Main	В7	4.5
	A6	4.0
	A8	4.0
Discovery	CH6	8.0

<sup>(</sup>a) Based on bathymetry survey using 0.5 m contours (Agnico Eagle 2019)

# 3.2.2 Surficial Geology

There are no proposed changes from the 2014 FEIS in surficial geology for Meliadine Extension. In general, the local overburden stratigraphy in the area consists of a thin layer of topsoil overlying a layer of silty gravelly sand. Cobbles and boulders are observed throughout the entire site and at various depths in the boreholes. The grain angularity is found mainly to be sub-angular to angular and few are identified as sub-rounded. The bedrock surface at site is encountered between about 2 to 18 m below the ground surface.

Additional information on the surficial geology in the local area, including geotechnical properties, can be found in SD 2-4A of the 2014 and 2022 FEIS (AEM, 2014, 2022c).

# 3.2.3 Bedrock Geology

There are no proposed changes from the 2014 and 2022 FEIS (AEM, 2014, 2022c) in surficial geology for Meliadine Extension.

Meliadine Extension is located within the Archaean Rankin Inlet Greenstone Belt, within the Churchill Structural Province of the Canadian Shield. The rocks of the Rankin Inlet Greenstone Belt have been subjected to polyphase deformational events and metamorphism. The rocks consist of a sequence of mafic volcanic rocks, felsic pyroclastic rocks, sedimentary rocks and gabbro sills.

The Meliadine Mine is situated in a region of historically low seismicity. Archaean and Proterozoic deformational events have resulted in an alignment of stratigraphy trending in a northwest to southeast direction which defines the Meliadine trend. To the south of the deposits is the Pyke Fault, a major regional fault zone, which extends over several kilometres and is characterized by multiple foliations and regional shear zones.

The geology of the Tiriganiaq Deposit consists of greywacke and argillite sediments (Sam Formation), iron formation, and mixed iron formation, greywacke, and siltstone (Upper Oxide Formation) in fault contact with underlying mafic volcanic rocks (Wesmeg Formation). The sequence trends in an east/west direction, and dips northward at inclinations greater than about 60 degrees. The stratigraphy is aligned for over 3 km along the mineralized shear direction. The fault contact between the Tiriganiaq and the Wesmeg Formation is referred to as the Lower Fault Zone. A zone of graphitic, mineralized fault gouge (0.5 to 3 m in thickness) commonly occurs over this zone.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



The Tiriganiaq-Wolf mining area is a hybrid deposit hosted in stratigraphy similar to the Tiriganiag deposit in the northern portion, while the southern portion is hosted in stratigraphy similar to the F Zone deposit. The geology of the Tiriganiaq-Wolf deposit contains chlorite-rich, massive basalts and pillowed basalts belonging to the Wesmeg Formation, which forms the structural footwall (AEM, 2014, 2022c).

Ongoing monitoring of geological structures has led to the identification of 17 faults (i.e., KMS corridor, RM-175) that have been incorporated into the conceptual hydostratigraphy, in addition to the three regional faults (Lower Fault, Pyke Fault, and North Fault) that were previously considered in the 2014 FEIS.

The additional structures are generally located between the Lower Fault and Pyke Fault within the Mafic Volcanic Rock formations, and range in thickness between 2 and 6 m. An exception is the KMS corridor, which is a wider zone of poor rock quality that is generally located between the KMS fault and Lower Fault. The improved understanding of the different structural features in the mining area have contributed to reduced conservatism in the hydrogeology modelling (refer to section 3.2.6).

There appears to be two parts to the Wesmeg gold deposit: a northern and southern part. In the northern part, the stratigraphy strikes east-west and dips 65 degrees to the north. The stratigraphy in the southern part strikes northwest-southeast and dips 50 degrees to the north. The host Wesmeg Formation is massive to pillowed basalts and interlayered mafic volcaniclastics, with rare gabbro dykes and some interflow sediments consisting of siltstone, mudstone, and minor iron formations.

The stratigraphy in the Pump deposit area strikes northwest-southeast and dips 50 degrees to the north. Similar to the F Zone and Wesmeg deposits, the host rocks at the Pump area are massive to pillowed basalts of the Wesmeg Formation, which are cut by rare gabbro dykes and interflow sediments.

The stratigraphy of the F Zone area is dominated by mafic volcanic rocks and the east southeast striking Lower Lean Iron Formation. The deposit area is located north of the Pyke Fault which runs sub-parallel to the Lower Iron Formation. Mineralization of the F Zone is hosted by the Lower Lean Iron Formation and is associated with quartz veins and east striking shear zones.

The stratigraphy of the Discovery area is dominated by a thick package of inter-bedded clastic sedimentary units, chemical sediments (oxide facies iron formations) and minor gabbroic dykes. In the deposit area, the hanging wall to the main gold-bearing iron formation horizon is dominated by a greywacke unit which contains minor interbedded argillaceous units, chemical sediments and gabbroic dikes.

Gold mineralization is generally restricted to a folded and variably sheared oxide facies iron formation package, which generally consists of banded chert and magnetite horizons (banding on the millimetre [mm] to centimetre [cm] scale), with lesser interbedded chlorite-rich beds and chert and minor local interbedded greywacke units. The footwall to the main mineralized iron formation horizon consists of a similar succession of clastic sedimentary units as found in the hanging wall. The footwall stratigraphy is dominated by greywacke, with a more argillaceous interval, approximately 20 to 40 m below the mineralized iron formation.

### 3.2.4 Geological Hazards and Seismicity

The mine site is in an area of relatively low seismic risk. The peak ground acceleration for the area was estimated using seismic hazard calculator from the 2010 National Building Code of Canada-Natural Resources Canada (NRC) website (NRC, 2015).

Meliadine Interim Closure and Reclamation Plan		re and Reclamation Plan – Update 2022	Original -V.00
	2023/01/13	682731-5000-4EER-0001	Technical Report



The estimated PGA is 0.022 g for a 5% in 50-year probability of exceedance (0.001 per annum or 1 in 1,000 year return) and 0.037 g for a 2% in 50-year probability of exceedance (0.000404 per annum or 1 in 2,475 year return) for the area (see Appendix F for the seismic zoning map and the seismic hazard calculation).

### 3.2.5 Permafrost

As presented in the 2022 FEIS (AEM, 2022c), the Project site is located within a region of continuous permafrost within the Southern Arctic terrestrial ecozone; one of the coldest and driest regions of Canada (see Appendix E). Permafrost is defined as ground that remains at or below 0°C for at least two (2) years. Permafrost does not necessarily contain ice; rather, its definition is based solely on the temperature of the mineral or organic parent material. Permafrost in the Project area is considered to be an irregular surface, and so the actual depth of permafrost is variable. In this region, the layer of permanently frozen subsoil and rock is generally deep and overlain by an active layer that thaws during summer. The ground temperature data indicates that the active layer is 1.0 to 3.0 m in areas of shallow soil and away from the influence of lakes. It is anticipated that the active layer adjacent to lakes or below a body of moving water, such as a stream, will be deeper. Thermal modelling indicates the depth to permafrost varies between 320 and 490m depth, with the interpreted depth dependent on the proximity to nearby lakes (Golder, 2022b). Late-winter ice thickness on freshwater lakes is approximately 1.7 m. Ice covers usually appear by the end of October and are completely formed in early November. The spring ice melt typically begins in mid-June and is complete by early July, depending on site specific conditions of water depth and exposure. Based on bathymetry data, maximum lake depth varies from 2.5 to 5.0 m. Where water depth is greater than about 1.0 to 2.3 m, taliks are expected. A talik is a zone of unfrozen ground year-round that lies in permafrost areas. Formation of open taliks that penetrate through the permafrost may also be expected for relatively deeper and larger lakes in the project area. Round lakes that do not freeze to the bottom in winter and have a minimum radius of approximately 290 to 330 m, or elongated lakes that do not freeze to the bottom and have a minimum half width of approximately 160 to 195 m, are expected to have a talik underneath that extends through permafrost.

The ground ice content of permafrost soil and rock in the Meliadine area is expected to be between 0% and 10% (dry permafrost) based on regional scale compilation data. Locally on land, ice lenses and ice wedges are present, as indicated by ground conductivity, and by permafrost features such as frost mounds. These areas of local ground ice are generally associated with low-lying areas of poor drainage.

Rock and soil-related terrain instability is a minor concern in the Meliadine project area. Although permafrost will degrade in certain areas, for the most part the permafrost is "dry" and has low ground ice content. The exception is the wetlands occupying lowlands adjacent to lakes and ponds where excess ground ice is present and thaw instability is foreseeable. These impacts can be mitigated using currently accepted permafrost engineering practices as part of construction and closure.

# 3.2.6 Hydrogeology

A 2-Dimensional thermal modelling was completed to update the predicted depth to the base of permafrost in the study area, to assess the extent of lake taliks and to determine whether the proposed open pits and additional underground developments will remain within the permafrost limits (Golder 2022b). This approach was adopted given the proposed underground mining activities and proximity of these to lakes with potential open taliks.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



The 2014 FEIS predicted that taliks extending through the permafrost would exist beneath circular lakes having a minimum radius of approximately 290 to 330 m, and beneath elongated lakes having a minimum half width of approximately 160 to 195 m. Taliks (areas of unfrozen ground) are to be expected where lake depths are greater than about 1.0 m to 2.3 m. Formation of an open talik, which penetrates through the permafrost, would be expected for lakes which exceed a critical depth and size. The thermal modelling update indicates that below Lake B7, Lake A8, Lake B5, Lake A6, Lake B4, and Lake CH6 will have open taliks with some being connected to the deep groundwater flow regime (Golder 2022b).

In support of the Meliadine Extension, an updated numerical groundwater model has been developed and is presented in the Hydrogeology Modelling Report (Golder 2022d). This report addresses the approaches and assumptions adopted in the estimate of the potential groundwater inflow quantity and groundwater quality (TDS only) associated with the development of the open pits and undergrounds, as presented in Section 2.2 of this Application. In this assessment, a three-dimensional numerical groundwater model was developed using FEFLOW (V7.2). In consideration of the expanded number and location of undergrounds, the model domain is larger than the model developed for the 2014 FEIS and the 2018 and 2020 FEIS Addenda for the Tiriganiag underground. The model also incorporates an updated conceptual model relative to the 2014 FEIS.

The Base Case Scenario represents the best estimate of groundwater inflow and groundwater TDS based on the measured data and the results of the model calibration. Since the groundwater inflows are being mitigated by active grouting, the predicted groundwater inflows incorporate the effects of grouting as grouting of the underground development is assumed to continue as part of future inflow predictions.

Groundwater Inflow to the Tiriganiag Underground were predicted to increase from 375 m<sup>3</sup>/day in 2022 to a peak inflow of 1,500 m<sup>3</sup>/day in 2027. Inflows then decrease as storage effects diminish from 2027 to 2037, where the predicted inflow to the underground is 1,100 m<sup>3</sup>/day. Future predicted groundwater inflows are not directly comparable to past groundwater inflows, as the future extent of the Tiriganiaq underground is larger and deeper. The lateral expansion of the underground includes a drift to the north of the underground development, which causes the increase in the predicted inflows in 2025.

Groundwater inflows to the other underground developments are lower than Tiriganiaq, reflecting the shallower planned mine depth, greater proportion of the development in permafrost, and overall smaller footprint of these developments. Peak inflows at the other developments range from less than 25 m<sup>3</sup>/day at Wesmeg-North, up to 200 m<sup>3</sup>/day at Tiriganiaq-Wolf and Discovery. Flows to Wesmeg, Wesmeg-North, and Pump are mitigated by lake dewatering. In the absence of this dewatering, higher inflows to the underground would be expected as the mine development extends below these lakes. Inflow to Wesmeg and Wesmeg-North are also affected by depressurization from the adjacent mining at Tiriganiaq, which acts a stronger hydraulic sink given its greater depth of mining (maximum base elevation of -845 masl versus -590 at Wesmeg and -395 at Wesmeg-North) (Golder 2022d).

#### Surface Water Hydrology 3.2.7

As presented in the FEIS (AEM, 2022c) hydrology in the Project area is highly influenced by geographic location, the headwater nature of the Project watersheds, and by the seasons.

The Meliadine Mine is located within the Meliadine Lake watershed. Meliadine Lake has a water surface area of approximately 107 km<sup>2</sup>, a maximum length of 31 km, features a highly convoluted shoreline of 465 km in length, and has over 200 islands. Unlike most lakes, it has 2 outflows that drain into Hudson Bay through

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



2 separate river systems. It has a drainage area of 560 km<sup>2</sup> upstream of its 2 outflows. Most drainage occurs via the Meliadine River, which originates at the south west end of the lake. The Meliadine River flows for a total stream distance of 39 km. The Meliadine River flows through a series of waterbodies, until it reaches Little Meliadine Lake and then continues into Hudson Bay. A second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which discharges into Hudson Bay through the Diana River system (a stream distance of 70 km). At its mouth, the Diana River has a drainage area of 1460 km<sup>2</sup>.

Watersheds within the Local Study Area (A, B, C, D, E, G, H, I, J, and P near the main Meliadine Mine footprint; and X and CH near Discovery) comprise an extensive network of waterbodies, and interconnecting streams. These watersheds have lake surface fractions (i.e., the ratio of lake area to land area) of up to 51%, and the hydrology of these watersheds is dominated by lake storage and evaporation. Channels are only slightly entrenched with banks typically consisting of mats of vegetation, below which are found organics and fine soils within a matrix of cobble and boulders similar to the bed materials. After the spring runoff and before the late summer rains, the streams are usually dry. During spring snowmelt peak discharges, erosion of channel banks is likely enhanced by frozen conditions. However, during conditions above freezing after spring runoff, these banks may be sensitive to changes in flow regime.

The Meliadine Extension is located within the same footprint as the Meliadine Mine, and primarily within the A, B, H, and J watersheds (refer to Appendix F). Additional information on hydrologic flows were obtained from routine monitoring done at the Meliadine Mine and as reported in the annual report (Agnico Eagle 2021a). Site water is monitored and a projection of surface flows were completed through an update to the monthly water balance. This model provides predicted monthly and annual water quantities reporting from the main site infrastructure (e.g., waste rock storage facilities, contact water ponds). Discharge volumes to the environment (i.e., to Meliadine Lake via monitoring station MEL-14 and to Itivia Harbour via monitoring station MEL-26) are recorded daily during discharge. Regional and local watershed boundary details are presented in **Appendix F**.

Summer evaporation is roughly equivalent to summer precipitation, with little if any net input from summer rain. The net input to the annual water balance of the watershed comes from spring run-off that recharges the lakes and ponds. Snowmelt runoff in the region begins in the period from late May to mid-June, and the snowmelt peak is often the peak flow for the year. Flows typically decline through the late summer and fall, with freeze-up occurring towards the end of October (except for Meliadine Lake, which has been observed to flow over the winter). All channels are anticipated to freeze to the bottom with zero flows over the winter period.

The previous assessments predicted quantities of water that would be withdrawn from Meliadine Lake for process or potable use, and quantities of water that would be managed and discharged to Meliadine Lake; these predictions are compared to measured data (Table 3-7). The previous assessments concluded that there would be negligible effects to water levels and flows in Meliadine Lake due to water withdrawal and water discharge (AEM 2022c). The measured water withdrawal and discharge volumes are within the range of predictions.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Table 3-7: Summary of Predicted and Measured Annual Water Withdrawal and Discharge to **Meliadine Lake for the Meliadine Mine** 

Source	Annual Withdrawal (m³)	Annual Discharge (m³)
Predictions		
2014 FEIS	2,168,100 (Volume 2, Table 2-27 from AEM 2014)	392,507 to 2,630,600 (SD 2-6 from AEM Eagle 2014)
2016 Water Licence	318,000 (AEM, 2015c)	798,000 (AEM, 2015c)
2020 Water Licence Amendment	741,706 (AEM, 2020d)	598,209 to 883,631 (Table 6 from Golder 2020a)
Measured		
2016	0 <sup>a</sup> (AEM, 2017b)	177,376 (AEM, 2017b)
2017	14,863 (AEM, 2018)	0 (AEM, 2018)
2018	29,255 <sup>b</sup> (AEM, 2019)	642,521 (AEM, 2019)
2019	299,470 <sup>b</sup> (AEM, 2020a)	306,773 (AEM, 2020a)
2020	296,823 <sup>b</sup> (AEM, 2021a)	1,031,178 (AEM, 2021a)
2021	457,636 <sup>b</sup> (AEM, 2022b)	851,126 (AEM, 2022b)

<sup>(</sup>a) No water under licence 2AM-MEL1631

Monitoring for natural flows outside of the Mine footprint is done to support specific studies when required, supplemental flows outside the Mine footprint and within the Regional Study Area (RSA) were not collected for the Meliadine Extension. Since measured flows during operations are within the range of predictions, flows outside the Mine footprint and within the LSA and RSA would not be substantially different than data collected for the 2014 FEIS.

# 3.3 Chemical Environment

#### 3.3.1 Soil Chemistry

A geochemical characterization of overburden was completed in support of Meliadine Extension to complement the soil characterization of the 2014. The geochemical characterization results indicated that Overburden from within the pit footprints is non-acid-generating and does not require means to prevent oxidation. Leachate concentrations in overburden are generally lower than waste rock and meet MDMER monthly mean limits. Overburden salinity was determined to increase from 2 to 6 m depth. Below a depth of 6m, overburden salinity was observed to remain relatively constant. Below a depth of 6m, overburden salinity was observed to remain relatively constant, with a peak pore water TDS of 10,000 mg/L.

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report

<sup>(</sup>b) Withdrawn from Meliadine Lake and A8



# 3.3.2 Sediment Quality

The 2014 FEIS (AEM, 2014) provides a review of baseline sediment quality in Meliadine Lake, small waterbodies on the peninsula of Meliadine Lake, and regional waterbodies. Average metal concentrations were generally similar across the lakes with some exceptions:

- Metals that were higher in the peninsula lakes as compared to Meliadine Lake included cobalt, arsenic, nickel, chromium, copper, and zinc.
- Metals that were higher in Meliadine Lake as compared to the peninsula lakes included molybdenum, strontium, vanadium, titanium, and aluminum.

Sediment chemistry in Meliadine is typical of northern lakes, particularly those located in close proximity to highly mineralized areas. Arsenic, cadmium, and chromium concentrations are naturally elevated in the exposure and reference areas of Meliadine Lake (Azimuth 2021).

Since 2014, sediment quality has been monitored following the Aquatic Effects Monitoring Program (AEMP) design plan (i.e., collection of pre-construction data in 2016, and starting in 2018, collection of data every three years following the EEM requirements). In Meliadine Lake, samples are collected in five areas including a near-field area, mid-field area, and three reference areas.

Monitoring since 2014 primarily reflects existing conditions since construction and early operation of Meliadine Mine. Further analysis of the pre-2014, 2015, 2016, and 2018 sediment data examined the relationship between metal concentrations and sediment particle size because there is a propensity for most metals to accumulate in finer sediments (Golder 2019a).

In the 2014 FEIS (AEM, 2014), it was stated that sediment quality in Meliadine Lake could be affected through release of treated effluent from the diffuser, erosion and sedimentation at the diffuser, and erosion and sedimentation on the shore of Meliadine Lake near mining infrastructure. Erosion and sediment control measures as well as best management practices were implemented at the site of the diffuser, and along the shore of Meliadine Lake, where appropriate, to minimize mobilization of suspended solids, and associated adsorbed chemicals, in the water column. Loading of particulate matter from treated effluent through the diffuser were controlled, as TSS in the end-of-pipe effluent is predicted to be no more than 15 mg/L. In addition, the use of a diffuser aids development of a mixing ratio in Meliadine Lake so that water quality guidelines are met at the edge of the mixing zone. Since water quality in Meliadine Lake at the edge of the mixing zone predicted to not exceed aquatic life or drinking water guidelines, and TSS in the effluent released from the Project will be managed to meet the regulations, it was predicted that sediment quality near the diffuser would not change from baseline concentrations.

Based on sediment data collected in 2018, arsenic, cadmium, and chromium were above the ISQG in the near-field and reference areas, and there was no indication that concentrations had increased in 2018 as compared to baseline/pre-construction (Azimuth 2021). These monitoring results are consistent with the FEIS (Golder 2019a).

Water modelling predictions completed as part of the 2022 FEIS concluded that for the Meliadine Extension, water quality at the edge of the mixing zone is not predicted to exceed aquatic life, terrestrial life, and human health guidelines. As such, sediment quality is not predicted to change from pre-mining conditions. Indirect impacts to water and sediment quality from changes to downstream flows, will be local in geographic extent, and will also be negligible.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# 3.3.3 Surface Water Quality

The 2014 FEIS (AEM, 2014) provides a review of Meliadine Lake, small waterbodies on the peninsula of Meliadine Lake, regional waterbodies, and small and large watercourses on the peninsula of Meliadine Lake and along the AWAR. It also provides a thorough overview of baseline (i.e., pre-2014) conditions in the LSA and RSA. Monitoring has been conducted since 2014 that primarily reflects existing conditions since construction and early operation of Meliadine Mine. These monitoring programs focus mainly on Meliadine Lake and a few small waterbodies near the Meliadine Mine (i.e., Lakes A8, Saline Pond SP6, and D7).

Seasonality is an important feature in lakes of northern Canada, where the seasonal production of ice can cause dissolved substances to concentrate in the unfrozen water, and in shallow systems, ice can form through the water column and freeze to the bottom in shallow waterbody and stream systems. Oxygen levels can be suppressed during the winter because oxygen is not replenished from the atmosphere and is consumed by sediments and organisms. During open water conditions, oxygen is replenished in waterbodies through exchange with the atmosphere. The open water season ranges from late May until early October, with ice cover the rest of the year.

Surface water in winter can often be high in total dissolved solids (TDS) due to the formation of ice as pure water, which increases the concentration of dissolved solids in the remaining water. In spring, runoff from snowmelt and precipitation is often low in TDS which dilutes TDS in the lakes. In contrast, total suspended solids (TSS) tend to increase in spring as freshet flows can result in erosion and suspension of materials in the water column. As flows decrease, TSS settles and the water column clears.

Meliadine Lake is generally described as well oxygenated throughout the year, with circumneutral to slightly basic pH. Concentrations of TDS, hardness, alkalinity, specific conductivity, nutrients, and metals were below relevant guidelines for aquatic life (CCME) and drinking water (Health Canada 2020). Concentrations were generally higher in the peninsula lakes as compared to Meliadine Lake; for example, TDS was lowest in Meliadine Lake and the larger regional lakes and the rivers, and higher in the peninsula waterbodies (2014 FEIS, Volume 7, Section 7.4.4; AEM 2014).

As per T&C of Project Certificate No.006 and Type A Water Licence 2AM-MEL1631, there is extensive water quality monitoring conducted on the mine site. These monitoring data are reported each year in the annual report. All water on the mine site is managed for eventual discharge to the receiving environment; treated surface contact water is discharged to Meliadine Lake, and treated saline water is discharged to Itivia Harbour.

Consistent with the 2014 FEIS and 2022 FEIS, discharge of treated effluent was identified as the main mine activity that could potentially change water quality. As part of the annual Aquatic Effects Monitoring Plan (AEMP) reports, discharge quality is evaluated against the water licence criteria and the MDMER on an annual basis and reported via the Annual Site Report. These predictions will be validated through the AEMP and EEM monitoring programs.

Modelling predictions for the Meliadine Extension, water quality at the edge of the mixing zone is not predicted to exceed aquatic life, terrestrial life, and human health guidelines. As such, sediment quality is not predicted to change from pre-mining conditions.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### 3.3.3.1 Surface Water Quality Monitoring

There are many monitoring programs conducted to evaluate water quality at Meliadine. These are mainly a requirement of the Meliadine Water License 2AM-MEL1631 Schedule I. They are designed to provide immediate feedback such that mitigation or adaptive management can be implemented.

Further details on surface water quality monitoring during operations is provided in Water Quality and Flow Monitoring Plan (AEM, 2022h) and Annual Report.

## 3.3.4 Groundwater Quality

The Project lies within the Canadian Shield in an area of continuous permafrost. In areas of continuous permafrost, there are generally 2 groundwater flow regimes: a shallow groundwater flow regime located in the active (seasonally thawed) layer near the ground surface, and a deep groundwater flow regime beneath permafrost.

The following details are from the FEIS for Meliadine (AEM, 2014, Volume 7). In the Canadian Shield, primarily in response to upward diffusion of deep-seated brines, concentrations of Total Dissolved Solids (TDS) in groundwater increase with depth. Chloride and calcium, with sodium to a lesser degree, are the chemicals that contribute to TDS in shield brines. By comparison, sea water is mostly composed of chloride and sodium. Three groundwater samples were collected in 2011:

- Groundwater sample from about 100 m bgs with a TDS of about 4,700 milligrams per litre (mg/L);
- Groundwater sample from about 450 m bgs with a TDS of about 60,900 mg/L; and
- Groundwater sample from about 600 m bgs with a TDS of about 61,000 mg/L.

As reported in the preliminary closure and reclamation plan (AEM, 2015a), these values are greater than values observed at other sites in the Canadian Shield at corresponding depths. This difference, together with the relatively high proportion of sodium relative to calcium in groundwater samples likely indicates the presence of relic sea water in bedrock. It is known that this area was largely overlain by seawater during the last period of glaciation. Such occurrences have been observed at other areas where land was submerged by oceans in the past.

A TDS profile with depth was prepared for Meliadine mine site based on the three samples identified above and, compared to TDS profiles from sites in the Canadian Shield, as well as the Diavik and Meadowbank sites. It is assumed that the TDS attributed to the sodium chloride of the recent incursion of seawater will decrease with depth down to the calcium chloride profile established for Meadowbank (AEM, 2015a).

An additional groundwater sampling round was undertaken in the summer of 2013. The TDS of the three groundwater samples collected in 2013 are as follows:

- groundwater sample from about 455 m bgs with a TDS of about 54,290 mg/L;
- groundwater sample from about 510 m bgs with a TDS of about 57,700 mg/L; and
- groundwater sample from about 580 m bgs with a TDS of about 58,420 mg/L.

It is expected that the following key salinity parameters will vary with depth: chloride, sulphate, calcium, magnesium, potassium, sodium, and strontium. In all water samples, the concentration of dissolved trace

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



metals in the groundwater is low, including arsenic which has a concentration below the analytical method detection limit in all samples. All parameters not associated with salinity are expected to be constant with depth.

As outlined in the Groundwater Management Plan (AEM, 2022d), groundwater investigations suggested that total dissolved solids (TDS) concentrations are relatively consistent below the permafrost at approximately 64,000 mg/L. Groundwater quality samples have been collected from 2017 through 2019 from diamond drillholes intersecting water bearing structures. Results from the 146 samples collected from 2017 to 2019 indicate stable and consistent concentrations for several parameters and indicate that TDS concentrations are less than predicted at a mean concentration of 56,000 mg/L. The discrepancy between expected and observed TDS levels is potentially due to the difference of sampling depth between pre-development testing and samples collected during development. Pre-development samples were collected below permafrost (>450 m below ground surface), whereas the bulk of samples collected to-date have been collected in the basal cryopeg (280 m to 450 m below ground surface). Samples and trends will continue to be assessed as development progresses below the cryopeg. It should also be noted that mining operations include drill-andblast excavation for the development of the Underground Mine, which results in certain parameters in groundwater to be influenced by explosives (particularly ammonia and nitrate).

In support of the Meliadine Extension, a second Westbay well (M20-3071) was installed near the proposed Discovery underground and near the potential talik below CH6. The well was installed in September 2020 to a depth of 606 mbgs. Two ports were selected for development and sampling (Port 8 at approximately 310 to 326 mbgs and Port 4 at approximately 439 to 457 mbgs), with development and sampling methods and results documented in Golder (2022a). Port 8 sampling was selected to support assessment of water salinity in the talik between Lake CH6 and the deeper regional groundwater (below the regional permafrost). Port 4 sampling was selected to support assessment of water quality to be intercepted at the Discovery underground (i.e., at a similar elevation) and the overall interpretation of regional water quality below the permafrost at similar depths. Only Port 8 results are considered appropriate for estimating formation groundwater quality as this Port was developed at approximately 13% and the consistent fluorescein and salinity of the drill fluid used during drilling at that depth (Golder 2022a). Furthermore, the estimated formation groundwater quality from Port 8 was found to have a sodium chloride signature similar to regional chemistry measured at M11-1257 (Westbay well installed to the northwest of Tiriganiaq Underground in 2011) though slightly more diluted. This relative dilution is consistent with the previously interpreted TDS profile for the site that shows increasing TDS with depth (Golder 2022c).

Table 3-8 presents a summary of the groundwater sampling that has been conducted in the area near the Meliadine mine and that has been used to characterize the groundwater quality presented in the 2014 FEIS, 2018 FEIS Addendum and for the Meliadine Extension application.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Table 3-8 : Comparison of Groundwater Sampling Conducted in Meliadine

Reference	2014 FEIS	2018 FEIS Addendum	Meliadine Extension Application
Sampling program date	2009, 2011 to 2013	2014 to 2017	2019 to 2021
Number of samples and location	<ul> <li>1 sample in 1 BH</li> <li>GT09-19 (Lake SP6)</li> <li>Samples from 8 intervals from Westbay well</li> <li>M11-1157 (Lake B5)</li> </ul>	<ul> <li>Samples from 8 intervals from Westbay well M11-1157</li> <li>3 groundwater samples from seeps (Tiriganiaq UG)</li> <li>8 groundwater samples from BH TIS-200-001 (Tiriganiaq UG)</li> <li>64 groundwater samples from DDH (Tiriganiaq UG)</li> </ul>	<ul> <li>37 groundwater samples (Tiriganiaq UG)</li> <li>Samples from 2 ports from Westbay well M20-3071 (Discovery UG)</li> </ul>
Depth (m)	105 to 620	225 to 725	230 to 457
TDS (mg/L)	4 700 to 61 000	16 400 to 66 300	24 558 to 67 000

BH = Borehole; DDH = Diamond Drill Hole

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### 3.3.4.1 **Groundwater Monitoring Program**

A summary of the underground monitoring plan is presented in the Groundwater Management Plan (AEM 2022d).

### 3.3.5 Geochemical Characterization

The geochemical characterization samples considered in Meliadine Extension include a subset of samples collected in support of the 2014 FEIS and supplemental sampling conducted in support of the Meliadine Extension (Lorax 2022). The 2014 FEIS geochemical characterization program included ore, waste rock, overburden, and tailings at Tiriganiag, Tiriganiag-Wolf, Wesmeg, Wesmeg North, F Zone, Pump, and Discovery. Some samples were collected to assess potential open pit operations at Wesmeg-North and Tiriganiaq-Wolf. Sample collection for the 2014 FEIS included:

- Waste rock (n= 557) and ore (n=25) samples collected from drill core.
- Tailings samples produced from metallurgical testing (n=20).
- Overburden samples collected from shallow test pits (0.3 to 0.7 m depth) (n=34).
- Waste rock samples collected from a pad constructed near the Tiriganiaq exploration pad (n=12).
- Ore (n=2) samples from two stockpiles (Lode 1000 and Lode 1100) present at the mine surface.

A comprehensive analytical testing program was completed on these samples. A subset of samples was also analysed for net acid generation (NAG) pH, shake flask extraction (SFE) and X-ray diffraction (XRD). A kinetic testing program was initiated which included 46 humidity cell tests, 9 unsaturated column experiments and 4 field cells. Details on analytical methods and sample collection methods can be found in SD 6-3 of the 2014 FEIS.

- The Meliadine Extension supplemental sampling was initiated in 2020 and completed in 2021 and included sampling of drill core, tailings, overburden, saline mine wastes, and a water quality survey (AEM, 2022c).
- The objectives of the Meliadine Extension supplemental sampling programs were to characterize:
- Geologic material that will be disturbed by the Meliadine Extension which were not characterized in the 2014 FEIS. This mainly consists of deeper bedrock associated with underground mine operations and changes in pit shell geometry from what was planned in the 2014 FEIS.
- Existing mine waste sampling to examine composition of mill tailings and saline mine wastes that were unavailable during the 2014 FEIS
  - Seep survey of existing mine facilities to supplement monitoring database.
- Kinetic testing to assess long term drainage chemistry, develop source terms for water quality predictions and evaluate disposal strategies for mine waste.

### 3.3.5.1 Waste rock

Most waste rock that will be excavated as part of the Meliadine Extension is classified as non-Potentially Acid Generating (non-PAG) except for the Discovery deposit. The distinct Acid Rock Drainage and Metal Leaching (ARD-ML) potential at Discovery is due to lower carbonate mineralization compared to other deposits, reducing the amount of Neutralizing Potential (NP) that is available to neutralize acidity generated from sulphide oxidation. Owing to the relatively low carbonate content, material classified as Potentially Acid Generating (PAG) or Uncertain are found in all three major waste rock lithologies (Sedimentary, Gabbro and

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Iron Formation). The occurrence of PAG rock outside of Discovery is essentially limited to the Iron Formation lithology. This lithology is primarily hosted with ore and comprises a minor component of waste rock from most deposits. The occurrences of Iron Formation at Wesmeg, Pump and F Zone tend to show similar ARD potential as Iron Formation at Discovery, while Iron Formation occurrences at Tiriganiaq and Wesmeg North are generally non-PAG.

Overall, 63% of Discovery open pit waste rock is classified as PAG or Uncertain. Only 5% of total waste rock outside of Discovery is expected to be classified as PAG or Uncertain. The ARD potential associated with Discovery open pit waste rock will be mitigated through progressive construction of a thermal cover on WRSF9. All the underground waste rock produced at Discovery will be backfilled into the mine underground and flooded at mine closure, eliminating the ARD potential associated with Discovery underground waste rock.

#### 3.3.5.2 Tailings

Milled tailings tend to have lower ARD potential compared to ore due to differences in ARD screening criteria. Discovery is the only deposit where most tailings are considered PAG. At Discovery, both major lithology types (Sedimentary and Iron Formation) are expected to be PAG or Uncertain. Outside of Discovery, the ARD potential is essentially limited to Iron Formation. Only 18% of tailings from all other deposits are classified as PAG or Uncertain. Mitigation of ARD potential of tailings placed in the TSF will occur through encapsulation by NPAG non-PAG material.

Throughout operations a closure cover will be progressively installed over the TSF to minimize the metal leaching potential from this facility.

### 3.3.5.3 Overburden

Overburden from within the pit footprints is non-acid-generating and does not require means to prevent oxidation. Metal release under laboratory conditions is low despite the relatively high total arsenic content. Leachate concentrations in overburden are generally lower than waste rock and meet MDMER monthly mean limits. Waste rock and overburden have compatible geochemical characteristics such that they could be managed together in the same facility.

Overburden excavated from mine pits will be co-disposed with waste rock in the WRSFs. Overburden excavations will be mostly conducted during winter months, to maintain frozen conditions, mitigating metal and salinity leaching potential from this material.

### 3.3.5.4 Geochemical Monitoring

Further details on characterization are provided in ARD-ML Sampling and Testing Plan (AEM 2022o). Sampling and testing of Discovery waste rock for ARD characterization will be conducted during mine operation to segregate suitable waste for use in construction and for closure. Sampling and reporting will be completed in accordance with Type A Water Licence 2AM-MEL1631.

# 3.4 Biological Environment

As presented in the 2022 FEIS Addendum, baseline studies on vegetation, and terrestrial wildlife in and around the Meliadine Mine area were conducted for three study areas:

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- A regional study area (RSA) to capture any effects that may extend beyond the immediate Meliadine MIne area on vegetation and wildlife in the broader regional context:
- A local study area (LSA) to assess the immediate direct and indirect effects of the Meliadine MIne on vegetation and wildlife;
- The AWAR LSA to assess limit of direct and indirect effects from the road on the surrounding vegetation and is delineated by a 1 km buffer on either side of the anticipated right-of way surrounding the proposed road alignment.

A map illustrating the LSA and RSA study area is provided in **Appendix G**.

The regional study area was defined as a 28 km radius centered on the mine site and encompasses an area of approximately 246,300 ha. Three Mine components that cover three distinct geographical locations (i.e., the Mine site and associated infrastructure, the AWAR, and the footprint of the Hamlet of Rankin Inlet) were considered when defining the LSA. The LSA for Meliadine Mine footprint and buffer area (a 500 m buffer is applied) encompasses approximately 11,657 ha.

# 3.4.1 Vegetation Habitat

In general, the community types identified within the Meliadine Mine and AWAR areas, or in the vicinity, include upland terrestrial vegetation classes, wetland classes and un-vegetated classes.

The Upland terrestrial vegetation is predominantly heath vegetation. Heath vegetation in this area is defined as land where the soils are not saturated for extended periods of the year. Heath refers to the presence of low growing evergreen shrubs, such as Labrador tea, bearberry, and black crowberry that are typical of these areas. Heath vegetation in the area also consists of heath tundra or heath boulder and bedrock associations.

Wetlands or riparian vegetation are defined as areas that are saturated for most, or all the growing season. Wetlands or riparian vegetation in the area consists of wet sedge meadows or tussock-hummock areas and low shrubby riparian vegetation along the margins of lakes and rivers.

Miscellaneous land cover types include un-vegetated areas, such as areas disturbed by pre-mining activities or bare ground and water.

A total of six rare plant species were observed within the Meliadine Mine area and include: pretty milkvetch (Astragalus eucosmus), northern tansy-mustard (Descurainia sophioides), hairy butterwort (Pinguicula villosa), Lanate willow (Salix lanata sp. calcicola), moor rush (Juncus stygius) and false chamomile (Tripleurospermum maritimum).

There are an additional 11 species of rare plants that may have the potential to occur in the Project area, though they were not encountered during previous field programs. These are listed as "Sensitive" in NU (CESCC 2011), though none are federally listed (COSEWIC 2012; SARA 2012).

### 3.4.1.1 Vegetation monitoring

The vegetation monitoring component is intended to provide a framework for maintaining both a healthy vegetative cover and re-vegetating disturbed areas to reduce the overall effect of the Mine on plant populations and communities, and consequently wildlife habitat. The objectives of the vegetation monitoring and management component are as follows:

measure direct loss of plant communities as a result of the Mine footprint;

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- measure degree of re-vegetation of disturbed areas;
- measure distribution and abundance of non-native invasive plant species; and
- measure plant health as part of the dust monitoring program.

As part of the re-vegetation monitoring plan in collaboration with the University of Saskatchewan, studies will be carried out at selected test plots to assess natural re-vegetation processes in disturbed areas. The focus of these test plots will be to evaluate plant species ingress, growth and survival on various disturbed sites, including rock fill covers, to determine re-vegetation success and the length of time it takes to reestablish vegetation on these sites (AEM, 2022n).

Studies indicate that tundra turfs, biological soil crusts and nitrogen fixing legumes are all candidates for active and passive restoration and both natural recovery and active restoration of local native vegetation can support the development of healthy functioning tundra ecosystems (AEM, 2022b).

In addition, monitoring programs for non-native invasive plant species will be completed during the construction and operations phase of the Mine. Surveys for non-native invasive plant species will be undertaken in disturbed areas (e.g., active mine site, borrow pits) to identify and document the extent of any non-native invasive plant species that may occur during construction and operations.

Vegetation monitoring is completed as part of the Terrestrial Ecosystem Monitoring and Management Plan (TEMMP).

# 3.4.2 Aquatic Biota and Habitat

Studies targeting the ecological characteristics of the aquatic environment in the LSA and RSA were conducted from 1997 to 2012. Investigations included ground and aerial surveys to assess habitat quality of streams, bathymetric surveys of selected lakes, continuous recordings of water temperature in streams and lakes, collection of in-situ water quality data, and measurements of vertical distribution of temperature and dissolved oxygen in lakes (AEM, 2015a).

As presented in the FEIS (AEM, 2014, Volume 7), habitat for fish was dominated by shallow runs; other habitat types encountered included riffles, pools and riffle/boulder garden combinations. High quality habitats occurred in pools and deeper run habitats that were present mainly in larger streams connecting the primary chains of lakes in each Peninsula basin. Coarse substrates and abundant instream cover in these larger streams provided suitable habitat for Arctic grayling spawning and rearing. The valued ecosystem components occupying top trophic positions in the Meliadine Lake ecosystem were Arctic char, lake trout, and Arctic grayling

Mainly shallow, ponds were also investigated in the area of the proposed mine site (i.e., the Peninsula) and contained poor to moderate fish habitat. The surveys showed that pond habitat was suitable mainly for rearing and spawning by forage species, particularly ninespine stickleback. The lack of suitable coarse substrates limits the spawning potential for Arctic grayling. Freezing to bottom during winter, overwintering by fish in the Peninsula ponds is not possible. Spring freshet and/or important precipitation events allows movement between ponds, they offer seasonal habitat (when accessible) and there is no potential to support fish on an annual basis.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



In order to characterize the lower trophic communities within the LSA and RSA, numerous investigations at streams, ponds, and lakes where completed in 1997, 1998 and 2001. At the base of the ecosystem, phytoplankton in lake water and periphyton on shoreline rocks use nutrients and carbon sources for growth and provide food to benthic invertebrates and zooplankton. Zooplankton feed directly on phytoplankton, while benthic invertebrates feed on periphyton and decaying organic material that settle on the bottom of waterbodies. Fish feed on zooplankton and benthic invertebrates, and predatory fish feed on smaller fish (AEM, 2015a).

#### **Aquatic Ecosystem Monitoring** 3.4.2.1

Upon the discharge of dewatering effluent to Meliadine Lake, the Mine becomes subject to the Metal and Diamond Mining Effluent Regulations (MDMER). Under the MDMER, the Mine is required to conduct Environmental Effects Monitoring (EEM) studies, the results of which are used by Environment and Climate Change Canada (ECCC) to assess the effectiveness of the effluent regulations by evaluating effects on fish, fish habitat, and use of fisheries resources by humans (AEM, 2022c).

The Aquatic Effects Monitoring Program (AEMP) is a requirement of the Type A Water Licence 2AM-MEL-1631. The AEMP is intended to function as an integrated monitoring program, which considers pathways to potential effects of the Mine on the aquatic environment, including changes in surface water quality, sediment quality, lower trophic communities, fish habitat, and fish health due to release of mine water, physical alteration of watersheds, and air emissions during construction, operations, and closure. The AEMP was also designed to incorporate EEM requirements of the MDMER throughout the life of the Mine, with supplemental components included to fulfill the additional conditions and requirements of the Water Licence (AEM, 2022c).

# 3.4.3 Wildlife

The wildlife baseline details for the Meliadine Mine are provided in SD 6-2 2009 Terrestrial Synthesis Baseline of the 2014 FEIS and are briefly summarized herein.

- Wildlife studies identified the following species within the Project and AWAR areas:
- Barren-ground caribou;
- Arctic fox;
- Raptors;
- Upland birds:
- Shorebirds; and
- Waterfowl.

Key baseline details from the area include:

- Barren-ground caribou of the Qamanirjuaq herd are regular but transient visitors during their spring migration and calving periods.
- 37 bird species have been observed including 14 species of waterfowl, five species of shorebird, three species of raptor, and two owl species.

Meliadine Interim Closu	re and Reclamation Plan – Update 2022	Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- The most common species of upland birds are Lapland Longspur (Calcarius lapponicus), Horned Lark (Eremophila alpestris), and Savannah Sparrow (Passerculus sandwichensis).
- Shorebirds are uncommon and have not been documented breeding.
- Pacific Loons (Gavia pacifica) and Tundra Swans (Cygnus columbianus) are confirmed, regular breeding summer residents.
- Peregrine Falcon (Falco peregrines), Rough-legged Hawk (Buteo lagopus), and Gyrfalcon (Falco rusticolus) have been documented and confirmed as breeding.
- Short-eared Owls (Asio flammeus) have been documented and nest observations indicate that they are likely breeding.
- Sandhill Cranes (Grus canadensis) occur throughout the study area in summer and are confirmed as breeding.
- Arctic fox (Alopex lagopus) and Arctic hare (Lepus arcticus) are common residents.
- Wolves (Canis lupus), muskox (Ovibos moschatus), and polar bears (Ursus maritimus) are infrequently observed.
- Grizzly bear (Ursus arctos) is listed under Committee on the Status of Endangered Wildlife in Canada as "Special Concern" and have the potential to be in the study area but were not observed in the study area during wildlife surveys for the Meliadine Extension.
- Wolverine (Gulo gulo) is listed under Committee on the Status of Endangered Wildlife in Canada as "Special Concern" and have the potential to be in the study area but were observed only once in the study area to date.
- Red knots, Calidris canutus rufa and Calidris canutus islandica are listed as "Endangered" and "Special Concern", respectively under the Committee on the Status of Endangered Wildlife in Canada and have the potential to be in the study area, but were not observed during wildlife surveys for the Project; and
- Polar bear, peregrine falcon, wolverine, and short-eared owl were the only species that are listed under Committee on the Status of Endangered Wildlife in Canada as "Special Concern" that have been documented in the study area.

# 3.4.3.1 Wildlife monitoring

Wildlife protection at Meliadine is ensured by various protocols implemented during operations and presented in the TEMMP (a component of the FEIS) (AEM, 2022n).

The purpose of the TEMMP is to collect date 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 scope of the TEMMP annual report is to report on monitoring of the Meliadine Mine during construction, operation, maintenance, reclamation, and closure. The TEMMP is a requirement of the Meliadine Project Certificate No.006.

Wildlife monitoring is an essential tool in protecting and maintaining wildlife in the vicinity of the Project. A comprehensive monitoring strategy has been implemented and, as required, is adapted to meet the

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



objectives of the management strategy and methods set out in the TEMMP (AEM, 2022n). Monitoring programs evaluate the effectiveness of mitigation measures and assess Meliadine Mine-related impact predictions. For all wildlife monitoring programs there is a certain level of uncertainty or unpredictability; therefore, residual effects identified during monitoring may require implementation of adaptive management strategies (AEM, 2022n).

Agnico Eagle has established several wildlife monitoring programs that involve collaborations with regional initiatives and community members and contribute to monitoring cumulative effects. These include caribou collar program, regional muskoxen surveys, hunter harvest program, raptor monitoring program, waterfowl and shorebird monitoring and wildlife surveys.

As presented in the Terrestrial Environment Management and Monitoring Plan (AEM, 2022n), mitigation measures and monitoring initiatives to lessen the likelihood that wildlife will become habituated to the Meliadine site and its infrastructures. Measures are defined to deter wildlife from obtaining camp food waste, finding shelter around the site, gaining access to harmful substances present on the project site, being injured as a result of vehicle collisions, and damaging mine property. Despite these mitigation measures, personnel may occasionally come in contact with wildlife that inhabits the Meliadine area. Incidents must be managed to keep both humans and wildlife safe while using only humane control methods (AEM, 2022n).

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 and to the Government of Nunavut, the Kangiqliniq Hunters and Trappers Organization and Kivallig Inuit Association.

# 3.5 Social Environment

The Kivalliq region communities' population has varied between 2016 and 2021. There was an overall population increase of 6% in the Kivalliq region over that 5-year period. Since 2016, and using 2016 and 2021 Census counts, the population decreased in Baker Lake (<1%) and Chesterfield (9%), while it increased in Arviat (8%), Coral Harbour (16%), Naujaat (13%), Rankin Inlet (5%), and Whale Cove (8%). Despite the annual variation in the population numbers, the ratio of Inuit to non-Inuit employees in Rankin Inlet and Baker Lake remained relatively stable from 2001 to 2016 (the last year for which data is available).

Agnico Eagle's employee migration data indicates minimal impact on Kivalliq communities. Based on available and current data, there is no indication of mining-induced in-migration. (2021 Socio-Economic Monitoring Program Report)

### Traditional Activities

We heard as part of the Meliadine Extension engagement activities that the daily diet still consists of various traditional foods. We heard from participants that especially caribou and fish meat regularly supplement their weekly diet. Arctic char is stocked up during the summer and ice freeze up with gill net in the ocean or lakes. Fish is stored in catches for personal consumption and to feed dog teams. Caribou meat is consumed fried, dried and raw. The meat is also grounded to cook meals. A wide variety of berries are harvested and are either consumed fresh or used to make jam and shared among relatives. Participant indicated that they

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



share all their catches with anyone that needs traditional food. Traditional food sources are preferred over store bought and processed food for health and cost reasons. (Meliadine Extension, FEIS Addendum, 2022)

Fishing is practiced year-round. We heard from the community that Meliadine Lake is a good fishing spot in the late winter and springtime. Many people follow the winter road toward the Meliadine Camp and then follow snowmobile trails to the southeast end of the lake. There are many ice fishing holes made in Meliadine Lake in the spring. Additionally, we heard that summertime is generally a good season for fishing lake trout and spending time on the lake. (Meliadine Extension, FEIS Addendum, 2022)

Berry picking was and still is an important fall and spring activity throughout the Meliadine valley, wherever there are low slopes with heath tundra, and in hummocky areas at the edges of wetlands. During the spring, when there is light all day long, people would walk from Rankin to the area near Diana River to pick berries. Areas along the road were regularly used for berry picking. While people pick berries throughout the Meliadine valley, people are less likely to cross the Meliadine River when coming from Rankin Inlet to pick berries, especially if they are carrying young children on their ATVs. Mid-August and beginning of September is when cloudberries are harvested in the Rankin Inlet area up to Meliadine Lake. (Meliadine Extension. FEIS Addendum, 2022)

# 3.5.2 Inuit Qaujimajatuqangit and Traditional Knowledge

The Inuit Qaujimajatuqangit (IQ) and traditional knowledge (TK) shared on the Project included knowledge on the existing condition, Project impact concerns, and recommendations for the Project. Knowledge of the existing conditions is included in baseline reports or environmental setting portions of the Final Environmental Impact Statement.

In 2021, Agnico Eagle developed a Kivalliq Inuit Elders' Advisory Committee comprised of 21 Elders from Baker Lake, Chesterfield Inlet, Rankin Inlet, Whale Cove, Coral and Arviat to integrate Inuit Qaujimajatuqangit (IQ), Inuit Societal Values (ISV) and community knowledge into exploration, planning, workforce, wellness, and operational plans.

As part of it's mandate, The Kivalliq Inuit Elder's Advisory Committee reviews and validates collectively IQ and TK shared with Agnico Eagle through multiple engagement channels with Kivallig individuals, communities, and community groups. Engagement channels regroup focus groups, public consultations and open house.

Concerns on the various Project impacts are included as part of the effects assessments and recommendations are considered when developing mitigation and monitoring plans.

## 3.5.3 Cultural, Archaeological and Paleontological Resources

A total of 139 archaeological sites were recorded in the LSA area, out of those, 23 are in the development area of the Meliadine Extension. The cultural affiliation of archaeological sites recorded as part of the Meliadine Extension are affiliated to the Neoskimo period and consist of hunting blind, campsite, cache and inuksuk. Within the LSA, a total of 39 sites were mitigated around the Mine Infrastructure and 13 along the AWAR. Continued avoidance by 30 meters will be continued for the sites not mitigated and mitigations measures implemented prior to development when required.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Since the 2014 FEIS submission, 28 new sites were identified throughout archaeological assessment conducted for the Meliadine Mine. Additionally, 10 sites recorded prior to the 2014 FEIS (1970s-80s) were included to the current total as they are located within the LSA area. (Meliadine Extension, FEIS, 2021)

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### Permanent Closure and Reclamation 40

# 4.1 Definition of Permanent Closure and Reclamation

Permanent closure is defined as the final closure of a mine site with no foreseeable intent by the existing proponent to return to either active exploration or mining. Permanent closure indicates that the proponent intends to have no further activity on the site aside from post-closure monitoring and potential contingency actions. Permanent closure does not, however, preclude the proponent or another party from pursuing opportunities at the existing site or in the area at a time beyond the foreseeable future (AANDC/ MVLWB, 2013).

# 4.2 Permanent Closure and Reclamation Requirements

This section provides the permanent closure and reclamation requirements for each individual component of Meliadine Extension. The components are categorized in sub-sections for clarity. The specified closure objectives may be revised with subsequent updates to the Interim Closure and Reclamation Plan but are considered reasonable at this time to guide the advancement of closure planning.

The details presented herein for each mine component were extracted from the following documents and its corresponding supporting documents listed below:

- Final Environmental Impact Statement, (AEM, 2014);
- Meliadine Preliminary Closure and Reclamation Plan (AEM, 2015a);
- Meliadine Interim Closure and Reclamation Plan 2019 (SLI, 2019);
- Updated Technical Report on the Meliadine Gold Project (AEM, 2015b);
- Nunavut Water Board Water Licence No: 2AM-MEL1631 (NWB 2016);
- Meliadine Annual Reports 2018, 2019, 2020a, 2021a and 2022b;
- Design report for Itivia laydown area culvert (Tetra Tech, 2017a);
- Design Report for Operation Landfill (Stage 1), Meliadine Gold Project (Tetra Tech, 2017b);
- Construction summary (as-built) report for landfarm (Tetra Tech, 2018);
- Construction summary report for Rankin Inlet bypass road and culverts (Tetra Tech, 2019);
- Prefeasibility Level Design-WRSF3 & Water Management Infrastructure (Tetra Tech, 2020);
- Prefeasibility Level Design of Water Management Infrastructures for Operation Phase, Meliadine Extension Project, Nunavut. (Tetra Tech, 2023a).
- Prefeasibility Level Design of Waste Rock Storage Facilities, Meliadine Extension Project, Nunavut. (Tetra Tech, 2023b).
- Stability Analyses for the Proposed Tailings Storage Facility (TSF), Meliadine Extension Project, Nunavut (Tetra Tech, 2023c).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- Meliadine Gold Mine FEIS Addendum Environmental Assessment of Treated Groundwater Effluent Discharge into Marine Environment (AEM, 2020b);
- Reclamation Work and Costs Waterline for Treated Groundwater Effluent Discharge (SLI, 2020a);
- Main Application Document, Type A Water Licence 2AM-MEL1631 Amendment (AEM, 2020c);
- Application for Water Licence Amendment, Nunavut Water Board (AEM, 2020d);
- Nunavut Water Board. Amendment no. 1 to Water Licence No: 2AM-MEL1631 (NWB 2021);
- Meliadine Interim Closure and Reclamation Plan Update 2020 (SLI 2021);
- Meliadine Extension FEIS Addendum (AEM 2022c);
- Meliadine Groundwater Management Plan (AEM 2022d);
- Meliadine Water Management Plan (AEM 2022e);
- Meliadine Mine Waste Management Plan (AEM 2022f);
- Meliadine Roads Management Plan (AEM 2022g);
- Meliadine Water Quality and Flow Monitoring Plan (AEM 2022h);
- Meliadine Landfill and Waste Management Plan AEM (AEM 2022i);
- Meliadine Landfarm Management Plan (AEM 2022j);
- Meliadine Borrow Pits and Quarries Management Plan (AEM 2022k);
- Meliadine Hazardous Materials Management Plan (AEM 2022I).
- Meliadine Itivia Bulk Fuel Storage Facility Environmental Performance Monitoring Plan (AEM 2022m)
- Meliadine Terrestrial Environment Management and Monitoring Plan (AEM 2022n).
- Meliadine ARD-ML Sampling and Testing Plan (AEM 2022o)

#### 4.2.1 Rankin Inlet Facilities

#### 4.2.1.1 Description of the components

Rankin Inlet facilities are located mainly in the Itivia area as presented on Figure 4-5. This is the transfer point and temporary storage for all dry shipment and fuel materials arriving by barge prior to overland shipment to the mine site via the AWAR. Rankin Inlet Facilities are listed below:

Floating Dock: A floating dock facility (spud barge) dedicated to the Meliadine Mine is located at Itivia. This floating dock consists of a barge that is connected by cables to the shore, while the other end is anchored in place by two (2) "spuds" onto the seabed, which allow the barge to rise and fall with the tides. The barge is connected to the shore using a ramp or removable bridge section. A portable crane (capacity of about 200 t) is set up on the floating dock and used to lift the sea cans

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



and other containers and equipment directly off the delivery barges and place them onto trucks. The gateway to link the barge to the beach is approximately about 6.5 m wide by 21 m long. The ship(s) will be located offshore in deep water (approximately 3 km from Itivia) where they will be offloaded onto barges for the transport of materials to the Itivia laydown area. Sea cans, large equipment, machinery, and vehicles are placed onto the barges for transport through the access passage using tugs before being docked alongside the floating dock located at Itivia.

- Dry Freight Storage Facility: A fenced-in laydown area (14 hectares) is located near the offloading barge to store the material being received during the barge season. The culvert under Itivia laydown area road are a group of 2 pipes, length of 30 m each and diameter of 900 mm (Tetra Tech, 2017a).
- Bulk Fuel Storage Facilities: The Itivia Bulk Fuel Storage facility including the fuel tank farm is located fairly close to the barge landing. The tank farm includes two (2) diesel fuel storage tanks of 20 ML and 13.5 ML, for a total capacity of up to 33.5 ML of diesel fuel. Fuel is pumped from the barges to the storage tanks (AEM 2022m).
- Water and Power Management: Water accumulation within the berms lined with geomembrane surrounding the Bulk Fuel Storage Facilities has to be managed as it is release to the environment. Power for facilities is supplied by portable generators and yard lighting is provided by portable dieselpowered light towers.
- Waterline for treated groundwater effluent discharge into marine environment: Treated saline effluent and surface contact water will be conveyed through waterlines prior to discharge through a diffuser to Itivia Harbour. The saline effluent will be treated at the Meliadine Mine in compliance to the water quality effluent guidelines for safe discharge in the ocean. The discharge of treated saline effluent from the mine into Itivia Harbour will occur every year during open water season, while there is mining activities at the Meliadine Mine. The proposed discharge volume of treated groundwater effluent to the marine environment is 20,000 m<sup>3</sup>/day. The treated groundwater will be conveyed through two (2) waterlines (two (2) 16-inch diameter HDPE pipes) along the 34 km of the AWAR and 7 km of bypass road between Rankin Inlet and the Meliadine Mine. The waterlines will be located on the side of the roads and attached to the bridges. Approximately 80% to 90% of the total length of the waterlines will be covered with material. The diffuser system will leave the Itivia Fuel Storage Facility through a Horizontal Directional Drilling (HDD) corridor before daylighting at a depth of 7m. The outfall will connect with the HDD section and terminate with a diffuser at 20 m depth in Itivia Harbour. The diffuser system includes a 75 m length (diameter of 12-inch HDPE DR-11) of outfall and a 25 m length diffuser. The diffuser located into Itivia Harbour is approximately 20 m below the water surface (AEM, 2020b).

Additional details for the saline water tank and the waterline for the treated saline water are available in section 5.2.7.

### 4.2.1.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (AEM, 2014).

The Meliadine Mine facilities are currently in use and will be during the period of operation, until closure or post-closure.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



As mentioned in the FEIS Addendum for the treated groundwater waterline (AEM, 2020b), for the most part, discharge into the ocean does not have much impact on the environment via waterlines from Meliadine Mine. Most effects from Meliadine Mine related to the waterlines, such as discharge to the marine environment have been reviewed and approved. Approximately 80% to 90% of the total length of the waterlines will be covered with material. The waterlines will be built close to the road on the tundra, impacting the vegetation where the waterlines will lie.

The facilities will be dismantled and reclaimed following best practices put in place during operation and in order to minimize long term disturbance and impact on the community. The facilities could also be transferred to the local community upon interest.

# 4.2.1.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Rankin Inlet Site facilities are listed in Table 4-1, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and AEM, 2015a).

Table 4-1: Closure Objectives and Criteria – Rankin Inlet Facilities

Closure Objectives	Closure Criteria	Action / Measurements
Return area to its original state or to a condition compatible with the end land-use targets	Remove all facilities and restore natural/compatible terrain as much as possible	Dismantle and reclaim all infrastructure, fuel reservoirs, chemicals and industrial wastes Physical inspection to confirm removal
The systems are dismantled and removed/disposed of (i.e., waterlines, diffuser)	Remove all components above ground, under water or buried	Components or materials will be cleaned up and salvageable materials removed, shipped or disposed at the landfill Physical inspection to confirm removal
Infrastructure, equipment and storage area will not be a source of contamination to the environment or a safety hazard to humans and wildlife	Limit access during closure Remove all facilities and restore natural/compatible terrain as much as possible Remove all hazardous material	Place signs to limit access Dismantle and reclaim all infrastructure, fuel reservoirs and hazardous wastes Remaining areas will be scarified and remaining concrete foundations and slabs will be cut in the pieces and buried Soil and water monitoring Physical inspection
Restore natural drainage patterns where surface infrastructure has been removed	Restore natural/compatible terrain as much as possible	Surface will be regraded to promote natural drainage
Restore the area for natural use by wildlife or traditional use by the community	Restore natural/compatible terrain as much as possible	Surface will be regraded to promote the use for wildlife and safe access for traditional activities

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Closure Objectives	Closure Criteria	Action / Measurements
Consider community land use expectations and traditional knowledge	Community engagement and traditional knowledge will continue to be implemented in closure planning	Community engagement during closure planning

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

Support infrastructure, such as fuel storage tanks, pipelines, conveyors and underground services, should be removed (from recommendation no R517).

# 4.2.1.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for Rankin Inlet facilities closure are provided by the AANDC/ MVLWB (AANDC/ MVLWB, 2013). Closure activities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Recycling or reusing building materials and equipment where possible to reduce waste;
- Dismantle all buildings that are not necessary to achieve the future land use target;
- Drain, dismantle, and remove tanks and pipelines from the site:
- Cover foundations with materials conducive to vegetation growth;
- Where approved, break or perforate concrete floor slabs and walls to create a free draining condition in order that vegetation can be established;
- Bury materials in the unsaturated zone or below the active layer;
- Cut, shred, crush, or break demolition debris to minimize the void volume during disposal;
- Decontaminate equipment (free of any batteries, fuels, oils, or other deleterious substances) and reuse or sell it to local community interests;
- Remove all hazardous materials and chemicals prior to demolition to national approved hazardous material treatment facilities, or recycle, reuse, or dispose of in an appropriate manner upon approval from the regulatory authorities.

All the options listed above will be required to address closure and reclamation of the Rankin Inlet facilities belonging to Meliadine Mine. Details on the implementation of those considerations are provided as applicable in the following section.

# Engineering Work Associated with Selected Closure Activity

At closure, it is planned to offer the infrastructures located in Rankin Inlet to local interests. If there is no local interest or agreement, the facilities and equipment will be decommissioned, dismantled and removed appropriately.

Agnico Eagle will return, if possible, the Rankin Inlet area where the facilities are located to pre-development conditions. The site may also be left in a semi-industrial condition if consistent with a different end land use agreed upon with regulators, the community of Rankin Inlet, and other local interest.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



All remaining bulk fuel located at Itivia will first be cleaned and then removed and offered to local interests. Infrastructure, including floating dock and portable equipment will be emptied, and also offered for local use and/or relocation. In the case that there is no local interest for the tanks or remaining infrastructure and equipment, the infrastructure will be dismantled, decontaminated and demolition waste will be either transported to the mine site landfill disposal or barged out of Rankin Inlet to a southern waste disposal, recycling facility or sale for scrap metal.

At closure, scarification of all disturbed areas, including storage pads and roads, is planned to loosen the compacted material to promote surface drainage. Areas will be profiled, and water management structures will be removed from the roadways to re-establish natural drainage patterns.

The saline water tank and diffuser for trucked groundwater will be decommissioned, dismantled and removed as appropriate. The pump, piping, tanks and other components will be either transported to the mine site landfill disposal or barged out of Rankin Inlet.

During mine closure, the waterline system for the treated groundwater discharge will be decommissioned; the covered sections of waterlines will be excavated, the pipeline network components will be dismantled, removed and disposed on-site in a landfill. The water effluent diffuser will also be dismantled and removed from the shore area and water, using best practices to minimize disturbance, and disposed on-site in the landfill.

It is important to note that any contaminated soils from the facilities will be removed and placed in sealed drums. These will then be transported to the mine site landfarm for treatment or barged out of to a southern destination for treatment and disposal.

### 4.2.1.6 Predicted Residual Effects

No significant residual effects have been identified for after closure of the supporting facilities in Rankin Inlet, but changes to terrain caused by the construction and subsequent reclamation of the facilities could result in some alteration of the natural terrain or loss of plant populations.

### 4.2.1.7 Uncertainties

The main uncertainty is related to the local interest for the Rankin Inlet facilities or equipment.

### Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following the closure of the Rankin Inlet facilities and maintenance strategies as presented by AANDC/ MVLWB (2013):

- Periodic inspections will be performed to visually assess the reclaimed areas; and
- All buildings and equipment left on-site during closure will be maintained until no longer required, at which time they will be removed from the site or demolished and disposed to the mine site landfill disposal or barged out to a southern waste disposal or recycling facility or for sale or sold as scrap metal.

#### 4.2.1.9 Contingencies

There are no activities proposed as contingencies for the closure of the facilities in Rankin Inlet.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# **Transportation Roads and Quarries**

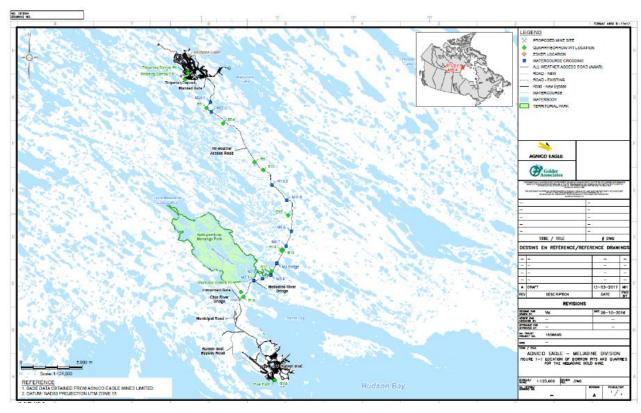
#### 4.2.2.1 Description of the components

Transportation Routes considered for the Project are listed below:

- Access Road (AWAR): The AWAR connects Rankin Inlet to the Mine site. The AWAR is a 23.8 km private road built with a 6.5 m running surface between the Char River bridge turn-off and the Mine site and has passing turnouts approximately every 400 ± 50 m (9.5 m total road width at passing turnouts). The first 2.3 km of the AWAR between Rankin Inlet and the Meliadine mine site are located on municipal land; the first 2 bridges on the AWAR (over the Char and Meliadine rivers) are also located on municipal land. There are eight (8) culverts along the AWAR, and two (2) bridges under the responsibility of the Meliadine Mine. The road alignment is presented on Figure 4-1 (AEM, 2022g).
- By-Pass Road: A bypass road is built around the south of the airstrip to Itivia as shown on Figure 4-2. The length of the bypass road is approximately 6.17 km long and allows traffic from Itivia to bypass the hamlet. Its design and width are similar to the AWAR (6.5 m, 8.0 m from chainage 0+222 to 1+492). There are 19 groups of culverts along the bypass road (Tetra Tech, 2019).
- Internal Access and Haul Roads: A network of roads (service roads and haul roads) of approximately 15 km on the mine site connects the various mining areas and to access the various Project facilities.
- Roads to Future Operation Areas (deposits): A network of roads to other deposits, included in the Water Licence Amendment (AEM 2020c) and the 2022 FEIS, will be built. The road to Discovery is approximately 15.8km long with a width of 17m and includes four (4) water crossings, as presented on Figure 4-3. The roads to the other deposits represent approximately a network of 9.3 km with an average width of 17m. The roads are presented on Figure 4-4.
- Quarries and Granular Borrow Sites: Required for AWAR, by-pass, internal access and haul roads construction. There are 15 quarries located along the AWAR. There are also 3 quarries located directly on site. For the Meliadine Extension, an additional 11 borrow pits and 2 new quarries located on the site shall be added. Details of the additional borrow pits and quarries can be found in the Borrow Pits and Quarries Management Plan (AEM, 2022k).

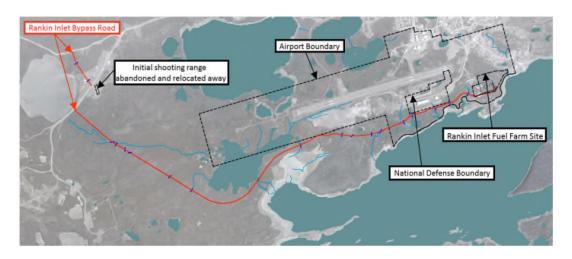
Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report





Source: (AEM, 2022g)

Figure 4-1: All Weather Access Road (AWAR) General Map



Source: (Tetra Tech, 2019)

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



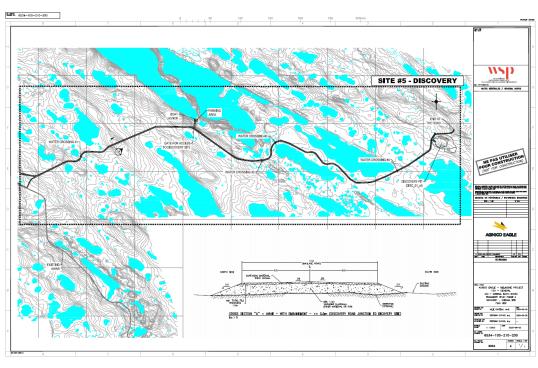


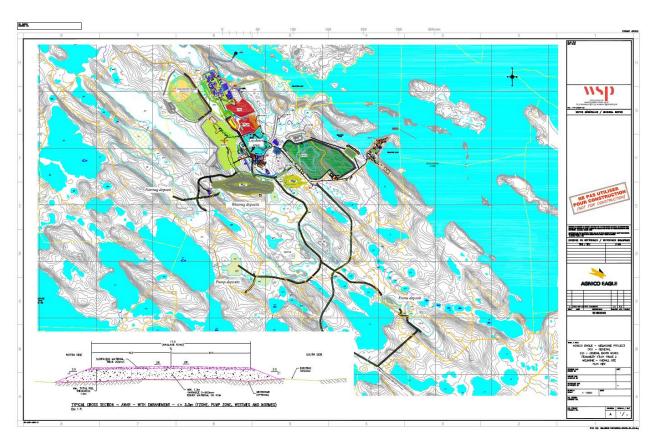
Figure 4-2 : Bypass Road General Location

Source: Provided by AEM

Figure 4-3: Road to Discovery

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	2023/01/13 682731-5000-4EER-0001	





Source: Provided by AEM

Figure 4-4 : Roads to future operation areas (deposits)

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### Pre-Disturbance, Existing, and Final Site Conditions 4.2.2.2

Pre-disturbance conditions are based on baseline data collection programs presented in the 2014 FEIS.

The transportation roads are currently in use and will be until post-closure, at least for the AWAR to access the site. The quarries will be maintained until material is no longer required.

At post-closure, the AWAR, the by-pass road embankment, and road to Discovery will be reclaimed, and the natural drainage and terrain will be restored as much as possible. The culverts and the bridges all along the AWAR, the bypass road and the road to Discovery will be dismantled. Upon local interest and regulatory approval, the AWAR, the bypass and road to Discovery could be transferred to the local community.

The internal access roads, roads to the different deposits and haul roads on site will be reclaimed and the natural drainage and terrain will be restored as much as possible during closure.

The quarries and granular borrow sites no longer required for operations will be progressively reclaimed during operation, as equipment and resources are available.

# 4.2.2.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the transportation routes are listed in Table 4-2, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and AEM, 2015a).

Table 4-2: Closure Objectives and Criteria – Transportation Roads and Quarries

Closure Objectives	Closure Criteria	Action / Measurements
Maintain access to site during post- closure for monitoring	Preserve the main access road to the site in a sufficient condition to allow post-closure access for monitoring, inspection and maintenance activities	Reclaim the AWAR, the bypass and road to Discovery once post-closure monitoring and site maintenance can be completed with helicopter access
At closure and post-closure, reclaim road to its original state or to a condition compatible with the end land-use targets	Restore natural/compatible terrain as much as possible and promote revegetation	Remove bridges, culverts and pipes; restoring natural stream flow and drainage patterns; stabilizing stream banks by using rip-rap Road embankment will be regraded and surface scarified Remove other infrastructures along the road, including communication towers
Restore natural drainage patterns	Restore natural/compatible terrain as much as possible	Road embankment will be regraded to promote natural drainage Remove bridges, culverts and pipes; restoring natural stream flow and drainage patterns Visual inspection
Reclaim quarries and borrow area by providing safe long-term conditions	Promote natural drainage and ensure wall stability	Quarry walls will be drilled and blasted to ensure long term stability and safety of the quarry walls for wildlife

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	2023/01/13 682731-5000-4EER-0001	



Closure Objectives	Closure Criteria	Action / Measurements
		Quarry area will be regraded to
		promote natural drainage
		Visual inspection
Control dust generation from	Best management practices for	Implement best management
reclamation activities	controlling dust, fugitive and exhaust	practices
	emissions during active reclamation	Routine air quality monitoring
Ensure the remaining surface areas	Restore natural/compatible terrain	Scarified surfaces will be re-graded
are safe for wildlife use and access	as much as possible	Visual inspection and wildlife survey
Ensure reclaimed areas are safe for	Restore natural/compatible terrain	Routine monitoring and physical
the community and support	as much as possible	inspection
continuation of human land use	Human land use of the reclaimed	
activities	area at post-closure will not	
	compromise people's health and	
	safety	
	Reclaimed area will be compatible	
	with land use	
Consider community land use	Community engagement and	Community engagement during
expectations and traditional	traditional knowledge will continue to	, , ,
knowledge	be implemented in closure planning	closure planning

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- The main access road to the site and other on-site roads, as required, should be preserved in a sufficient condition to allow post-closure access for monitoring, inspection and maintenance activities (from recommendation no. R518);
- Roads that will not be preserved for post-closure use should be reclaimed. Bridges, culverts and pipes should be removed, natural stream flow should be restored, and stream banks should be stabilized by re-vegetating or by using rip-rap. Surfaces, shoulders, escarpments, steep slopes, regular and irregular benches, etc., should be rehabilitated to prevent erosion. Surfaces and shoulders should be scarified, blended into natural contours, and re-vegetated (from recommendation no R519).

### 4.2.2.4 Closure Options and Selection of Closure Activities

Considerations for the transportation roads closure are provided by the MVLWB/AANDC (MVLWB/AANDC, 2013). Closure activities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Remove structures including bridges and culverts (not the culverts or bridges belonging to the Hamlet of Rankin Inlet);
- Reclaim areas to the original topography and drainage or to a new topography or drainage compatible with end land use targets;
- Scarify road surfaces to promote re-vegetation of indigenous species;

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- Allow gradual slope failure of quarries involving rock masses or slope pit walls;
- Block quarry access routes with boulder fences, berms and/or inukshuks (guidance from local communities and elders would be sought); and
- Flatten berms and slopes at the side of roads to facilitate wildlife passage.

As mentioned in the preliminary closure plan (AEM, 2015a) and subsequent Meliadine Mine regulatory processes, Annual reports, and FEIS Addenda, migrating caribou protection is an important aspect of the AWAR closure. Agnico Eagle will work, during the operations and closure stages, with the KivIA and HTO to monitor areas where the road may be impeding caribou migration. Heavy traffic on the AWAR, Discovery road, and on-site roads will cease at closure. Traffic associated with reclamation will continue at a reduced level for the first years of closure. After that, there will be very little vehicle traffic.

All the options listed above will be required to address closure and reclamation of the transportation roads for the Meliadine Mine. Details on the implementation of those considerations are provided as applicable in the following section.

#### 4.2.2.5 Engineering Work Associated with Selected Closure Activity

Agnico Eagle is committed to manage the roads as a private road with limited public access during the mine life and to fully decommission the roads after post-closure. The transportation roads should be one of the last mining components to be reclaimed in post-closure to preserve access for monitoring.

As mentioned in the Roads Management Plan (AEM 2022g), it is the responsibility of Agnico Eagle of decommissioning and reclaiming all roads once construction, operations, closure, and post-closure activities are complete. For a third party to take over the road(s), that third party would have to complete its own arrangements with the landowners (the KivIA and the Rankin Inlet Hamlet) and then complete its own environmental assessment and permitting process covering future use. Agnico Eagle does not own the land on which the roads are constructed and, thus, cannot transfer future ownership or use privileges to any third party. Agnico Eagle must complete its obligation to decommission and reclaim all roads unless directed otherwise by a combination of the landowners and other regulatory agencies who issued permits/authorizations for the roads. In the case that Agnico Eagle stays the owner of the AWAR, the bypass road and road to Discovery, natural drainage courses and terrain will be restored by removing culverts and bridges, regrading road fill material and removing in-stream works down to the original channel bed.

The reclamation work presented in detail in the Roads Management Plan (AEM 2022g) is summarized herein. The loosening of compacted surfaces will be accomplished by ripping of the road bed using a dozer with a "ripper" attachment on the back. Successive passes with the dozer longitudinally along the road bed will eliminate the level road surface and make travel difficult. It is anticipated that, in this way, the abandoned roads will not be useable by wheeled vehicles (i.e., cars, trucks, and pick-up trucks). The road bed would still be useable by ATV or snowmobile and, thus, even after final reclamation, the reclaimed roadbed would offer similar passage to the existing set of trails that currently exist and are used by the residents of Rankin Inlet for traditional use purposes.

The roads deactivation works will be carried out as necessary to stabilize any slopes where potential for slope erosion may exist. Stabilization measures may require pulling back of side-cast fills on locally steep slopes or buttressing and/or re-contouring of steepened out slopes using non-acid generating material. These measures would also be applicable to borrow pits/quarries that remained open following construction

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



and are located adjacent to the roadway. As much as practical, deactivated surfaces will be graded to blend with the existing topography (AEM 2022g).

To the extent practical, the reclamation would also restore the natural pre-road hydrology. Natural drainage courses would be restored primarily through the removal of all culverts and bridges (excluding the Char River bridge, which will belong to the Hamlet of Rankin Inlet), and through rehabilitation of channels and banks at the crossing sites. Cross-drain structures (cross-ditches) will also be installed where necessary between culvert sites. Where armouring rock (rip-rap) is required, this rock will be non ARD/ML for the protection of aquatic life. Where affected watercourses are fish bearing, the timing of work will have to be restricted to within the designated Fisheries and Oceans Canada (DFO) fisheries work window (July 16th to April 30th). For these sites, appropriate fish exclusion measures will be undertaken prior to the in-stream works. All instream works will be carried out using best management practices for erosion and sediment control (AEM, 2022g).

Decommissioning of the roads will start from the Meliadine Mine and progress south towards Rankin Inlet and will include reclamation of the bypass road and the road to Discovery. Stream crossings will be rehabilitated as they are encountered during the progression of the work. The culverts and bridges, as previously mentioned, will be removed from the crossings using a backhoe and crane, and then removed materials (i.e., culvert steel, bridge decks, abutment steel, etc.) will be transported to Rankin Inlet using a semi-tractor and a low-boy trailer, for disposal and salvage (AEM, 2022g).

The decommissioning details of the quarries are provided in the Road Management Plan (AEM, 2019d, 2022g) and the Borrow Pits and Quarries Management Plan (AEM, 2022k). The quarries and borrow pits have gently sloping walls and are designed for positive drainage wherever possible. Reclamation and closure of quarries and borrow pits will depend on the individual site conditions. With a conservative initial design, the quarries should require little reclamation following completion of the roads. Loose rock will be pulled to the floor of the guarry and the entrance blocked with large boulders. Reclamation should lead to natural revegetation establishing on disturbed areas (AEM, 2022g). Similar process will be completed for the reclamation of the quarries on site.

All guarry sites and borrow sources developed during the construction of the roads have been selected to generate only non-acid generating/low metal leaching materials. During reclamation of the roads, should acid-generating bedrock be exposed along the roadway or in borrow pit/quarries, these areas will be covered with a minimum 2 m thick layer of non-acid generating soil or rock to direct water away from the surface (AEM, 2022g).

## 4.2.2.6 Predicted Residual Effects

No significant residual effects have been identified for after closure of the transportation roads and quarries but changes to terrain caused by the construction and subsequent reclamation of the facilities could result in some alteration of the terrain and or loss of plant populations and plant communities. The reclaimed roadbed would offer similar passage to the existing set of trails that currently exist and are used by the residents of Rankin Inlet for traditional use purposes.

### 4.2.2.7 Uncertainties

The pre-disturbance terrain is covered by discontinuous vegetation interspersed with few bedrock outcroppings. The reclamation plan will be designed to encourage a natural succession of indigenous plant species within disturbed site areas. Grading and contouring would be done, where appropriate, to control

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



soil erosion and to promote re-vegetation by natural colonization. Re-vegetation studies will be completed to assess the potential for vegetation to establish in disturbed areas or on rockfill covers.

There are also some uncertainties regarding the transfer of ownership of the roads to the local community or a third party, upon interest. For a third party to take over the road(s), that third party would have to complete its own arrangements with the landowners (the KIA and the Hamlet) and then complete its own environmental assessment and permitting process covering future use.

# Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following the closure of the roads and quarries and maintenance strategies as presented by AANDC/ MVLWB (2013):

- Periodic inspections will be performed to visually assess the reclaimed areas; and
- All roads to be used during closure will be maintained until they are no longer required.

## 4.2.2.9 Contingencies

There are no activities proposed as contingencies for the closure of the transportation roads.

# 4.2.3 Underground

#### 4.2.3.1 Description of the components

Agnico Eagle is currently developing the Tiriganiaq gold deposit using traditional open-pit and underground mining methods. Two (2) open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and an underground mine (Tiriganiag Underground) are currently on development.

The Meliadine Extension primarily consists of amending the Water Licence 2AM-MEL1631 to include the mining of Pump, F Zone, Wesmeg, and Discovery deposits that were previously assessed and approved for open pit mining activities by NIRB. Based on the additional geological information collected since the Water Licence approval, Agnico Eagle refined the open pit and underground mine designs and reviewed the infrastructure required to support mining activities. As part of this Application, Agnico Eagle is proposing the following changes:

- open pit mining of F Zone, Wesmeg, Pump, and Discovery deposits and associated infrastructure;
- \tag{var} underground mining and associated saline water management infrastructures at the Pump, F Zone, and Discovery; and
- development of a new portal and associated infrastructures in the Tiriganiag-Wolf area to improve access to and expand the existing Tiriganiag underground mine.

Approximately 42.5 Mt of ore and 15.9.6 Mt of waste rock will be produced from underground. Approximately 1.1 Mt of saline waste rock from underground will be temporarily stored on surface but then brought back to underground by the end of operations. Underground mining will take place throughout the life of mine of Meliadine Extension as follows:

Tiriganiaq underground ongoing from the approved operations to 2037)

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- Pump underground from 2029 2035
- F Zone underground from 2033 2039
- Discovery underground from 2026 2031
- Tiriganiaq-Wolf underground from 2034 2043

A conveyor belt has been built in the underground access ramp to deliver the ore from the underground to the surface ore stockpile dome. A crusher is located underground to reduce the ore to a size that can be accommodated on the conveyor belt. Underground waste rock is transported through the same system that transports the ore but at different times.

#### 4.2.3.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the 2014 FEIS.

The underground mine stopes will be backfilled with cemented paste used in primary stopes, and dry rockfill for the secondary stopes. The underground workings will be flooded using groundwater seepage, and saline contact water stored in contact and saline ponds.

## 4.2.3.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the underground mine are listed in Table 4-3, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and AEM, 2015a).

Table 4-3: Closure Objectives and Criteria - Underground

Closure Objective	Closure Criteria	Actions/Monitoring
Access to underground workings from surface openings has been limited, for the safety of humans and wildlife	The decline ramps and the portals will be capped to eliminate the access to the underground mine workings	Place signage Maintain or construct waste rock berm Inspection of berms
Uncontrolled surface water infiltration into underground workings has been minimized	The decline ramps and the portals will be capped, and area will be levelled to avoid water accumulation	Ramp will be dismantled and blocked Concrete structures will cap the raises Physical inspection and monitoring
Underground workings have been stabilized so that there is no surface expression of underground failure Controls that prevent collapse, stress transfer, and flooding of adjacent mines are in place	The underground will be designed and mined to be physically stable; stopes will be backfilled as needed during operation and closure	Proper backfilling procedure  Meet appropriate design levels, physical inspection by a qualified engineer and monitoring
Contaminated mine water from underground workings is not and will not become a source of contamination to the surface environment, nearby taliks, surface water, or groundwater	Underground mine to flood with natural groundwater seepage	Water treatment systems in place until surface water meets discharge criteria to the environment Initial physical monitoring to check inflow, but limited once ventilation is turned off

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Closure Objective	Closure Criteria	Actions/Monitoring
Areas surrounding mine openings are suitable for future use targets	Ramp facilities at the surface will be removed Area will be levelled to avoid water accumulation	Ramp will be dismantled and blocked Concrete structures will cap the raises Physical inspection and monitoring
No hazardous material from underground will become a source of contamination	Remove hazardous materials from the underground mine	Fuels, oils, chemicals and all hazardous material will be removed for disposal by a licensed handler prior to flooding  Physical inspection and monitoring
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement and traditional knowledge will continue to be implemented in closure planning	Community engagement during closure planning

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- If it is technically and economically feasible to do so, infrastructure (e.g., crushers, metal structures and air pipes) and equipment (e.g., pumps) should be removed from the site. Any equipment to be left in the pit should be inspected and remediated as appropriate to ensure that there is no risk of leakage of any contaminants (from recommendation no. R506);
- During the decommissioning of underground and open pit mines, any contamination associated with vehicle and equipment operations and maintenance should be identified and remediated, as appropriate (from recommendation no. R507);
- Underground mine workings should be secured, and signs should be posted warning the public of potential dangers associated with the facility (from recommendation no. R508);
- The risk of subsidence in underground mines should be assessed. Appropriate measures should be taken to prevent subsidence in cases where the risk of subsidence is determined to be significant. The primary measure used to prevent subsidence is the backfilling of underground voids (from recommendation no. R509);
- The potential for mine water discharges should be assessed. For underground mines, this should be done using a hydrogeological assessment (from recommendation no. R511);
- Where there is the potential of mine water discharge after mine closure, the quality of the discharge should be predicted. Mine water quality should be assessed once closure has been completed to verify the accuracy of the predictions (from recommendation no. R512);
- Where there is the potential of mine water discharge of poor quality, measures should be implemented to prevent or control that discharge and to collect the mine water for treatment. Prevention methods may include capping of mine openings to prevent mine water discharge (from recommendation no. R513).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### Consideration of Closure Options and Selection of Closure Activities 4.2.3.4

Considerations for open pit closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the pit were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Minimize the number of mine openings to the surface;
- Include long-term geotechnical and geothermal stability in the design of mine openings and crown pillars;
- Develop a ground stability monitoring plan.

Capping the top of the decline ramps and portals are considered to be the only viable option for eliminating access to the underground mine workings.

Geotechnical monitoring, thermal monitoring and underground water quality monitoring is part of the underground operations and will be used for the closure planning of the underground mine.

### Engineering Work Associated with Selected Closure Activity

All surface openings will be sealed; the decline ramps and the portals will be capped to eliminate access to the underground mine workings. The sealed surface opening areas will be contoured to prevent natural surface flows to the underground, and disturbed surface areas will be re-contoured to establish positive natural drainage patterns and blend in with the surrounding topography to the extent possible. The raises will be capped with concrete. Any equipment or infrastructure left underground will be cleaned, drained of fluids, inspected, and remediated as appropriate to eliminate the risk of contaminant leakage. All hazardous materials from underground shops, equipment, and magazines (fuels, oils, glycol, batteries, explosives, etc.) will be removed and disposed off-site at an approved disposal facility. Contamination associated with vehicle and equipment operations at work areas will be identified and remediated (AEM, 2015a).

Every stope will be backfilled, with cemented pastefill used in primary stopes, and dry rockfill for the secondary stopes. The paste backfill will be made by mixing pressed filtered tailings, cement and water in a facility (AEM, 2015b). Backfill will be done during the operation and will be completed in closure.

The underground workings will be flooded over the first year of active closure by a combination of groundwater seepage and saline contact water stored in saline ponds. The estimated total void space volume of the underground mines for Meliadine Extension is 3Mm<sup>3</sup>.

## 4.2.3.6 Predicted Residual Effects

No significant long-term effects are expected for the underground mine workings. After closure, the only surface expression of the underground workings will be the sealed vent raises and portals and the area graded and levelled to avoid erosion and water accumulation.

# 4.2.3.7 Uncertainties

There are no currently identified uncertainties associated with the closing of the surface openings to the underground or flooding the underground works.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### Post-Closure Monitoring, Maintenance, and Reporting 4.2.3.8

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following the closure of the underground mine, and maintenance strategies as presented by AANDC/ MVLWB (2013):

- Visually inspect reclaimed openings for signs of physical deterioration or settlement;
- Vary the frequency of inspections, with increased frequency following construction and decreased frequency upon establishment of stable conditions;
- Check for surface expression (subsidence) of underground failure;
- Test underground mine water quality and monitor volume from controlled discharge points of workings to ensure water quality is as predicted;
- Identify unanticipated mine-related drainage discharge points (volume and quality);
- Install thermistors where appropriate to monitor the ground thermal regime in permafrost areas;
- Establish special monitoring provisions for mines that have become flooded and are retaining water under pressure by means of plugs. These provisions can include visual inspection, piezometers, seepage measurement weirs, and sampling to check water quality parameters;
- Inspect areas surrounding mine openings to ensure they are suitable for future use targets;
- Inspect passive water treatment systems for maintenance requirements.

### 4.2.3.9 Contingencies

Backfilling of certain underground areas will be completed during operation. This will ensure ground stability that potential ground collapse into these tunnels does not progress to surface, creating a subsidence or sinkhole.

# 4.2.4 Open Pits

## Description of the components

The following mining development sequence is planned for the development of the open pits for the Meliadine Extension project:

- Tiriganiaq Pit 1 will be mined from 2020 to 2027;
- Tiriganiag Pit 2 will be mined from 2020 to 2021 and from 2025 to 2026
- Tiriganiaq Pit 3 will be mined from 2037 to 2040;
- Tiriganiaq Pit 4 will be mined from 2041 to 2043;
- Wesmeg open pits will be mined as follows:
  - WES01: from 2026 to 2028;
  - WES02: from 2037 to 2040;

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



WES03: from 2037 to 2040;

WES04: in 2025:

WES05: from 2040 to 2042;

- The open pit WN01 (Normeg deposit) will be mined from 2027 to 2030;
- The deposit at Pump will be mined as follows:

o PUM01: 2031 to 2032;

o PUM02: 2032 to 2035;

o PUM03: 2028 to 2030;

PUM04: in 2036.

The deposit at F Zone will be mined as follows:

o FZO01: 2031 to 2035;

o FZO02: 2033 to 2035:

FZO03: in 2037;

The Discovery open pit DIS01 will be mined from 2031 to 2036.

A conventional truck/shovel operation for both pits is planned with different mining approaches for ore and waste. The mining method must be suited to Arctic conditions and provide a good daily production in waste zones. To maximize the recovery of economic material and minimize dilution in the ore zones, the method must be very selective.

The drill and blast activity will take place using 10 m bench heights, with 165-mm (6.5-inch) diameter holes. The emulsion will be prepared on site by an explosives supplier who will also be responsible for delivering explosives to the bore holes. Once blasted, the rock material will be loaded in rigid trucks by hydraulic excavators.

Rock material will be transported by haul truck to either the primary crusher dump area for ore material or the designated WRSFs for waste rock. Temporary ore stockpiling pads will be sited near the open pits.

No physical surface constraints have been considered in defining the ultimate pit limits within each deposit. The presence of different watercourses located within or near the pit footprints will require some water management including dewatering, drainage and water retention dikes. However, the ultimate pit limits have been controlled by the presence of the underground mine, which limits the deepening of the pits. Potential future pit expansion could interact with and/or be constrained by the development of surface infrastructure such as vent houses and raises that will be installed in the vicinity of the current/final pit walls.

Any water reporting to the open pits will be collected in sumps and ultimately directed to their respective collection pond. Dust will be managed for environmental and safety reasons on pits haul ramps by spraying water whenever needed during the non-freezing periods.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# 4.2.4.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (AEM, 2014).

The open pits are designed to have stable slopes during the mine life and post-closure. At the end of active mining operations, the pits will be flooded, and rock berms will be placed around exposed perimeters of the pits to restrict access and minimize hazards to people and wildlife.

# 4.2.4.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine open pits are listed in Table 4-4 along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and AEM, 2015a).

Table 4-4: Closure Objectives and Criteria - Open Pits

Closure Objective	Closure Criteria	Actions/Monitoring
Access to the pits are limited, for the safety of humans and wildlife	Install physical barriers to limit access	Maintain or construct waste rock berm until pit area is flooded Inspection of berms during flooding period
Allow emergency access and exit during flooding stage	Safe access and route will be established during flooding for inspection and emergency	A plan will be developed to allow for reasonable exit should inadvertent access occur  Proper signage will be installed
The open pit mine walls, slopes and pit shorelines are physically and geotechnically stable or minimize access to unstable areas	Ensure walls and slopes are stable prior to flooding Install physical barriers to limit access	Inspection of berms, walls, slopes and shorelines before and during flooding period  Maintain or construct waste rock berm until pit area is flooded
Meet water quality objectives for any discharge from pits Water quality in flooded pits is safe for humans, aquatic life, and wildlife	The water quality will meet the Water Licence requirements	Water treatment will remain on site until water quality criteria are met Routine monitoring as per the Water Licence requirements
Migration and discharge of contaminated drainage has been minimized and controlled Controlled flooding rate of the open pits	The water quality will meet the Water Licence requirements Ensure safe water level during flooding to avoid uncontrolled discharge Minimize erosion during flooding	Water treatment will remain on site until water quality criteria are met Integrate water management plan and water balance to control flooding rate and water level Routine monitoring as per the Water Licence requirements
Dust levels are safe for people, vegetation, aquatic life, and wildlife	Control dust emissions during active reclamation period	Implement best practices and conduct air quality monitoring during active reclamation period

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report



Closure Objective	Closure Criteria	Actions/Monitoring
Meet Canadian Ambient Air Quality standards	Best management practices for controlling fugitive and exhaust emissions during active reclamation	
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement and traditional knowledge will continue to be implemented in closure planning	Community engagement during closure planning

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- During decommissioning, any contamination associated with vehicle and equipment operations and maintenance should be identified and remediated, as appropriate (from recommendation no. R507);
- Open pits should be backfilled or flooded to the extent practicable to prevent unauthorized access and to protect public safety. In cases where backfilling or flooding is not practically feasible, fencing should be installed to protect the public. In all cases, signs should be posted warning the public of potential dangers associated with the site (from recommendation no. R510);
- The potential for mine water discharges should be assessed. For open pit mines, this may be done using water balance calculations and, in some cases, hydrogeological assessment. Where mine water discharge is predicted, the flow rate should be estimated (from recommendation no. R511);
- Where there is the potential of mine water discharge after mine closure, the quality of the discharge should be predicted. Mine water quality should be assessed once closure has been completed to verify the accuracy of the predictions (from recommendation no. R512);
- Where there is the potential of mine water discharge of poor quality, measures should be implemented to prevent or control that discharge and to collect the mine water for treatment. Prevention methods may include capping of mine openings to prevent mine water discharge (from recommendation no. R513).

#### 4.2.4.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for open pit closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the pit were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Excavate rock and soil slopes will remain stable during closure and post-closure;
- Flood the pit, with natural and pumped inflows;
- Block open pit access routes and control access.

All the options listed above will be required to address closure and reclamation of the open pits. Details on the implementation of those considerations are provided as applicable in the following section.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### 4.2.4.5 Engineering Work Associated with Selected Closure Activity

It is anticipated that it will take approximately seven (7) years to fill all of the open pits with an assumed pumping rate of 78 200 m<sup>3</sup>/day. The assumed pumping rate of 78 200 m<sup>3</sup>/day from Meliadine Lake during closure will have negligible effect to Meliadine Lake when compared to the average outflow rate at the outlet of Meliadine Lake. The pumping rate will be evaluated further to validate that any possible negative effects to Meliadine Lake do not occur. Table 4-5 summarizes the pit volume and expected water elevations at the completion of flooding activities for Meliadine Extension.

**Table 4-5: Pit Flooding Volume** 

Pit ID	Total Pit Volume (m³)	Total Meliadine Lake Volume Pumped (m³)
Discovery	13,441,462	12,500,000
F ZONE01	6,366,823	5,857,908
F ZONE02	1,380,520	1,168,517
F ZONE03	1,617,968	1,318,000
PUMP01	1,005,067	838,800
PUMP02	962,338	754,800
PUMP03	1,686,914	1,380,600
PUMP04	1,223,339	761,200
TIR01 (note 3)	8,811,360	0 (note 1)
TIR02/04	9,483,964	1,752,000 (note 2)
TIR03 (note 3)	1,492,152	1,356,000
WES01 (note 3)	2,653,794	2,349,400
WES02	10,067,130	9,183,846
WES03	3,098,940	2,717,000
WES04	290,583	284,400
WES05	4,641,767	4,194,000
WN01 (note 3)	9,873,504	8,772,000
Total	78,097,626	55,188,471

Notes:

Note 1: TIR01 receives overflow from TIR02/04 at approximately 2000 m<sup>3</sup>/day, so Meliadine Lake water is not required to fill this pit

Note 2: TIR02/04 is also filled via pumping from CP1 (7,731,964 m³), which comprises the majority of the volume.

Note 3: All pits are filled individually until 2051. Closure pit complexes are formed after the pits fill.

Source: Lorax, 2023

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



The water quality model results indicated that water quality in the flooded pits will meet the discharge criteria and post closure treatment will not be required. The water quality within the pits will be monitored during flooding to verify the prediction of the water quality model. The information will be used to develop a strategy to minimize contamination of the regional surface water system (AEM, 2022e).

Overall, the water quality objectives for closure and post-closure will represent baseline conditions or national water quality objectives such as the CCME or site-specific water quality objectives (SSWQO). The final SSWQO that will be applied for closure will be developed prior to closure and presented in the Meliadine Final Closure and Reclamation Plan

The open pit may be hazardous to wildlife species as wildlife may be injured by inadvertent access into the open pit. Wildlife management and protection practices will be implemented to limit wildlife injury and morbidity during closure and post-closure. A rock berm will be constructed around the open pits to limit or prevent access by people and to discourage access by wildlife. The rock berm(s) was selected over a fence based on feedback received from communities in regard to concerns relating to wildlife behavior (AEM, 2015a). Proper signage will also be placed around the flooded pits to mark access points.

The open pits are designed to have stable slopes during the mine life and post-closure. The slopes are monitored as part of mine operations and will be progressively modified as required to maintain stability during closure and post-closure.

#### 4.2.4.6 Predicted Residual Effects

As presented in the Preliminary Closure Plan (AEM, 2015a), the following residual effects are predicted for the open pits after reclamation:

- The flooded open pits will be a permanent feature on the landscape. The impacted vegetation communities that formerly occupied the open pit footprints will be permanently lost;
- Although wildlife species will be discouraged from using the flooded open pits, some may still do so, and they could potentially ingest metals dissolved in the surficial water.

### 4.2.4.7 Uncertainties

The following uncertainties have been identified with respect to closure planning of the open pits:

- The open pit slopes are designed to be stable under operating conditions, but the walls of the open pits will have been exposed for several years during mine operations, therefore the long-term stability of the open pit walls represents an uncertainty in closure planning design;
- While surficial water quality within the flooded open pits is predicted to meet requirements for direct discharge to the environment (Meliadine Lake), actual water quality conditions will not be known with certainty until flooding is complete;
- Flooding rate for filling the open pits at closure, including natural inflows and lake water transfers, will have to be evaluated to determine the length of time to achieve target water levels.

Water quality monitoring will continue during operations to expand the available water quality database and calibrate the predictions. Water quality forecast for pit lake water will continue to be performed to predict the water quality at closure. The water balance and water management will also be reviewed in operation and in closure to estimate the lake water transfer volume required for flooding, as well as the natural inflows, to ensure adequate water levels are maintained into the pits.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# 4.2.4.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following flooding of the open pits as presented by AANDC/MVLWB (2013):

- Monitor water level in pit to confirm closure objectives are being achieved;
- Sample water quality and quantity at controlled pit lake discharge points;
- Inspect aquatic habitat in flooded pits where applicable.

# 4.2.4.9 Contingencies

The water treatment facilities are included as a contingency measure should water on site not be suitable for release to the environment. Water quality monitoring will occur during mine operation to include in the site water quality and to provide additional information for future closure water quality prediction and planning modifications if required. Prior to flooding of the pits, the quality of surface water and any groundwater seepage reporting from the pit walls will be sampled to assess potential for contamination of the pit water during re-filling. Water quality monitoring will continue in closure and post-closure.

If the results of water quality monitoring indicate that water in the flooded open pits is not suitable for direct discharge, in-pit treatment and active treatment prior to discharge into the receiving environment will be considered as contingencies for the treatment of the flooded pit water (AEM, 2015a).

# 4.2.5 Waste Rock Storage Facilities and Overburden

#### 4.2.5.1 Description of the components

As described in the Mine Waste Rock Management Plan (AEM 2022f), the design locations of the WRSFs took into consideration the environmental, social, economic, and technical aspects of waste rock management, including long-term physical stability of the facility, the availability of storage capacity, maintaining minimum distances between the toe of the WRSFs and the open pits, haul and access roads and adjacent lakes.

To achieve the above considerations, the following areas will be utilized for the combined storage of waste rock and overburden material. These areas are located as follows:

- WRSF1: located within the footprint of the approved SP6 WRSF. The area is within the 2014 FEIS footprint. It will be in operation from 2020 to 2043, with the extension occurring in 2025 to be ready to receive material in 2026;
- WRSF3: WRSF3 is increased to the south with the addition of WRSF3\_ext. It will be in operation from 2022 to 2043, with the extension occurring in 2024 to be ready to receive material in 2025;
- WRSF5: Located near approved B4 WRSF. The area is within the 2014 FEIS footprint. It will be in operation from 2025 to 2043;
- WRSF6: Located within the footprint of approved B4 WRSF. The area is within the 2014 FEIS footprint. It will be in operation from 2029 to 2043;

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- WRSF7: Located within the footprint of approved A45 WRSF. The area is within the 2014 FEIS footprint. It will be in operation from 2031 to 2043; and
- WRSF8 and WRSF9: Located northwest of the Discovery pit. The location has changed from that presented in the 2014 FEIS, but the area is smaller than in the 2014 FEIS. They will be in operation from 2032 to 2043.

The WRSFs are designed and operated to minimize the impact on the environment and considering geotechnical stability and geochemical considerations (Tetra Tech, 2023b). The material will be generally transported by truck and end-dumped, following a sequence developed for the operation. Waste rock and overburden will be managed within the same area.

Discovery WRSF (i.e., WRSF8 and WRSF9) contains rock with potential for acid generation or potential to leach metals and will require a thermal cover to reduce potential impacts on the environment.

Although not required for the management of metal leaching and acid rock drainage (ARD) potential, waste rock and overburden will be disposed on land and in a manner that encourages total freezing. Based on experience, it is expected that the material within each pile will freeze within two years of placement, but this needs to be confirmed with thermal analyses. Several thermistors will be placed during operation to confirm the rate of freezing for the various material cells and modify the management if required.

Waste rock generated from the underground mining activities will be separated from the open pit waste rock and stored in a separate WRSF. The underground waste rock will be temporarily stored in a saline WRSF on surface before being brought back underground throughout the mine life. All saline WRSFs will be removed at closure. The four saline WRSF are:

- Saline WRSF 1 at Pump;
- Saline WRSF 2 at F Zone;
- Saline WRSF 3 Discovery; and
- Saline WRSF 4 at Tiriganiaq-Wolf.

Agnico Eagle will continue to adhere to management practices outlined in the Mine Waste Management Plan (AEM, 2022f).

Seepage and runoff water from the WRSFs will be managed by a series of water diversion channels, water retention dikes/berms, and water collection ponds (AEM, 2022f). If the water quality does not meet the discharge criteria as per the Type A Water Licence 2AM-MEL1631 requirement, the collected water will be treated accordingly prior to being discharged to the receiving environment (AEM, 2022f).

# 4.2.5.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (AEM, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

Most waste rock that will be excavated as part of the Meliadine Extension is classified as non-Potentially Acid Generating (non-PAG) except for the Discovery deposit. Overall, 63% of Discovery open pit waste rock is classified as PAG or Uncertain. The ARD potential associated with Discovery open pit waste rock will be mitigated through progressive construction of a thermal cover on WRSFs 8 and 9. All the underground waste

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report



rock produced at Discovery will be backfilled into the mine underground and flooded at mine closure, eliminating the ARD potential associated with Discovery underground waste

# 4.2.5.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine waste rock storage facilities are listed in Table 4-6, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB, 2013 and AEM, 2015a).

Table 4-6: Closure Objectives and Criteria – Waste Rock Storage Facilities

Closure Objectives	Closure Criteria	Action / Measurements
The pile is physically and geotechnically stable for human and wildlife safety in the long-term: minimize erosion, thaw settlement, slope failure, collapse, or the release of contaminants or sediments	The WRSFs are designed for closure and will account for seismic and permafrost conditions	Ensure proper design and stable slopes Physical and geotechnical inspection by a qualified engineer Thermal monitoring
Build to blend in with current topography, be compatible with wildlife use, and/or meet future land use targets	Limit WRSFs elevation to blend into local topography WRSFs at post-closure will not compromise wildlife safety and safe land use	Ensure proper design and stable slopes Physical and geotechnical inspection by a qualified engineer
Generation of poor water quality has been minimized, including ARD/ML Confirm runoff and seepage from the WRSFs meet water licence criteria Surface runoff and seepage water quality is safe for humans and wildlife	The runoff and seepage from the WRSFs will continue to be collected in the designated collection ponds and pumped to CP1 for treatment in the WTP, as per operational practices, until monitoring results demonstrate that water quality conditions from the WRSFs are acceptable for direct discharge	The runoff and seepage from the WRSFs will continue to be collected and monitored as needed and transferred to CP1 for treatment Routine water quality monitoring and sampling Physical inspection, thermal monitoring
Dust levels are safe for people, vegetation, aquatic life, and wildlife in the long-term	Best management practices for controlling dust during active reclamation	Implement best management practices as during operation Routine air quality monitoring
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement will continue to be implemented	Public engagement

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

Carry out detailed inspections and assessments of waste rock piles. The objective of these inspections and assessments is to evaluate the actual performance against design projections related to anticipate post-closure conditions. (from recommendation no. R524);

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report



- Conduct a comprehensive risk assessment for mine closure to evaluate the long-term risks associated with possible failure modes for waste rock piles. Identify possible impacts and critical parameters and develop control strategies. If warranted, implement a long-term monitoring plan. (from recommendation no. R525/526);
- Re-evaluate, and revise as necessary, plans for the management of waste rock to prevent, control and treat metal leaching and acidic drainage to ensure that they are consistent with the objectives and plans for mine closure and post closure. If warranted, implement a long-term site-specific monitoring program (from recommendation no. R527/538).

#### 4.2.5.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for rock storage facilities closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the WRSFs were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Construct the WRSFs in lifts with slopes where individual lifts can be set back to provide long-term stability;
- Controlled runoff water by having sediment collection ponds where required for use during operation and possibly for the initial portion of the closure phase until seepage water quality is proven to be acceptable and stable:
- Design and operate the WRSF during operation to promote permafrost.
- Approximately 80% of the Discovery WRSF (i.e., WRSF8 and WRSF9) thermal cover will be progressively reclaimed during the operations period, and the remaining 20% will be placed during the active closure period.

## 4.2.5.5 Engineering Work Associated with Selected Closure Activity

The description of the closure activities for the WRSFs as presented herein is taken from the Mine Waste Management Plan (AEM, 2022f).

Reclamation of the WRSFs will use currently accepted management practices and appropriate mine closure techniques that will comply with accepted protocols and standards. Except for WRSF8 and WRSF9 at Discovery, geochemical testing indicates that the waste rock and overburden from the Tiriganiag / Wesmeg / Normeg / Pump / F-Zone areas are non-potentially acid generating (NPAG) and non-metal leaching (NML). Kinetic tests completed on all waste rock type and at various scales show that drainage water quality is expected to meet MDMER monthly mean effluent limits, including results for arsenic. Therefore, a closure cover system is not proposed for these WRSFs (AEM, 2022f).

The Discovery WRSFs (i.e., WRSF8 and WRSF9) contain rock with potential for acid generation or potential to leach metals and will require a thermal cover to reduce potential impacts on the environment (AEM, 2022f).

The WRSFs were designed for long-term stability and no additional re-grading will be required at closure. Reprofiling could be required if waste rock material is excavated for reclamation work such as TSF cover or rock berms around the open pits.

The contact water management system for the WRSFs will remain in place until mine closure activities are completed and that monitoring results demonstrate that water quality conditions from the WRSFs are

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report



acceptable for discharge to the environment with no further treatment required. Once water quality meets the discharge criteria established through the water licensing process, the water management infrastructures will be decommissioned to allow the water from the WRSFs to naturally flow to the receiving environment (AEM, 2022f).

Overall, the water quality objectives for closure and post-closure will represent baseline conditions or national water quality objectives such as the CCME or site-specific water quality objectives (SSWQO). The final SSWQO that will be applied for closure will be developed prior to closure and presented in the Meliadine Final Closure and Reclamation Plan.

Dust suppression measures, which are typical of the current mine practices and consistent with best management practices, will be considered through design, operation and closure phases to control the dust. Dust is expected to be a minor issue during the operation of the WRSFs as the waste rock produced at the mine generally comprises large pieces of rock that is not be susceptible to wind erosion. The overburden will be surrounded by waste rock in the WRSFs; therefore, dusting is not expected to be an issue. The need for dust control at closure will be further evaluated during closure activities.

It is anticipated that the native lichen community will naturally re-vegetate the surface of the WRSFs over time.

All saline WRSFs will be brought back underground at closure (AEM, 2022f).

### 4.2.5.6 Predicted Residual Effects

The following residual effects are predicted at the WRSFs after reclamation:

- The WRSFs will be permanent features on the landscape. The vegetation communities which formerly occupied the areas will be permanently lost but it is expected that some of the native community will re-vegetate the WRSFs cover surface over time;
- No significant adverse impact on the continued opportunity for traditional and non-traditional use of wildlife in the region is anticipated with the closure of the WRSFs;
- Runoff from the WRSFs will eventually be discharged in the receiving environment, once water quality demonstrates that water flowing from the facilities is acceptable for direct release. It is predicted that concentrations will meet discharge criteria.

## 4.2.5.7 Uncertainties

The thermal conditions within the WRSFs will depend on the actual waste placement plan and schedule, initial waste temperatures when placed, and thermal conditions of the original ground before the waste materials are placed. Therefore, thermistors will be installed in each WRSFs to monitor the rate of freeze back and permafrost development in the facilities (AEM, 2022f). Thermal monitoring will be done during operation and closure.

The WRSFs will be allowed to naturally re-vegetate. It is anticipated that the native lichen community will naturally re-vegetate the surface over time. As part of a research project at Meliadine, re-vegetation studies will be completed to assess the potential for vegetation on rockfill surfaces.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## 4.2.5.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring and maintenance strategies for the WRSFs as presented by AANDC/MVLWB (2013):

- Periodic inspections will be performed by a geotechnical engineer to visually assess stability and performance of the WRSFs. Geotechnical monitoring will be carried out during all stages of the mine life, including closure and post-closure, to demonstrate geotechnical stability and the safe environmental performance of the facilities. If any non-compliant conditions are identified throughout the process, corrective measures will be completed to ensure stability of the structures;
- Ground conditions in the WRSFs will be monitored to confirm permafrost conditions are being established as predicted;
- The placed waste rock and overburden are expected to freeze back, and permafrost is likely to develop within the WRSFs with time. Thermistors will be installed in each WRSF to monitor the rate of freeze-back and permafrost development progress in the facilities during closure;
- Water quality from the WRSFs will be monitored to confirm that drainage is performing as predicted and is not adversely affecting the environment;
- Any seepage areas from the toe of the WRSFs will be identified and monitored.

# 4.2.5.9 Contingencies

The contact water management system for the WRSFs will remain in place until mine closure activities are completed, and monitoring results demonstrate that water quality conditions from the WRSFs are acceptable for the discharge of all contact water to the environment with no further treatment required. Treatment systems will remain on site until suitable water quality is reached.

#### **Tailings Storage Facilities** 4.2.6

#### 4.2.6.1 Description of the components

The tailings storage facility at Meliadine consists in a dry stack tailings. Dry stack tailings produced in the mill at Meliadine are trucked to either the TSF or to the paste plant for use underground as backfill. The tailings are spread out at the TSF and compacted into thin lifts using a dozer and vibratory compactor.

The TSF is located on high ground west of the mill and east of Lake B7, as shown in Figure 2-2. The direct distance from the mill to the tailings stack ranges from 400 to 800 m. The minimum setback distance from the edge of Lake B7 is approximately 150 m.

The TSF is designed and will be extended to accommodate approximately 51.6 Mt of tailings (AEM, 2022f). The TSF will be constructed using a cell-by-cell approach to limit the active deposition area such that dust generation, and surface erosion can be effectively managed and progressive reclamation and closure of the TSF can be conducted during the operation phase. The current cover system for the TSF includes a layer of waste rock on the slopes and a layered combination of waste rock and overburden on the crest (AEM, 2022f).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Based on the properties of the tailings and TSF operation parameters, the TSF has a capacity for 31.3 Mm<sup>3</sup> (51.6 Mt) of filtered tailings (Tetra Tech. 2023c).

Commissioning of the process plant started near the end the fourth quarter of 2018 and actual production commenced early in the second quarter of 2019. The production schedule, quantities, and distribution of tailings by year are presented in Table 2-2. Generally, deposition at the TSF consists of the following sequence (AEM, 2022f):

- The filtered tailings are hauled to the TSF with haul trucks, end dumped, and placed into lifts of maximum height 0.3 m using a dozer. Each tailings lift is then compacted using a vibratory drum roller. This compaction is intended to promote runoff, reduce the potential for oxygen ingress and water infiltration, and maintain geotechnical stability.
- A starter waste rock berm was initially placed along the outside perimeter to contain the initial lifts of the tailings; the berm will become a part of the closure cover. Additional lifts of compacted waste rock (with a maximum lift thickness of 1 m) are placed as the tailings surface is brought up as erosion and thermal protection. Safety berms are placed on each lift of the waste rock that also help to reduce dust generation from the tailings surface.
- Surface water or excess snow/ice is removed from the natural ground within the footprint prior to tailings placement.

To promote freeze-back, the initial lift of tailings over original ground is placed during winter conditions. An adaptive, performance-based management approach has been used at the TSF to adapt the yearly deposition strategy to actual mill and paste plant production quantities.

The TSF is located within the catchment of Lake B7 with a small portion straddling the water catchment of CP1. Site contact water from the TSF is collected by the perimeter water management system located to the northwest and south of the TSF. Seepage and runoff from the TSF will be collected within the CP1 catchment area and in SP6. The contact water quality and the water management structures for the TSF will be monitored and assessed according to the Type A Water License 2AM-MEL1631 during operation, closure and post-closure periods.

# 4.2.6.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (AEM, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

The progression of tailings deposition at Meliadine Mine is and will continue to be provided as part of the Annual Report.

As the tailings reach final elevation, the tailings will be progressively encapsulated with either waste rock or a layered combination of waste rock and overburden.

### 4.2.6.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine TSF are listed in Table 4-7, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and AEM, 2015a).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Table 4-7: Closure Objectives and Criteria – Tailings Storage Facilities

Closure Objectives	Closure Criteria	Action / Measurements
Remnant embankments and surfaces of tailings containment areas are physically and geotechnically stable in the long-term	The TSF is designed for closure and will account for seismic and permafrost conditions  A cover is placed during operation and closure for dust control (wind erosion), stability and water infiltration	Place cover in progressive reclamation and closure Physical /geotechnical inspection by a qualified engineer Monitoring
Surface runoff and seepage water quality is safe for humans and wildlife Ensure runoff and seepage is collected	Ensure runoff and seepage from the TSF is collected and meet water licence criteria for direct discharge	The runoff and seepage from the TSF will continue to be collected as needed and monitored as per operational practices, and until monitoring results demonstrate that water quality is acceptable for direct discharge Routine water quality monitoring and sampling Physical inspection
Ensure the TSF is safe for monitoring and physical inspections	TSF at post-closure will not compromise people's health	Ensure stability of the TSF Routine monitoring and physical inspection
Control dust generation from active reclamation activities  Dust levels are safe for people, vegetation, aquatic life, and wildlife in the long-term	Best management practices for controlling dust, fugitive and exhaust emissions during active reclamation	Implement best management practices Routine air quality monitoring
Be compatible with wildlife use, and/or meet future land use targets	TSF at post-closure will not compromise wildlife safety TSF will be covered	Place cover in progressive reclamation and closure Physical /geotechnical inspection by a qualified engineer Routine monitoring and physical inspection
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement will continue to be implemented	Public engagement

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

Carry out detailed inspections and assessments of Tailings Storage Facilities. The objective of these inspections and assessments is to evaluate the actual performance against design projections related to anticipate post-closure conditions (from recommendation no. R524);

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- Conduct a comprehensive risk assessment for mine closure to evaluate the long-term risks associated with possible failure modes for Tailings Storage Facilities. Identify possible impacts and critical parameters and develop control strategies (from recommendation no. R525). If warranted, implement a long-term monitoring plan (from recommendation no. R526);
- Re-evaluate and revise as necessary plans for management of tailings to prevent; and control and treat metal leaching and acidic drainage to ensure that they are consistent with the objectives and plans for mine closure and post closure (from recommendation no. R527). If warranted, implement a long-term site-specific monitoring program (from recommendation no. R528).
- At all mines that exist in permafrost conditions, downstream slopes of tailings containment structures should be revegetated (from recommendation no. R529).

## 4.2.6.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for the TSF closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the TSF were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Construct a cover system to prevent surface erosion and create a stable landform in the long-term;
- Collect water that does not meet the discharge criteria for treatment.

The closure options considered different approaches to achieving a stable configuration for the TSF. Placing the cover in a progressive manner is considered the most appropriate approach to achieving a stable configuration for the TSF. The runoff and seepage from the TSF will continue to be collected as needed and monitored as per operational practices. Water treatment facilities will remain on site during closure if required, until water quality meets discharge criteria.

### 4.2.6.5 Engineering Work Associated with Selected Closure Activity

Mine closure and reclamation of the TSF will utilize best management practices and appropriate mine closure techniques that will comply with recognized protocols and standards. Results of geochemical characterization indicates that most of the tailings produced to-date at the mine are either PAG or uncertain, while ML has not been observed to be an issue. Despite the PAG classification, the TSF is not considered to pose an ARD risk due to the placement methodology used, assumption of freeze-back within the facility and progressive reclamation cover placement (AEM, 2020c). Freeze-back of the tailings and cover placement are management actions being taken to ensure water from tailings does not impact the receiving environment.

The closure plan for the TSF is to progressively place an engineered cover over the tailings surface as the tailings deposit reaches the ultimate elevation 80% of the cover system will be placed during operations and the reminder 20% during the first years of active closure. The proposed closure cover includes:

- A minimum thicknesses of 4.5 m waste rock cover over the lower toe of the final tailings side slopes and a minimum thicknesses of 4.0 m waste rock cover over the upper side slopes, placed during operation along with tailings deposition;
- A minimum thicknesses of 2.5 m waste rock cover over 0.5 m thick select overburden till fill over the top surface of final tailings. The top closure cover material will be placed when each cell reaches its operational capacity and sloped 4% to discourage ponding and surface infiltration.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Waste rock cover will consist of 600 mm minus NPAG waste rock. Select overburden till will be placed and compacted over the top surface of the tailings, in unfrozen conditions. The till material is intended to reduce surface infiltration and will meet the following specifications:

- Inorganic, sandy silt or silty sand with a fines content of 20% to 60% and maximum particle size of 300 mm;
- Placed in an unfrozen condition and have a minimum thickness of 0.5 m.

About 0.1 Mt of selected ice-poor overburden will be stored in a temporary overburden stockpile as TSF closure cover material.

The contact water management system for the TSF will remain in place until mine closure activities are completed, and monitoring results demonstrate that water quality conditions from the TSF are acceptable for the discharge of all contact water to the environment with no further treatment required. Once the water quality meets the discharge criteria established through the water licensing process, the TSF water management infrastructure will be decommissioned to allow the water to naturally flow to the receiving environment (Tetra Tech, 2023 and AEM, 2022f).

Overall, the water quality objectives for closure and post-closure will represent baseline conditions or national water quality objectives such as the CCME or site-specific water quality objectives (SSWQO). The final SSWQO that will be applied for closure will be developed prior to closure and presented in the Meliadine Final Closure and Reclamation Plan.

An adaptive closure strategy has been adopted for the Meliadine Mine. The preliminary closure cover design adopted for the TSF at this stage will be further evaluated and updated based on the TSF performance monitoring, water quality monitoring and evaluation, and the overall mine closure plan. The final closure cover design for the TSF will be developed before mine closure (AEM, 2020c, 2022f).

Dust suppression measures, which are typical of the current mine practices and consistent with best management practices, will be considered through design, operation and closure phases to control the dust. The surface compaction of the filtered tailings lifts and limiting traffic over the compacted surface will significantly reduce the potential for wind erosion of the tailings surface. The placement of the engineered cover will also help prevent dust production. TSF will be operated by cells to limit the tailings surface area exposed to wind and facilitate progressive closure for the cover.

It is anticipated that the native lichen community will naturally re-vegetate the TSF cover over time (AEM, 2015a).

## 4.2.6.6 Predicted Residual Effects

The following residual effects are predicted at the TSF after reclamation (AEM, 2015a):

- The TSF will be a permanent feature on the landscape. The vegetation communities which formerly occupied the areas will be permanently lost but it is expected that some of the native community will re-vegetate the TSF cover surface over time;
- No significant adverse impact on the continued opportunity for traditional and non-traditional use of wildlife in the region is anticipated with the closure of the TSF.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



### 4.2.6.7 Uncertainties

The main uncertainties for the closure planning of the TSF are related to the cover design, the water quality from the TSF, the permafrost development and the re-vegetation.

During Post Closure, mining activity will have ceased, and mine site waterbodies will begin to discharge passively. In the absence of mining activities, TSS is expected to return to relatively low baseline values of <3 mg/L. Due to the low TSS baseline conditions, total and dissolved concentrations are anticipated to be similar during Post Closure. Hence, model results are developed assuming that total concentrations are equal to dissolved concentrations.

Summary statistics are presented for key collection ponds and pit lakes during Post Closure, with comparison to terrestrial (SP6 only) and aquatic guidelines are presented in AEM (2022e). Parameters predicted to be above applicable guidelines include As, Cu, Se, P and NH3. Of these parameters, P shows elevated concentrations in natural runoff and is not considered a mine related POPC in Post Closure (Lorax, 2023). Among the 15 model nodes modelled, only the following 5 showed Post Closure predictions above applicable guidelines for mine related POPCs.

- SP6: flooded with Meliadine Lake water during Active Closure, with increasing concentrations of As, Cu, and Se (to a lesser extent) predicted during Post Closure. The elevated concentrations in SP6 are due to the surrounding catchment being dominated (68% of total catchment area) by mine waste facilities (TSF and WRSF1). It is assumed that SP6 is not re-established as aquatic habitat but remains accessible to terrestrial life. In this regard, As represents the only POPC with Post Closure predictions above the terrestrial/aquatic guideline of 0.025 mg/L.). Additional monitoring data collected through the life of mine will be used to update these closure and post-closure predictions for the Final Closure and Reclamation Plan.
- CP7: flooded with Meliadine Lake water during Active Closure, with Cu and Se identified as POPCs during Post Closure. Loading of these POPCs originates from runoff and interflow from WRSF7 and show concentrations above guidelines periodically from 2058 onwards. Additional monitoring data collected through the life of mine will be used to update these closure and post-closure predictions for the Final Closure and Reclamation Plan.
- PUMP01: dewatered to Itivia Harbour via the Waterline at beginning of Active Closure then flooded with Meliadine Lake water, with NH3 identified as the only POPC. Changes in Active Closure water management could reduce initial NH3 prediction which are currently predicted to modestly exceed the 0.58 mg/L guideline at the beginning of Post Closure (2051 to 2055). Additional monitoring data collected through the life of mine will be used to update these closure and post-closure predictions for the Final Closure and Reclamation Plan.
- · WES04: dewatered to Itivia Harbour via the Waterline at beginning of Active Closure then flooded with Meliadine Lake water. The WES04 pit lake is predicted to show an increasing trend in most parameters due to Evapo-concentration (e.g., evaporation > runoff and precipitation). This trend leads to predicted Cu concentrations increasing to above the guideline beginning in 2063. Additional monitoring data collected through the life of mine will be used to update these closure and post-closure predictions for the Final Closure and Reclamation Plan.
- TIRI Pit Lake: predicted to show an increasing trend in most parameters owing to drainage from SP6, with only Se increasing to above the AEMP guideline starting in 2110 near the end of model horizon. Additional

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



monitoring data collected through the life of mine will be used to update these closure and post-closure predictions for the Final Closure and Reclamation Plan.

In natural lakes located downstream of mine discharges (e.g., Lake A8 West), P is the only parameter with concentrations above AEMP guideline. Similar to the 2022 FEIS Base Case model (Lorax, 2022a), the predicted P concentrations in these receiving lakes are similar to the baseline total P concentrations for noncontact areas.

The cover design will consider infiltration and potential metal loadings in surface runoff. If necessary, water quality analysis through hydrogeological (groundwater) modelling, unsaturated flow modelling in the cover layer, and field trials will be undertaken to assess the water quality from the TSF at closure (AEM, 2015a). The water quality modelling will be completed during operations and will be considered in the design of the final closure concept for the TSF. The models will be calibrated using operational monitoring data.

The thermal conditions within the TSF will depend on the actual tailings placement plan and schedule, tailings temperatures when placed, and thermal conditions of the original ground before the tailings are placed. Based on ground temperatures and climate data for the Meliadine Mine, it is anticipated that the TSF will freeze back in the long term. Tailings placement strategies will be adopted during mine operation to promote freeze back. Thermistor cables will be installed in the TSF to monitor the permafrost development progress within the facility during the operations stage.

It is anticipated that the native lichen community will naturally re-vegetate the TSF cover over time. As part of a research project at Meliadine, re-vegetation studies will be completed to assess the potential for vegetation on the TSF cover surface.

# 4.2.6.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring and maintenance strategies for the WRSFs as presented by AANDC/MVLWB (2013):

- Periodic inspections will be performed by a geotechnical engineer to visually assess stability and performance of the TSF;
- Ground conditions in the TSF will be monitored to confirm permafrost conditions are being established as predicted;
- Thermistor data will be monitored to determine thermal conditions within the TSF to confirm predicted permafrost aggradation;
- Water quality from controlled discharge points around the TSF will be monitored to confirm that drainage is performing as predicted and is not adversely affecting the environment; and
- Any seepage areas from the toe of the TSF will be identified and monitored.

# 4.2.6.9 Contingencies

The contact water management system for the TSF will remain in place until mine closure activities are completed, and monitoring results demonstrate that water quality conditions from the TSF are acceptable for the discharge of all contact water to the environment with no further treatment required. Treatment systems will remain on site until suitable water quality is reached.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Freeze-back of the tailings and cover placement are management actions being taken to ensure water from tailings does not impact the receiving environment. Monitoring will continue until freeze-back of the tailings has been achieved.

## 4.2.7 Water Management Structures

#### 4.2.7.1 Description of the components

The approved Meliadine Mine (2014 FEIS, and 2018 FEIS Saline Effluent to Marine Environment, and 2020 FEIS) will continue to be used in addition to the Meliadine Extension water management infrastructures presented herein.

The required water management infrastructure (i.e., dikes, berms, sumps, diversion channels, pumps/pipelines etc.) for the Meliadine Extension were assessed and sized based on the overall site water and waste management plans and the results of the water balance and water quality. The required water management infrastructure for the Meliadine Extension include the following:

- Eleven water retention dikes including Dikes D-SP6North, D-SP6West, D-B5North, D-B5South, D-CP8North, DCP8West, D-CP8South, D-CP8East, D-A8North, D-A8South, and D-A6;
- Eight water collection ponds including contact water ponds CP7, CP8, CP9, CPD1, CPD2, and saline ponds SP5, SP6, and SPD1;
- Twelve water diversion channels including Channels 11 to Channel 22;
- Seven sumps including Sump P1, Sump P2, Sump P3, Sump P4, Sump P5, Sump F1, and Sump F2;
- Two water diversion berms including Berm-D1 and Berm-D2;
- Five thermal protection berms including Berm-P5, Berm-CP7, Berm-F2, Berm-CPD2, and Berm-SP5:
- Various pump and pipelines; and culverts as required.

### Water Retention Dikes and Thermal Berms

Consistent with the approved design, the dikes and thermal berms of Meliadine Extension were designed in accordance with the recommendations provided in the CDA Dam Safety Guidelines (CDA 2013 and 2014)

### **Diversion Channels**

Consistent with the approved design, Meliadine Extension diversion channels were designed to divert the natural run-off and contact water towards collection ponds and sumps that will be subsequently pumped to the main CPs and SPs. The diversion channels were designed to pass extreme intensity flow and rain events.

Table 4-8 presents a summary of the proposed water management infrastructures for Meliadine Extension.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



**Table 4-8: Proposed Meliadine Extension Water Management Infrastructure** 

Water Management Infrastructure Type	Nomenclature	Location and Operational Function
	Dike D- SP6North	Located north of SP6. D-SP6North will be used to contain saline water from the TSF and prevent the saline water from flowing to the downstream receiving environment.
	Dike D- SP6West	Located in the narrow between SP6 and Lake B6. D-SP6West will be used to contain saline water from the TSF and prevent the saline water from flowing into downstream dewatered Lake B6.
	Dike D-B5North	Located north of WN01 open pit within dewatered Lake B5. D-B5North will be used to divert runoff from flowing into WN01 pit.
	Dike D-B5South	Located south of WN01 open pit within dewatered Lake B5.  D-B5South will be used to collect runoff from B5 south catchment and portion of runoff from WRSF5.
	Dike D- CP8North	Located in the narrow between CP8 and Lake B5.  D-CP8North will be used to contain contact water stored within CP8 and prevent the contact from flowing to the dewatered Lake B5.
Dike	Dike D- CP8South	Located within the narrow of CP8 and B45. D-CP8South will be used to contain contact water stored within CP8 and prevent the contact from flowing to the downstream receiving environment.
	Dike D- CP8West	Located in the narrow between CP8 and B3. D-CP8West will be used to contain contact water stored within CP8 and prevent the contact from flowing to the downstream receiving environment.
	Dike D- CP8East	Located west of PUM01 open pit. D-CP8East will be used to contain contact water stored within CP8 and prevent the contact from flowing into PUM01 open pit.
	Dike D-A8North	Located south of WES03 open pit. D-A8South will be used to divert runoff from flowing into WES03 open pit.
	Dike D-A8South	Located north of PUM02 and PUM04 open pits. D-A8South will be used to divert runoff from flowing into PUM02 and PUM04 open pits.
	Dike D-A6	Located southwest of FZO01 open pit. D-A6 will be used to divert contact water from Lake A6 from flowing into FZO01 open pit.
Berm	Berm-D1	Located west of Saline WRSF3 and industrial pad. Berm-D1 will be used to divert contact water from Saline WRSF3, industrial pad, and saline water from Saline WRSF3 and prevent the contact from flowing to the downstream receiving environment.
	Berm-D2	Located downstream of WRFS8 to divert the runoff water from WRSF8 to CPD1 during operation.
	Berm-P5	Located in the narrow between Sump P5 and Lake B46.  Berm-P5 will be used as thermal protection berm for Sump P5.
Thermal Berm	Berm-CP7	Berm-CP7 will be used as a thermal protection berm for CP7 to reduce seepage to F Zone open pits from CP7.
Thomas Bonn	Berm-F2	Located between Lake A6 and Sump F2. Berm-F2 will be used as thermal protection berm for Sump F2.
	Berm-CPD2	Located north of CPD2. Berm-CPD2 will serve as a thermal protection berm to control the seepage flow from CPD2 to downstream (CH6).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Water Management Infrastructure Type	Nomenclature	Location and Operational Function	
	Berm-SP5	Berm-SP5 will serve as a thermal protection berm to control the seepage flow from SP5 to Lake D4.	
	Channels 11, 12 and 13 Channels 14,15, and 16	Channels 11 and 12 to divert contact water from WRSF6 towards Sumps P1 and P2. Channel 13 to divert contact water from WRSF6 towards Sump P5. Channel 14 and Channel 15 to divert contact water from WRSF7 towards Sump F1. Channel 16 to divert contact water from F Zone Ore Pad and Saline WRSF2 towards Sump F2.	
Channel	Channels 17,18  Channels 19, 20, and 21	Channels 17 and 18 to divert contact water from Saline WRSF3, ore pad, industrial pad, and fuel pad towards the downstream SPD1.  Channels 19 is to divert contact water from WRSF8 towards CPD1.  Channels 19 and 20 to divert contact water from WRSF9 towards CPD2.	
	Channel 22	Located east side of WRSF5 to divert the runoff water from east slope of WRSF5 to CP9 or PUM01 open pit and prevent the runoff water from flowing to the dewatered Lake A8 area.	
	Sumps P3 and P4	Sumps P3 and P4 to collect saline contact water from Saline WRSF2 at Pump.	
Sump	Sump P1, Sump P2, and Sump P5	Sumps P1 and P2 to collect contact water from WRSF6 that has been diverted by Channels 11 to 12.  Sump P5 will be used to contain contact water from the Pump Ore Pad and WRSF6 and prevent the contact from flowing to the downstream receiving environment.	
	Sump F1	Sump F1 to collect contact water from WRSF7 that has been diverted by Channel 14 and Channel 15.	
	Sump F2	Sump F2 to collect saline water from F Zone Ore Pad and Saline WRSF2 that has been diverted by Channel 16 and saline water from F Zone Underground mining.	
Culverts	To be determined For water conveyance through haul roads and access roads.		

Source: Tetra Tech, 2022

Other water management systems of Meliadine Extension include the following components:

- A water treatment complex (WTC) building hosting the EWTP and SETP-WTC;
- A sewage treatment plant (STP);
- A potable water treatment plant (WTP);
- A network of surface pumps and pipelines;
- A freshwater intake;
- Jetties and pumping infrastructure at selected collection ponds;
- An effluent diffuser located in Meliadine Lake;

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- A waterline to convey saline contact water to Itivia Harbour. 80 to 90% of the waterline shall be covered:
- An effluent diffuser located in Itivia Harbour; and
- A waterline along the Discovery Road. 80 to 90% of the waterline shall be covered.

Meliadine Extension water management infrastructures have been updated as part of the NWB Type-A Water Licence amendment application process.

## 4.2.7.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (AEM, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

The water management components are required during the operation phase of the Meliadine Mine and Meliadine Extension. The water management objectives are to minimize potential impacts to the quantity and quality of surface water at the Mine. Water management structures are in place or will be constructed as needed during operation to contain and manage the contact water from the areas affected by mining activities. All mining components have been located to avoid or minimize impact on the local environment to the extent possible.

All water management facilities will be decommissioned at different stages of closure, the open pits will be flooded, and natural drainage will be restored as much as possible. Once the underground mining activities are completed, the source of saline groundwater will be eliminated.

### 4.2.7.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the dikes and dams are listed in Table 4-9, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and AEM, 2015a).

Table 4-9: Closure Objectives and Criteria – Water Management Structures

Closure Objectives	Closure Criteria	Action / Measurements
Ensure physical stability of residual earth structures for environmental, human, and wildlife safety	Stabilize slopes to minimize erosion, failure and slumping Ensure long-term stability	Routine monitoring and sampling Physical and geotechnical inspection
Dismantle and remove as much of water management systems as possible and restore natural or establish new drainage patterns	Re-establish natural grade and drainage where possible Runoff is channelled through the watershed Restore natural/compatible terrain as much as possible	Dismantle all water management systems Surface will be regraded to promote natural drainage Physical inspection, routine monitoring and sampling
The systems are dismantled and removed/disposed of (i.e. pipelines, culverts, pump systems).	Remove all components above ground or buried	Components or materials will be cleaned up and salvageable materials removed, shipped or disposed at the landfill Concrete slabs on grade will be perforated and covered or removed

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Closure Objectives	Closure Criteria	Action / Measurements
		and the area re-graded to avoid erosion and promote natural drainage Physical inspection to confirm removal
Remove all hazardous wastes to avoid contamination	All hazardous wastes are removed and disposed properly	Hazardous wastes will be removed for disposal by Licenced handler as per operation practices
Meet water quality objectives for the site surface water	Water licence criteria for direct discharge to the receiving environment	Routine monitoring of water quality as per the Water Licence requirements
Remove treatment facilities when water treatment is no longer required	Water licence criteria for direct discharge to the receiving environment Collected runoff and seepage will be treated until water quality meets licence criteria for direct discharge When water quality from the mine components is deemed suitable for direct discharge to the environment berms and dikes will be breached	Dismantle all water management and treatment systems when possible Routine monitoring of water quality as per the Water Licence requirements
Stable release of water discharge to the environment is maintained at designated discharge points	Maintain water management components until they are no longer required Long term water management structures are properly designed for long term stability	Design and construct structures for long term water management with adequate dimensions at proper locations  Routine monitoring and inspection
Return area to its original state or to a condition compatible with the end land-use targets	Remove all facilities and restore natural/compatible terrain as much as possible	Dismantle and reclaim all infrastructure, regrade surface to promote natural drainage Physical inspection to confirm removal, routine monitoring
Discourage wildlife from entering the facilities	Wildlife will be discouraged from entering the facilities until water quality is acceptable	Limit access to facilities with berms Routine monitoring and sampling
Systems are physically and geotechnically stable for the safety of humans and wildlife	Limit access until water quality is acceptable and meet required criteria	Place berms and signs to limit access Physical inspection
Consider community land use expectations and traditional knowledge	Community engagement will continue to be implemented	Public engagement

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

Support infrastructure, such as fuel storage tanks, pipelines, conveyors and underground services, should be removed (from recommendation no. R517).

#### Consideration of Closure Options and Selection of Closure Activities 4.2.7.4

Considerations for the water management facilities closure are provided by the AANDC/ MVLWB (AANDC/ MVLWB, 2013). Closure activities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- For any water management structures that may be required post-closure, select design parameters to reflect the need to maintain stability in the long term;
- Design water management systems to minimize the migration of potential contaminants;
- Treat non-compliant water in storage and subsequently release upon achievement of discharge criteria:
- Open and level/contour of embankments, berms, dikes and culverts not required for long-term use and restore the pre-disturbance drainage network to the extent possible;
- Locate permanent spillways in competent rock or material;
- Drain and backfill all sumps and collection trenches;
- Drain, dismantle, and remove tanks and pipelines from the site;
- Ensure any remnant embankments or other water management structures have appropriate erosion control measures in place to maintain stability post-closure;
- Stabilize embankments by removing weak or unstable materials from slopes and foundations and/or construct toe berms to flatten overall slope;
- Open water retention dams and drain impoundments, avoid post closure impoundment of water when possible.

All the options listed above will be required to address closure and reclamation of the water management system. Details on the implementation of those considerations are provided as applicable in the following section.

#### 4.2.7.5 Engineering Work Associated with Selected Closure Activity

During mine closure, the water management infrastructure on site will remain in place until mine closure activities are completed, and monitoring demonstrates that the water quality is acceptable for environmental discharge without treatment. Once water quality meets the discharge criteria, the water management systems will be decommissioned to allow the water to naturally flow to the environment.

The containment ponds, dikes and berms will remain in place to collect the surface runoff water and seepage from the mine until the water quality meets discharge criteria. Once the water quality meets discharge criteria,

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



dikes/berms will be breached to allow runoff to follow natural (topographically induced) flow paths. Dikes/berms breaching will involve the removal of a portion of the dikes to a minimum depth of 1 m below average water level or back to original ground levels. Consideration will be given to breach staging, with the above water portions of the dike/berm in the breach area removed during winter periods, when there will be little surface water flow, thereby minimizing the potential release of sediments to the neighboring waterbodies. The remainder of the breach would be conducted during the open water season following freshet. Turbidity curtains would be deployed to minimize any potential sediment release to surface water (AEM, 2022e).

Once monitoring results have indicated that contact water conveyed in channels and sumps meets acceptable water quality, the infrastructure will be graded and/or surface treated according to site specific conditions to minimize wind-blown dust and erosion from surface runoff, if required. This closure activity is intended to enhance site area development for re-colonization by native plants and wildlife habitat (AEM, 2022e).

Culverts will be maintained as required in closure until site water quality monitoring results indicate that water can be released to the environment without further management and without erosion. Culverts on site will be dismantled and disposed of in the on-site landfill and the areas will be re-graded to promote natural drainage.

The long-term, post-closure water quality in the containment ponds and in the flooded open pit lakes are anticipated to meet Metal and Diamond Mining Effluent Regulations (MDMER), Canadian Council of Ministers of the Environment Water Quality Guidelines (CCME-WQG) for the protection of aquatic life and/or the Site-Specific Water Quality Objectives (SSWQO) developed for the Mine (AEM, 2022e).

Overall, the water quality objectives for closure and post-closure will represent baseline conditions or national water quality objectives such as the CCME or SSWQO. The final SSWQO that will be applied for closure will be developed prior to closure and presented in the Meliadine Final Closure and Reclamation Plan.

The waterline system will be decommissioned; the covered sections of waterlines will be excavated, the pipeline network components will be dismantled, removed and disposed on-site in a landfill. The water effluent diffuser will also be dismantled and removed from the shore area and water, using best practices to minimize disturbance, and disposed on-site in the landfill.

Water treatment facilities will remain on site until water quality is suitable for direct discharge to the environment. The water treatment and Meliadine Lake effluent diffuser will be maintained for three (3) water treatment seasons as a contingency before being dismantled and disposed of in an appropriate landfill.

## 4.2.7.6 Predicted Residual Effects

No significant residual effects have been identified for closure of the water management facilities, as it is predicted that concentrations in post-closure will meet discharge criteria. Changes to terrain caused by the construction and reclamation of the facilities could result in some alteration or loss of plant populations and plant communities.

### 4.2.7.7 Uncertainties

Uncertainties are related to water quality during closure and post-closure. However, water quality modelling will continue during operation.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## 4.2.7.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring following the closure of the water management facilities, and maintenance strategies as presented by AANDC/ MVLWB (2013):

- Periodically inspect the remaining water management structures to assess their performance;
- Continue monitoring climatic conditions at site to compare them to design assumptions (e.g., regarding storm events) and performance of selected closure activities;
- Monitor the performance of erosion protection on embankment structures, such as riprap, and the physical stability of water management systems including permafrost integrity where applicable;
- Monitor water quality, quantity, and flows to ensure system is working as predicted and water quality objectives are being met;
- Sample surface water as per Water Licence requirement;
- Evaluate post-closure drainage patterns and confirm that they compare to pre-development patterns as described in the closure objectives;
- Periodic inspections will be performed by a geotechnical engineer to visually assess stability and performance of the structures.

### 4.2.7.9 Contingencies

The water treatment facilities are included as a contingency measure should water on site not be suitable for release to the environment. The diffuser will be maintained in place for three (3) water treatment seasons as a contingency before being dismantled and disposed. Once the underground mining activities are completed, the source of saline groundwater will be eliminated.

Water quality monitoring will occur during mine operation to include in the site water quality and to provide additional information for future closure water quality prediction and planning modifications if required.

#### Site Buildings and Equipment 4.2.8

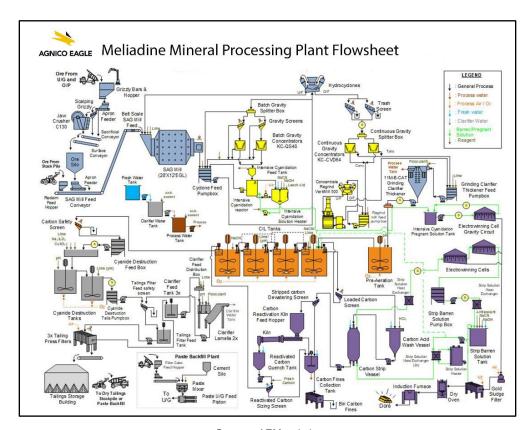
#### Descriptions of the components 4.2.8.1

During the life of mine, surface infrastructures are required at different periods for mining, processing, accommodation, fuel storage and electricity. Most of the infrastructures are located within the industrial site of Meliadine.

Mill: The mineral processing facility consists of four (4) main components: a crusher plant, a belt conveyor from crusher to the ore bin, a process plant and a paste backfill plant. The ore processing facility is centrally located relative to the mining site. The facilities will comprise crushing, grinding, gravity recovery, cyanidation, and gold recovery in a carbon-in-leach circuit. The main ore processing streams will be continuous operations, while the carbon-handling and gold recovery circuits will be batch operations. Figure 4-5 presents the Meliadine mineral processing flowsheet.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report





Source: AEM website

Figure 4-5: Meliadine Mineral Processing Flowsheet

- Ore Pads: The ore stockpile is located on a pad close to the process plant pad. No ore will remain in the ore stockpiles by the end of operations. The stockpile will have a maximum footprint of 10.3 ha. Upon regulatory approval, an extension of the ore pad (Ore Pad 2) of approximately 5.6 ha is planned within the laydown area.
- Accommodation and Service Building: Due to the remote location of the mine, it is necessary to provide catered accommodation on-site. The permanent camp includes individual rooms, shared bathrooms and recreational facilities. The camp complex is constructed out of insulated structural wood frames resting on a structural steel frame floor on piles. At full operational capacity, the camp will house approximately 905 people. The building houses also the kitchen, dry warehouse, and offices (administration offices, an engineering and training room, various departmental offices (e.g., human resources, training, geology, engineering, planning, environment).
- Laboratory and Core Shack: The assay laboratory and core shack will be designed to accommodate, but not be limited to, an average of 300 samples/day in a building located on the mine site. The assay laboratory and core shack are in a building near the south of the warehouse. The building is a prefabricated steel frame (foldaway type) structure covered by cladding and roofing panels.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- Maintenance Shops: An industrial mine maintenance shop containing several maintenance bays, a wash bay, a machine shop, and a welding shop is in the industrial area on a concrete foundation. Upon regulatory approval, a wash bay close to the service building, temporary and permanent garage buildings (on concrete blocks or concrete slab) will also be built in the laydown area.
- Emulsion Plant: The Emulsion Plant, raw material storage, and magazines are located north west of the site, away from vulnerable facilities, as stipulated by the federal and territorial Explosives Use Act and Regulations. The explosives trucks are based at the Emulsion Plant. A garage is also included in the building for the maintenance and washing of trucks and equipment used to handle explosives.
- Fuel Storage: The main storage tanks include one (1) tank of 6 ML and one (1) tank of 3 ML. Smaller storage tanks are also located on site. The total diesel fuel storage capacity on site is in the range of 9.7 ML.
- Power Plants: The power plant is a diesel-fuelled facility using multiple medium-speed reciprocating engines housed in a building (Murox type building). A separate modular building is required to house all the switchgears, transformers, mechanical rooms, electrical rooms, and heat recovery systems.
- Pads and staging areas: Laydown areas for containers (sea cans) disposal of approximately 51,562 m<sup>2</sup>. An approximate total area of 12.5 ha for additional pads and staging areas (within the laydown area) will be constructed upon regulatory approval. The new facilities include a garage area, a warehouse pad, container areas 1 and 2, an ore staging area, a waste staging area and a mobile crusher area. The site layout will be updated with this final infrastructure list.
- Wind turbines: Wind turbines shall be installed to supplement the electrical demand of the site. Installation of up to eleven (11) wind turbines is planned, with five (5) wind turbines to be constructed during the first phase of construction and six (6) additional turbines during the second phase. An access road is provided to access the wind turbines and the windfarm storage and battery area.

Approximate dimensions of site infrastructures are available in the RECLAIM model and the cost calculations details presented in **Appendix J**.

The equipment fleet include mobile surface equipment and underground mining equipment. The list is provided in Appendix J. The list includes the equipment on site, but additional equipment will be mobilized in the future for the open pits exploitation. The list will be adjusted if required in next version of the ICRP.

# 4.2.8.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (AEM, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

Figure 2-2 and Figure 2-3 show the main existing infrastructure at the mine site. At closure, the facilities will be dismantled and reclaimed following best practices put in place during operation and in order to minimize long term disturbance. The facilities could also be transferred to the local community upon interest.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



# 4.2.8.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine buildings and equipment are listed in Table 4-10, along with the specific actions and monitoring associated (modified from AANDC/ MVLWB 2013 and AEM, 2015a).

Table 4-10: Closure Objectives and Criteria – Site Buildings and Equipment

Closure Objectives	Closure Criteria	Action / Measurements
Return area to its original state or to a condition compatible with the end land-use targets	Remove all facilities and restore natural/compatible terrain as much as possible	Dismantle and reclaim all infrastructure, fuel reservoirs, chemicals and industrial wastes Surface will be regraded to promote natural drainage, revegetation and to suit the surrounding topography Physical inspection
Transfer of usable surface infrastructure	Any above-ground infrastructure will be offered to the Kivalliq Inuit Association (the land owner) at closure for potential re-use elsewhere, or will be dismantled and demobilize from site	Agreement with the Kivalliq Inuit Association
Remove surface infrastructure Buildings and equipment will not be a source of contamination to the environment or a safety hazard to humans and wildlife	Limit access during closure Remove all facilities and restore natural/compatible terrain as much as possible Clean up and remove machinery, materials and equipment	Place signs to limit access Machinery and equipment will be removed off-site for salvage Dismantle and reclaim all infrastructure and fuel reservoirs Approved demolition waste will be placed in on-site landfill Metals will be separated and shipped off-site as scrap if economical to do so or disposed onsite, salvageable material will be removed off-site for salvage Remaining areas will be scarified and remaining concrete foundations and slabs will be cut in the pieces and buried Soil and water monitoring Physical inspection
Remove all hazardous wastes to avoid contamination	Remove all hazardous material	Remove all hazardous material for disposal by licensed handler
Maintain required site infrastructure during active reclamation	Promote early decommissioning	Reduce the use of facilities as much as possible after closure

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Closure Objectives	Closure Criteria	Action / Measurements
Ensure the remaining surface areas are safe for wildlife use and access	Restore natural/compatible terrain as much as possible	Surface will be regraded to promote the use for wildlife Physical inspection
Ensure contaminated soil is removed from site	Remove and remediate contaminated soils	An assessment will be carried out to identify areas where soils may be contaminated by hydrocarbons  A more detailed investigations will be carried out of the potential soil contaminated areas (i.e., Phase 1 and 2 ESA investigations) to determine the extent of the contamination  Selected hydrocarbon contaminated soils will be excavated and hauled to the landfarm for remediation
Control dust generation from demolition and active reclamation activities	Best management practices for controlling dust, fugitive and exhaust emissions during active reclamation	Implement best management practices Routine air quality monitoring
Ensure reclaimed areas support continuation of human land use activities	Human land use of the reclaimed area at post-closure will not compromise people's health	Dismantle and reclaim all infrastructure Surface will be regraded to promote natural drainage, revegetation and to suit the surrounding topography Routine monitoring and physical inspection
Consider community land use expectations and traditional knowledge in the closure planning	Community engagement will continue to be implemented	Public engagement

Other recommendations are presented in the Code of Practice for Metal Mines as follows (adapted from EC, 2009):

- On-site facilities and equipment that are no longer needed should be removed and disposed of in a safe manner. Efforts should be made to sell equipment for reuse elsewhere or to send equipment for recycling, rather than disposing of it in landfill facilities (from recommendation no. R514);
- The walls of on-site buildings should be razed to the ground. Foundations should be removed or covered with a sufficiently thick layer of soil to support re-vegetation (from recommendation no. R515);
- Any remaining structures and foundations should be inspected to ensure that no contamination is present. If contamination is found, it should be remediated as necessary to ensure public health and safety for post-closure land use (from recommendation no. R516);

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- Support infrastructure, such as fuel storage tanks, pipelines, conveyors and underground services, should be removed (from recommendation no. R517);
- Electrical infrastructure, including pylons, electrical cables and transformers, should be dismantled and removed (from recommendation no. R520).

## 4.2.8.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for the buildings and equipment dismantling are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Reclamation activities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Recycling or reusing building materials and equipment where possible to reduce waste and importation of materials to site:
- Dismantle all buildings that are not necessary to achieve the future land use target;
- Raze/level all walls to the ground and remove foundations;
- Remove foundations where possible or cover with natural materials to blend into natural surroundings. Cover materials should be conducive to vegetation growth (this may include lichen) where possible;
- If disposing on site, decontaminate building materials (free of any batteries, fuels, oils, bulk process chemicals, or other deleterious substances), and use toxicity characteristic leaching procedure testing to confirm suitability for non-hazardous disposal;
- Cut, shred, crush, or break demolition debris to minimize the void volume during disposal;
- Maintain photographic records of major items placed into landfills, as well as a plan showing the location of various classes of demolition debris (e.g., concrete, structural steel, piping, metal sheeting, and cladding);
- Remove and dispose of concrete in an approved hazardous waste landfill if it contains contaminants that may pose a hazard over time;
- Backfill/grade all excavations to achieve the final desired surface contours to re-establish the original drainage or a new acceptable drainage;
- Backfill excavations in permafrost to limit permafrost degradation:
- Control dust emission during demolition of buildings that contain or contained asbestos, lead paint, hazardous chemicals, or other deleterious material:
- Remove buried tanks, where they already exist, to prevent subsidence;
- Remove hazardous waste to an approved on- site waste storage facility prior to shipping for off-site disposal:
- If possible, transport equipment off the site for reuse at other locations. This may include sale or salvage to local communities if sufficient interest exists;

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- If sale or salvage of equipment is not possible, dispose of decontaminated equipment in an approved landfill or as recommended by the regulatory authorities;
- Decontaminate equipment (free of any batteries, fuels, oils, or other deleterious substances) and reuse or sell (local communities may have interests in some of the materials);
- Reclaim areas to the original topography and drainage or to a new topography or drainage compatible with end land use targets.

## 4.2.8.5 Engineering Work Associated with Selected Closure Activity

Prior to closure, infrastructure and equipment will be offered to the Kivalliq Inuit Association (the land owner) at closure for potential re-use elsewhere.

At closure, all buildings and structures will be decontaminated, decommissioned and dismantled. Demolition waste that cannot be reused, recycled or provided to local interests will be disposed of in the on-site landfill. Salvageable material will be removed off site and metals will be separated and shipped off-site as scrap if economical to do so.

Any above grade concrete structures or foundation will be demolished, and the rubble will be disposed of in the landfill. Any slabs on grade will be punctured and then left in place and covered with soil or non-potentially acid generating/non-metal leaching waste rock. Any subgrade foundations will be left in place. All disturbed site areas will be re-graded to promote natural drainage, revegetation and to suit the surrounding topography. In areas where the original ground surface was lowered for site grading or structural requirements, the slopes will be stabilized and contoured. Cover materials may be required for erosion and dust control.

Remaining bulk fuel and empty portable fuel storage tanks will be offered to community interests. The tanks will be emptied, cleaned, and dismantled for disposal in the site landfill or shipped south. Fuel not required during the closure and reclamation activities will be sold, returned to suppliers, disposed by a licensed handler, or incinerated.

All hazardous wastes will be removed for disposal by a licensed handler during the dismantling of buildings and infrastructure. An assessment will be carried out to identify areas where soils may be contaminated by hydrocarbons. Any contaminated soil will be excavated and taken to the landfarm for disposition and treatment.

Most of the mobile equipment will be removed once the closure stage is complete. Equipment used for closure activities and long-term maintenance will be removed from the site once they are no longer required. A small subset of equipment will be retained on-site for a portion of the post-closure stage, in order to complete corrective work if required. The equipment selected to be left on site for the post-closure period will be reviewed with qualified personnel, to ensure adequate equipment is available for corrective work. Mobile equipment and local contractors may also be available in the municipality of Rankin Inlet located near the Meliadine site.

If not properly reclaimed, wildlife maybe injured by entering reclaimed areas with depressions and if subsidence occurs. Environmental design features and mitigation, as well as current wildlife management practices used in other mining projects will be implemented at the Meliadine Mine to limit wildlife injury such as re-contouring reclaimed areas to reduce hazards to wildlife. Proper reclamation is also required to leave the site in appropriate conditions that do not present safety risks for humans.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### 4.2.8.6 Predicted Residual Effects

No significant residual effects have been identified for after closure of the supporting buildings but changes to terrain caused by the construction and subsequent reclamation of the facilities could result in some alteration of the natural terrain and alteration or loss of plant populations and plant communities.

#### 4.2.8.7 Uncertainties

No major uncertainties are related to the closure activity of the site building and equipment. The predisturbance terrain was covered by discontinuous vegetation interspersed with few bedrock outcroppings. The reclamation plan will be designed to encourage a natural succession of indigenous plant species within disturbed site areas. Grading and contouring would be done, where appropriate, to control soil stability and promote re-vegetation by natural colonization. Re-vegetation studies will be completed to assess the potential for vegetation to establish in disturbed areas or on rockfill covers (AEM, 2015a).

## 4.2.8.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring and maintenance strategies for the WRSFs as presented by AANDC/MVLWB (2013):

- Periodic inspections will be performed to visually assess the reclaimed areas; and
- All buildings and equipment left on-site during closure will be maintained until no longer required, at which time they will be removed from the site or demolished and disposed in the on-site landfill.

## 4.2.8.9 Contingencies

There are no activities proposed as contingencies with regards to the closure of the buildings and equipment.

## 4.2.9 Waste Management Facilities

#### Description of the components 4.2.9.1

The waste management facilities include the landfill, landfarm and incinerator. Hazardous waste management is also part of the global waste management. At the Mine site, wastes are safely managed from the time they are produced to their final disposal. All waste is segregated at the mine site and will predominately be landfilled, incinerated, or recycled. Used oil burning will be maximized as much as possible using the secondary chamber of the incinerator. Remaining wastes on site, including hazardous waste, will be packaged for shipment to a certified waste management facility for treatment, recycling, and/or disposal.

Waste management begins by keeping all materials that can be economically recycled out of the waste stream destined for the landfill or incineration. The three (3) R's of waste management - reduce, reuse, and recycle - is encouraged within the waste management program. Reduce, reuse, and recycle initiatives will be developed at the Project to minimize the quantity of waste incinerated or directed to the landfill. To support this initiative, operating procedures will be developed to maximize the volume of materials that are recycled and/or reused. This will include eliminating the use of disposable materials where possible, and segregating waste destined for reuse, and recycle alternatives.

Similar to the waste management philosophy, plans are to actively work towards minimizing spills through suitable work procedures. Plans developed from the environmental impact study address the management

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report



of spills on land, ice, water, and into the marine environment. When spills do occur, the goal is to limit the spread of the spill, and then manage contaminated material resulting from the spill.

The major components of the waste management system are described below.

## Landfill:

As described in the Landfill Management Plan (AEM, 2022i), a landfill is required on site for the disposal of non-salvageable, non-hazardous, non-putrescible solid industrial wastes that cannot be incinerated and that result from construction, operations, and closure of Meliadine Mine. An operation landfill (Stage 1) is required to permanently store acceptable waste materials during mine preproduction and early operation. The acceptable waste materials are non-salvageable, non-hazardous, non-putrescible solid industrial wastes that have a low leachate and low heat generation potential and cannot be incinerated in the site's incinerator.

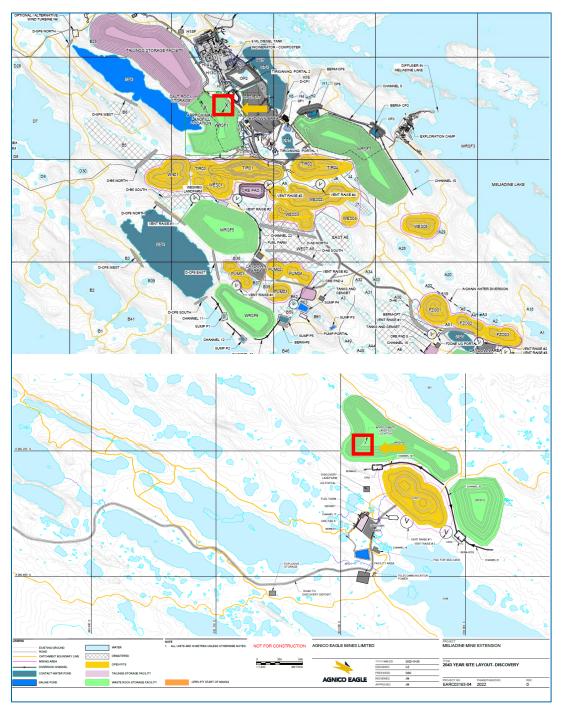
As presented on Figure 4-6, a landfill is situated within the Waste Rock Storage Facility 1 (WRSF1), which is located close to, and northeast of, the main mine infrastructure. The proposed second landfill would be built within the Discovery WRSF (i.e., WRSF8) (AEM, 2022i). The following criteria were considered in determining its location (AEM, 2022i):

- Drainage sites that will drain into areas where water will be collected and monitored as part of the overall site plan were preferred;
- Disturbed areas sites within or near areas that will be disturbed as part of the future overall mine plan were preferred to minimise the environmental footprint of the Mine;
- Access sites located close to existing service or haul roads were preferred; and
- The landfill site had to be large enough to accommodate non-salvageable, non-hazardous, nonputrescible solid industrial wastes for the life of the Mine, including the development of the other pits.

The first three criteria are recommendations from the Mine Site Reclamation Guidelines for the Northwest Territories (INAC 2007).

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report





Source: AEM, 2022i

Figure 4-6 : Operation Landfill (Stage 1) Location

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



The landfill will be used for the construction, operations, and closure phases. It will not be required for postclosure. The schedule for the landfill is as follows (AEM, 2022i):

- Construction: WRSF1 landfill has already been constructed. Construction of the proposed Discovery WRSF8 landfill will occur directly after the placement of minimum 1.2 m of waste rock or rockfill to serve as a base or foundation. This will occur during the first year of construction, with commissioning of the landfill directly thereafter. This will allow non-salvageable, non-hazardous, non-putrescible solid construction waste to be placed in the landfill.
- Operations: The landfills will be used continuously during operations.
- Closure: The landfills will be one of the last parts of mine infrastructure to close. It is expected to be extensively used during closure for demolition waste and will remain operational until it is no longer needed.

The landfill will progressively be filled in an orderly manner. Specifically, waste is placed to full height at one end of the landfill and then the active waste area will progressively advance. An "area method" of dumping is used such that materials is dumped in rows and covered as required. Wastes are deposited directly onto the landfill floor and compacted with heavy equipment against the berm or an existing row of debris that was compacted earlier. Areas where the waste has been placed to full height, compacted and levelled is progressively covered by placement of a minimum of 0.3 m thick of rock fill on top of the waste to reduce windblown debris. Owing to its placement within the WRSF 1, the landfill will become encapsulated within waste rock. Upon closure, the entire landfill will be covered with 3.7 m of waste rock (AEM, 2022i).

The leachate from the landfill is anticipated to be of very low ionic strength (dilute) due to controls on materials to be placed in the landfill, and, as a result, site-specific landfill leachate management is not considered necessary. In the event there is leachate from the landfill during periods of heavy rainfall or spring freshet, the runoff will be collected and directed to CP1.

## Landfarm:

As described in the Landfarm Management Plan (AEM, 2022j), on site storage and remediation has been established as the preferred method for treatment of light petroleum hydrocarbons (PHC) contaminated soil that may be generated at the mine. Specifically, remediation through landfarming has been identified as the primary treatment option and, as such, is the focus of this contaminated soil management plan. It is estimated that soils contaminated with light end PHCs would require three (3) full summer seasons for complete remediation. The general location of the landfarm is presented on Figure 2-3, and the specific location is shown on Figure 4-7. The area has no exposed bedrock and up to 20 m of glacial-fluvial till that has little ground ice and shows no permafrost degradation. The central location of the landfarm was chosen to minimize the footprint of the site and the transport distance of contaminated material from potential spill locations.

The landfarm is designed to receive soils, rock, snow, and ice contaminated with petroleum hydrocarbons. This will include light hydrocarbons such as diesel and gasoline. The design volume of the landfarm is based on allowances for the materials being treated at Meadowbank.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



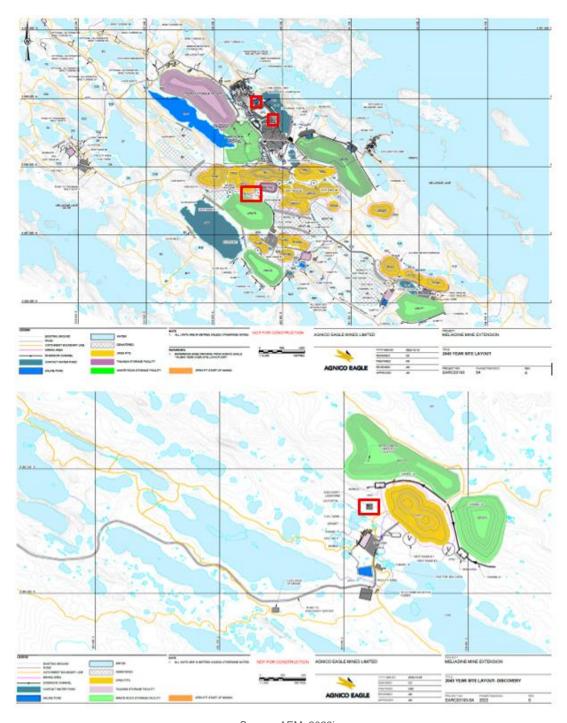
The average floor slope is 3.1% going in the designed direction of northwest to southeast, matching the natural ground slope. This slope is still adequate allowing leachate/drainage from the PHC soils and internal runoff to gradually seep through the filter berm into the sump area. The water collected in the sump will be pumped to the oil separator for oil removal before being discharge into CP1. The sump area was built as per design capacity.

The geomembrane liner crest elevation was installed at an elevation of 74.80 m, it does allow for 0.45 m of freeboard before reaching the geomembrane liner crest elevation.

The proposed Wesmeg and Discovery landfarms will be designed in a similar manner to the existing landfarms at Meliadine Mine, and final design will be submitted to the NWB 60-days prior to construction as per Part D Items 1 and 2.

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report





Source: AEM, 2022i

Figure 4-7 : Landfarm Locations

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



The landfarm facility will only treat and/or store light PHC contaminated soils that have been generated through mine related activities and which have been transferred from the Mine's advanced exploration camp landfarm upon closure. Material from the Hamlet of Rankin Inlet or other sites will not be accepted without approval from the NWB, Crown-Indigenous Relations and Northern Affairs, Water Resources Inspectors, and the Kivallig Inuit Association (AEM, 2022i).

The following products are acceptable for treatment in the landfarm if generated on-site and spilled on soil (AEM, 2022i):

- diesel fuel:
- gasoline;
- hydraulic oil
- aviation fuel (Jet A);
- other light oil (e.g., engine oil, lubricating oil).

In the event that the contaminant source is unknown, soil samples will be analyzed for PHCs and possibly additional contaminants prior to placement in the landfarm. These additional parameters could include total metals, oil and grease, and volatile organic compounds. Analysis for additional compounds will be determined by the Environment Department on a case-by-case basis. If there is uncertainty whether or not the material contains additional, unknown contaminants, the material should be placed in totes/drums until lab results confirm that they can be placed in the landfarm.

Concentrations of contaminants are currently compared to the site background values (for metals) and/or criteria in the Government of Nunavut (GN) Guidelines for Contaminated Site Remediation (GN 2009); however, Agnico Eagle proposes to use different criteria that is more applicable to Meliadine Mine (refer to Section 3.5 for more details). If this analysis indicates soil contamination above background or GN guidelines for any substance not approved for landfarming (i.e., non-PHC contaminants), the spill material will not be placed in the landfarm. This is to ensure that PHC contaminated soils are not contaminated with other products.

Spills of non-PHC material (e.g., solvents) will be placed in drums and stored on-site for shipment to approved facilities during shipping season.

#### Incinerator:

Incineration is an essential part of waste management at the Meliadine Mine. The incineration of acceptable solid waste from the accommodation complex, kitchen, lunch rooms, shops, warehouses, and offices diverts waste from directly reporting to the on-site landfill. It has the advantage of eliminating putrescible waste that could potentially attract wildlife to the landfill, thereby reducing possible dangerous interactions between humans and wildlife.

The incinerator is in its own building on the south end of the infrastructure pad, downwind of other mine infrastructures. Figure 2-3 shows the location of the incinerator. The ECO 1.75 TN 1PVC100L incinerator system consists of a primary chamber and a secondary chamber. Both chambers are vessels constructed

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



of steel with a special insulating liner known as refractory. Incinerator components also include a main control panel, diesel fuel and used oil tanks (AEM, 2017a).

The ashes collected from the incinerator are disposed into the landfill. Ash testing protocol is implemented to ensure that the incinerator ash is suitable for disposal in the landfill. The incinerator stack design includes two (2) sampling ports with caps, as well as an in-line opacity meter to allow for stack testing to be undertaken during incinerator operation. Performance limits for the incinerator at Meliadine are in accordance with the emission guidelines set out by the CCME: Canada-Wide Standard for Dioxins and Furans, and Canada-Wide Standards for Mercury Emissions.

## Hazardous material storage area:

As presented in the Hazardous Waste Management Plan (AEM, 2022l), all hazardous materials are stored in secured areas to prevent tampering, as well as access by unauthorized personnel. Hazardous materials that become waste will be stored and/or disposed of in accordance with specific government regulations and guidelines. The Environment Department monitors the movement of hazardous waste, from the generator to final disposal, through use of a tracking document known as a Waste Manifest. Hazardous wastes at the Itivia docking site in Rankin Inlet will be managed according to the appropriate regulation(s). The Project requires the use of the following types of hazardous materials:

- Petroleum products and lubricants diesel fuel, oil, grease, anti-freeze, and solvents used for equipment operation and maintenance;
- Process Plant consumables chemicals for mineral extraction;
- Water treatment consumables chemicals;
- Explosives emulsion, caps, explosives, surfactants, and sodium nitrate used for blasting; and
- Laboratory consumable and wastes various by-products classified as hazardous waste and chemicals used in the assay laboratory.

#### 4.2.9.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (AEM, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

The landfill and landfarm are currently in use at Meliadine and will be until post-closure. The incinerator and the hazardous waste management area are also operating and will be until the end of active closure.

The waste management facilities will be reclaimed following best practices put in place during operation and in order to minimize long term disturbance.

## 4.2.9.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for the Meliadine waste management facilities are listed in Table 4-11, along with the specific actions and monitoring associated (modified from AANDC/MVLWB 2013 and AEM, 2015a).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Table 4-11: Closure Objectives and Criteria – Waste Management Facilities

Closure Objectives	Closure Criteria	Actions/Monitoring
Inadvertent access to landfill debris by humans and wildlife has been prevented	Limit access to facility Dispose only appropriate waste type in landfill	Limit access to the WRSF with berms and signs Avoid food waste in landfill that could attract wildlife Routine inspection of the facilities
Waste disposal areas are not and will not become a source of contamination to the environment	Dispose only appropriate waste type in landfill  Treat light hydrocarbon contaminated soil  Remove all hazardous waste	Manage and dispose waste in landfill as per operation best practices Treat light hydrocarbon contaminated soil in the landfarm Hazardous wastes will be removed for disposal by licensed handler as per operational practices Routine inspection of the facilities
Erosion and effects to the ground thermal regime have been controlled to ensure physical stability	Appropriate cover and drainage over the landfarm and landfill	The landfill and landfarm area will be covered with waste rock at the end of active closure stage Surfaces will be re-graded to promote natural drainage Inspection during cover construction
Surface runoff and seepage water quality is safe for humans and wildlife	Water quality meets Water Licence requirements  Appropriate cover and drainage over the landfarm and landfill	Water quality monitoring
Return area to its original state or to a state compatible with the desired end land use	Human land use of the reclaimed area at post closure will not compromise people and wildlife health	Routine monitoring and physical inspection

The Code of Practice for Metal Mines also provides the following recommendations related to the closure of waste facilities and to the handling of contaminated materials (adapted from EC 2009):

- Waste from the decommissioning of ore processing facilities and site infrastructure, such as waste from the demolition of buildings and the removal of equipment, should be removed from the site and stored in an appropriate waste disposal site or disposed of on site in an appropriate manner in accordance with relevant regulatory requirements. If material is disposed of on site, the location and contents of the disposal site should be documented (from recommendation no. R522);
- Sampling and analysis of soils and other materials should be conducted to ensure that none of the material is contaminated, e.g., with asbestos and mercury from buildings. If contaminated materials are identified, they should be handled and disposed of in an appropriate manner in accordance with all applicable regulatory requirements (from recommendation no. R523).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## 4.2.9.4 Consideration of Closure Options and Selection of Closure Activities

Considerations for waste management facilities closure are provided by the AANDC/MVLWB (AANDC/MVLWB, 2013). Closure activities for the waste management facilities were selected in consideration of the closure aspects listed below, related to mine design stage, closure and post-closure periods.

- Plan activities to limit the amount of waste generated throughout the life of the mine;
- Locate waste management facilities away from waterways to minimize environmental impacts that could result from leachate generation/migration;
- Select location and design that will have minimal impact on wildlife habitat and therefore require minimal reclamation effort:
- Divert runoff around waste disposal area with ditches or berms to minimize migration of contaminants:
- Burn domestic waste and special waste (i.e., waste oil) in an approved incinerator;
- Remove hazardous waste to an approved on-site waste storage facility prior to shipping for off-site disposal;
- Cover landfill/landfarm with an appropriately designed cover system to limit infiltration to acceptable levels. The surface of the landfill cover should comprise erosion resistant materials, and the surface landform should be sustainable in the long-term.

#### 4.2.9.5 Engineering Work Associated with Selected Closure Activity

#### Landfill:

The closure activities planned for the landfill presented herein are taken from the Landfill and Waste Management Plan (AEM, 2022i).

The landfill locations serve to minimize the area of surface disturbance, stabilize disturbed land surfaces against erosion, and return the land to a post-mining use that is chemically and physically stable, and consistent with past traditional pursuits and wildlife habitat. While waste rock will be disposed on land and in a manner that encourages total freezing. The design, operation, and/or closure of the WRSFs and landfill do not rely on total freezing. Any unacceptable leachate that is generated following closure of these facilities will be contained, collected, and/or treated, if necessary.

Upon closure, it is estimated that the landfill will have a volume of approximately 63,000 m<sup>3</sup> of waste. The landfill will be covered with a minimum of 3.7 m of waste rock and should thereafter be stable. When finalizing the design for the cover, the need for thermistors to be installed will be evaluated. The cover surface will be left irregular to capture snow, windblown sediment, and collect seeds.

Contact water from the landfill at its closure will continue to be managed using best management practices as in operation. The leachate from the landfill is anticipated to be of very low ionic strength (dilute) due to controls on materials to be placed in the landfill. Moreover, drainage from the landfill is largely expected to freeze within WRSF, with little to none reporting to the water collection infrastructure (FEIS, 2014).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## Landfarm:

The closure activities planned for the landfarm presented herein are taken from the Landfarm Management Plan (AEM, 2022j).

After removal of all remediated soil and prior to closure and reclamation of the landfarm, the berm and base will be sampled on a 10 m grid, to determine if these soils are free from PHC contamination. Results of this analysis will be compared to GN criteria. No excavation will be necessary if agricultural/wildlife criteria are met. If industrial criteria are used, the landfarm will be covered with 2 m of waste rock or other material used for reclamation. The surrounding berm will be breached to avoid water accumulation on the landfarm. The liner put in place at the base of the landfarm during construction, is covered by a layer of granular fill material and rockfill, will be left in place and covered with additional material if required.

### Incinerator:

Approved waste will be burned in the incinerator during operation and closure. At the end of the active closure phase, the incinerator will be emptied and offered for local use and/or relocation. If there is no local interest, the infrastructure will be demolished and taken to the on-site landfill for disposal or barged out to a southern waste disposal facility.

## Hazardous Material:

The hazardous materials will be managed in operations such that minimal quantities remain on site at closure. Any remaining hazardous materials that cannot be used during closure activities will be transported to licensed disposal facilities in the south, as per operation procedures, in accordance with the Hazardous Material Management Plan (AEM, 2022l). Any remaining cyanide reagents will be packaged and transported to licensed facilities in the south or other Agnico Eagle divisions in accordance with the International Cyanide Management Code, and the Hazardous Materials Management Plan.

## 4.2.9.6 Predicted Residual Effects

No significant residual effects have been identified for closure of the waste management facilities other than changes to terrain caused by the construction and subsequent reclamation of the facilities.

## 4.2.9.7 Uncertainties

No major uncertainties have been identified regarding closure of the waste management facilities.

## 4.2.9.8 Post-Closure Monitoring, Maintenance, and Reporting

The overall post-closure monitoring and maintenance program for the Meliadine Mine are discussed in Section 8.0 along with the general reporting requirements. The following presents the relevant post-closure monitoring and maintenance strategies for the WRSFs as presented by AANDC/MVLWB (2013):

- Test water quality and quantity to measure the success of the selected closure activities for landfills and waste disposal areas:
- Monitor the ground thermal regime and the cover system performance to determine if permafrost has aggraded into the landfill;
- Inspect surface of landfill cover systems for cracking or slumping of the cover and for the underlying waste material's migrating to surface;

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Monitor wildlife and human use to ensure the selected closure activities have been effective in preventing access to these areas.

The landfill and landfarm monitoring programs completed in operation will continue during the closure period.

Hazmat disposal will be audited in closure or post-closure to ensure all material have been disposed off site in appropriate facilities.

### 4.2.9.9 Contingencies

No specific activities are proposed as contingencies for the closure of the waste management facilities.

## 4.2.10 Description of Project Alternatives

## 4.2.10.1 Description of the components

As part of the application for the Meliadine Extension, Agnico Eagle is also seeking approval for the following options/alternatives should it be required (AEM, 2022c):

- use of exhausted pits to store tailings to complement the current waste management strategy; and
- use of exhausted pits to store waste rock to complement the current waste management strategy.

Table 4-12 summarized the proposed volume of tailings and waste rock to be backfilled in the exhausted

The key advantages of implementing these alternatives are:

- A reduction in volume of water to flood the open pit;
- A reduction in surface area to cover at the TSF;
- A reduction in active closure period (refer to section 4.2.10.4); and
- A reduction in overall closure costs for the Meliadine Extension Project.

## 4.2.10.2 Pre-Disturbance, Existing, and Final Site Conditions

Pre-disturbance conditions are based on baseline data collection programs presented in the Meliadine FEIS (AEM, 2014). The pre-disturbance site conditions are also summarized in Section 3.0.

### 4.2.10.3 Closure Objectives and Criteria

The closure relevant objectives and closure criteria for these alternatives will the same as the closure objective described previously in section 4.2.4.3

## 4.2.10.4 Engineering Work Associated with Selected Closure Activity

The open pits will be flooded. However, the volume of water required to flood the pits will be reduced due to the volume of tailings and waste rock backfilled in the pits. It is expected that the pit flooding period will be reduced from seven (7) years to five (5) years approximately. The implementation of the project alternatives will also result in a reduction of closure cost for the project.

Table 4-13 provides an estimate of the pit flooding volumes required for this alternative.

Meliadine Interim Closu	re and Reclamation Plan – Update 2022	Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Table 4-12: Proposed Backfill Tonnage and Volume in Exhausted Pits

Pit	Waste Type	Waste Rock Backfill (t)	Tailings Backfill (t)	Backfill Volume Waste Rock and Tailings (m³)
Discovery	Waste Rock	8 485 173	-	4 242 587
F ZONE01	Waste Rock	8 944 336	-	4 472 168
F ZONE02	Waste Rock	1 010 086	-	505 043
F ZONE03	Waste Rock	1 186 095	-	593 048
WN01	Tailings	-	8 863 315	5 371 705
PUMP01	Tailings	-	309 697	187 695
PUMP02	Waste Rock	466 002	-	233 001
PUMP03	Tailings	-	770 571	467 013
PUMP04	Waste Rock	567 019	-	283 510
TIR01	Waste Rock	12 369 689	-	6 184 845
TIR02/04	Waste Rock	5 041 791	-	2 520 895
TIR03	Waste Rock	1 559 697	-	779 849
WES01	Tailings	-	3 861 938	2 340 568
WES02	Waste Rock	9 275 423	-	4 637 712
WES03	Waste Rock	3 232 050	-	1 616 025
WES04	Tailings	-	48 970	29 679
WES05	Tailings	-	3 556 987	2 155 750
	Total	52 137 161	17 411 478	36 621 093

Source: Lorax, 2022

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



**Table 4-13: Alternative Pit Flooding Volume** 

Pit	Estimated Total Pit Flooding Volume (m³)	Total Volume Pumped from Meliadine Lake (m³)	Passive Flooding from Runoff (m³)
Discovery	10 810 380	10 548 000	262 380
FZONE-01	2 271 561	2 056 500	215 061
FZONE-02	490 174	398 724	91 450
FZONE-03	568 948	512 400	56 548
WN01 (note 3)	5 160 457	4 280 000	880 457
PUMP-01	544 818	399 600	145 218
PUMP-02	417 349	367 089	50 260
PUMP-03	1 127 812	1 072 323	55 489
PUMP-04	294 827	265 200	29 267
Tiri01 (note 1)	4 771 557	4 489 016	282 541
Tiri02 (note 2)	7 381 581	from Meliadine Lake: 535,000 from CP1: 6 846 581	0
Tiri03 (note 1)	included with Tiri01		
Tiri04 (note 2)	included with Tiri02		
WES01 (note 1)	included with Tiri01		
WES02	5 787 733	5 401 600	386 133
WES03	1 484 328	1 133 488	350 840
WES04	233 566	212 814	20 753
WES05	2 540 661	2 283 858	256 803
Total	43 885 752	40 802 193	3 083 559

1 : Tiri01, Tiri03 and WES01 form TIRI pit lake complex once full 2 : Tiri02/04 is also filled via pumping from CP1 3 : WN01 joins with Lake B5 to form the WN complex once full

Source: Lorax, 2022

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### **Progressive Reclamation** 5.0

## 5.1 Definition of Progressive Reclamation

Progressive reclamation takes place prior to permanent closure to reclaim components and/or decommission facilities that no longer serve a purpose. These activities can be completed during operations with the available resources to reduce future reclamation costs, minimize the duration of environmental exposure, and enhance environmental protection. Progressive reclamation may shorten the time for achieving closure objectives and may provide valuable experience on the effectiveness of certain measures that might be implemented during permanent closure (AANDC/MVLWB 2013).

The Code of Practice for Metal Mines includes the following recommendations related to progressive reclamation (adapted from EC 2009):

- Progressive reclamation, including that of waste rock piles, tailings management facilities and mine site infrastructure, should be undertaken during the mine operations phase to the extent feasible;
- Progressive reclamation activities should be consistent with the site-specific objectives and intended post closure land use for the site. Planning and implementation should consider final contouring, final drainage, cover requirements, and re-vegetation;
- The project schedule should be used to monitor the status of progressive reclamation, and the schedule should be updated on a regular basis.

## 5.2 Opportunities for Progressive Reclamation

The key closure activities that have been identified for progressive reclamation are summarized in the following sections for each individual component of the Meliadine Mine. The progressive reclamations activities provided in this ICRP will be updated in future versions of the plan to include new opportunities for progressive reclamation identified during operations. Details related to schedule of progressive reclamation is included in the closure schedule presented in **Appendix I**.

## 5.2.1 Rankin Inlet Site Facilities

No progressive reclamation activities have been identified for the Rankin Inlet site facilities at this time, as the facilities will be required throughout the operation period and the active closure.

## Transportation Routes and Quarries

No progressive reclamation activities on the roads are planned as they will be required for transportation throughout the operation period and the active closure.

The quarries and granular borrow sites no longer required for operations will be progressively reclaimed during operation, as equipment and resources are available. Specific timeline for quarries progressive reclamation during operation will be eventually defined.

In 2018, reclamation work occurred at the Itivia quarry. Agnico Eagle proceeded to the reclamation according to the guarry conditions by removing all equipment and material, stabilizing and gently sloping the walls

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



(AEM, 2019). 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 (AEM, 2020a).

## 5.2.3 Underground

Mined-out work specific areas are being backfilled for reasons of ground stability, using coarse rock waste, cemented waste rock, paste tailings, or some combination of these during operations. Following completion of underground mining, the flooding of the underground mine workings with natural groundwater seepage will start as progressive reclamation. Most of the waste rock produced underground (16.9 Mt) will be used as underground backfill (11.9 Mt) (AEM, 2022f).

## 5.2.4 Open Pits

Following completion of open pits mining, the flooding of the open pits with water from Meliadine Lake will start as progressive reclamation.

## 5.2.5 Waste Rock Storage Facilities

The waste rock and overburden storage facilities will be closed during operations with the deposition of the waste rock, based on the current deposition plan. The waste rock storage facilities at Discovery will also be closed progressively during operations.

## 5.2.6 Tailings Storage Facilities

Additional lifts of waste rock will be placed as the tailings surface is brought up as erosion, stability and thermal protection. At the final elevation, the top of the tailings stack will be progressively capped with a layered combination of overburden and waste rock.

## 5.2.7 Water Management Facilities

No progressive reclamation activities have been identified for the water management facilities at this time. Water management facilities or equipment not used or deemed not necessary will be evaluated and could be removed during operations.

## 5.2.8 Site Buildings and Equipment

Potential progressive reclamation activities could include removal of equipment and facilities as they are identified as no longer being required for operations. Efforts could also be made to reduce inventories of consumables and sea containers (sea cans) leading up to the end of operations.

## 5.2.9 Waste Management Facilities

The landfill will be in active use throughout the operation and closure period in order to receive debris from decommissioning. The landfill will be covered with waste rock progressively over time. The final closure of the landfill will occur at the end of the active closure stage. The landfarm will be required in operation and active closure for soil decontamination, so no specific progressive reclamation is identified for the landfarm. The hazardous material will be managed throughout operation and closure.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### **Temporary Closure** 6.0

Temporary closure occurs when an advanced mineral exploration or mining operation ceases with the intent of resuming activities in the near future. Temporary closure could be due to an unplanned closure or a planned closure of certain facilities in a complex mining project (AANDC/MVLWB, 2013).

The Meliadine Mine operation is planned to be continuous for the full proposed operating period. However, the mine may need to shut down for a short-term or indefinitely (long-term) due to economic, environmental and/or social factors. The plans for both closure periods are discussed below.

Notification of temporary closure would be presented to the staff and the local population with at least 30 days of notice; if the conditions allow, a longer notice period will be provided where possible (AEM, 2015a).

As per the Water License 2AM-MEL1631, Part J, condition 2, the Licensee shall notify the NWB in writing, at least sixty (60) days prior to, or as soon as practically possible, the intent to enter into a Care and Maintenance Phase.

As per the Meliadine Inuit Impact and Benefit Agreement (IIBA), written notice of a temporary closure decision would be given immediately to the Kivalliq Inuit Association (KIA) and the Parties would "enter into good faith negotiations and use commercially reasonable efforts to conclude an agreement on appropriate implementation measures which shall be in keeping with the purpose and the objectives of" the IIBA (KIA, 2017).

## 6.1 Temporary Closure Goal and Closure Objectives

The goal of temporary closure is ongoing protection of the environment, and regulatory compliance during the shutdown period. Temporary closure measures deemed necessary will depend upon the duration and extent of site activities/presence during the temporary closure. It is anticipated that water management and treatment facilities will function at the same level during temporary shutdown periods as during operations.

The objectives of temporary closure activities are to:

- Maintain all operating facilities and programs necessary to protect humans, wildlife, and the environment, including necessary environmental monitoring;
- Make available appropriate financial resources to continue environmental monitoring and reporting during temporary closure;
- Keep care and maintenance staff at the site and in sufficient number and expertise to care for the site and any potential problems that may arise;
- Make available enough equipment and supplies on site for any maintenance or reclamation activities that may need to take place; and
- Comply with all applicable federal and territorial laws and regulations, in addition to the operator's Land Use Permits, Land Leases and Water Licence.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## 6.2 Temporary Closure Activities

The proposed short-term and long-term temporary closure activities are presented in the following subsections. The extent to which the activities listed will be implemented depends on the site conditions at the time of the temporary closure, and the anticipated length of the closure (short-term or long-term). In all cases, access to the sites, buildings, and all other infrastructures will be secured and restricted to authorized personnel only.

In most circumstances, planned temporary closure activities are expected to occur as described above and in the following sections. Should a situation arise in which temporary closure cannot be executed as planned (e.g., major fire or spill, major problem in the open pits or underground, etc.), the affected features will be subject to alternative temporary closure measures, with the planned temporary closure activities resuming as soon as practical.

In most circumstances, the AWAR will continue to be open to public access during any temporary closure of the mine. The status of the road during such periods would be assessed by Agnico Eagle on a case-by-case basis. For short duration temporary shutdowns (short-term temporary closure), the AWAR would remain open and be maintained in the same manner as proposed during the operational phase. While each case would be assessed separately, temporary shutdowns of less than 6 months duration would not change the way the access road is operated or maintained. For temporary shutdowns of greater than six (6) months and less than 12 months in duration, and/or for indefinite shutdowns (period greater than one year: long-term temporary closure), Agnico Eagle would have to change the way it operates and maintains the road. In such an instance, Agnico Eagle would evaluate what level of activity was expected to continue at the site during the shutdown period and adjust its care and maintenance of the access road accordingly (AEM, 2022g).

## **Short-term Temporary Closure**

Short term shut down or closure period is defined as a period of less than one year and could last for a period of weeks or several months (up to 12 months) based on economic, environmental, and social factors. The following Table 6-1 summarizes the measures that will be taken as required during a short-term temporary closure (adapted from SLI, 2018 and AEM, 2015a).

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



**Table 6-1: Short-term Temporary Closure Activities** 

Sites	Closure Activities
	Warning signs and berms will be erected as needed to block the entrance to underground
Underground	Maintain required activities where possible to ensure stability. Dewatering underground areas will continue as conducted during operations since flooding and subsequent dewatering may adversely impact stability
	Warning signs and berms will be erected as needed around the pit perimeter
Open pits	Dewatering of open pits will continue as conducted during operations since flooding and subsequent dewatering may adversely impact stability.
	Surface water management facilities will be maintained to manage contact water runoff
	Unused water distribution lines will be drained, but would be left in place
Water Management	All water will be treated and discharged during a four-month period from June to September each year. If the temporary shutdown occurs during the October to May period (i.e., during the winter period), little or no water will need to be considered for storage or treatment
	The sewage treatment plant and potable water treatment plant will continue to operate as needed
	All mobile equipment except for small service equipment required for pit inspections will be removed and placed in secure on-site storage
	Fuel, lubricants, and hydraulic fluids will be removed from the site, open pit and underground area and stored in designated areas
	Fluid levels in all fuel tanks will be recorded and monitored regularly for leaks, or fuel will be removed from the site
Infrastructures	An inventory of chemicals and reagents, petroleum products, and other hazardous materials will be conducted. These materials will be secured appropriately, or the materials will be removed from the site
and services	All explosives will be relocated to the main powder magazine and secured, disposed of, or removed from the site
areas	Minimum staffing levels will be maintained to carry out care and maintenance
	The accommodations will be operated at reduced staffing level
	Critical facilities will have nominal heat to prevent freezing of the facilities and possible damage
	Hazardous wastes on-site will be collected and stored in an appropriate area for annual disposal to a registered disposal facility
	In most circumstances, the AWAR will continue to be open to public access. The status of the road during such periods would be assessed by Agnico Eagle on a case-by-case basis
	Monitoring of water quality of the collection ponds will continue as per during operations
Monitoring	Environmental monitoring and sampling will continue at regular intervals as set out in the Meliadine Mine operations and monitoring program and in accordance with all applicable Licences, permits, and authorizations
	Routine geotechnical stability monitoring and maintenance will continue at a reduced rate compared to that conducted during operations. The pit area will be inspected routinely to check for rock falls, changes to groundwater inflows and overall integrity. Underground will be inspected for geotechnical stability in area safe to do so

## 6.2.2 Long-term temporary closure

Long-term temporary closure (indefinite shutdown) is a cessation of mining and processing operation for an indefinite period greater than one year. The intention is that the mine will resume operations as soon as

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



possible after the cause for the indefinite shutdown has been addressed. The site must maintain safety and environmental stability during this time. Possible causes for an indefinite shutdown could include prolonged adverse economic conditions or extended labor disputes. A decision on the estimated length of the indefinite shutdown would be made after the initial one-year period. Decisions on possible extensions to the indefinite shutdown would be made every 6 months thereafter and would be based on the conditions at that time. At present, the maximum length of time or number of extensions for interim shutdown before moving to final closure has not been defined. Table 6-2 summarizes the measures that will be taken as required in addition to the short-term temporary closure activities presented in Table 6-1 during a long-term temporary closure (adapted from SLI, 2018 and AEM, 2015a).

**Table 6-2: Long-term Temporary Closure Activities** 

Category	Closure Activities
Underground and open pits	Monitoring of the pumps in the underground and open pits will continue and the underground and open pits will be maintained in a dry condition to maintain dry, stable conditions to allow a restart of mining as appropriate
open pits	Pumps in the pit will be relocated and the pit will be allowed to flood passively (from rainfall and groundwater inflow)
WRSF	If necessary, the working face of the WRSFs slopes will be graded to ensure stability and drainage to the contact water management system adjacent to the rock storage facilities. As the WRSFs will be designed and operated for long-term stability, it is anticipated that any grading required will be localized and minimal. The WRSFs will be monitored to ensure the site stays in compliance with any permits and/or licences
TSF	The tailings surface area will be re-graded, if needed, to promote slope stability. Erosion control measures will be implemented, if required, to reduce the potential mobilization of tailings by wind, such as a minimum 0.75 to 1 m cover of non-potentially acid generating waste rock placed over the exposed tailings to control dust
151	The TSF will be subject to routine geotechnical stability monitoring and maintenance. Monitoring will be at the same frequency as that of operations, to ensure the site stays in compliance with any permits and/or licences. Maintenance will be completed as required
Water	The dikes/dams will be monitored and maintained, and none of the dikes/dams will be opened and reconnected to adjacent lakes
Management Water	Surface water control structures will be maintained as required. In areas where water quality is suitable for discharge, natural drainage courses may be re-established
Management	Unused water distribution lines will be drained. Unused lines on surface will be removed and placed in a secure lay down area to reduce impacts on wildlife
Infrastructures and services areas	Dependent on the cause of the closure, the AWAR may be inaccessible during the winter for cars and trucks. If continued presence on-site is required, then it is likely Agnico Eagle would maintain the road open in some manner over the winter
Monitoring	Environmental and geotechnical monitoring and sampling will continue at the regular level as set out in the mine operations and monitoring program, and in accordance with all applicable Licences, permits and authorizations

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## 6.3 Temporary Closure Monitoring, Maintenance, and Reporting

Monitoring and reporting during the short-term and long-term temporary closure will continue at the regular level as set out in the mine operations and monitoring program, and in accordance with all applicable Licenses, permits and authorizations. Adjustment of monitoring frequencies for long term temporary closure might be made only following approval from the licensing and permitting authorities concerned.

As required by the Meliadine Water Licence 2AM-MEL1631, Part J, items 2, 3 and 4:

- 2. The Licensee shall notify the Board in writing, at least sixty (60) days prior to, or as soon as practically possible, the intent to enter into a Care and Maintenance Phase.
- 3. The Licensee shall provide the Board for review, within thirty (30) days of the Licensee providing notice of intent to enter into Care and Maintenance under Part J. Item 2, a Care and Maintenance Plan that details the Licensee's plans for maintaining compliance with the Terms and Conditions of the Licence.
- 4. The Licensee shall provide the Board for approval in writing, within ninety (90) days of the Licensee providing a notice of intent to enter into Care and Maintenance under Part J, Item 2, all operational revised Plans to reflect the Care and Maintenance status.

The reclamation security deposit will also be kept up to date during temporary closure.

The numbers of personnel on-site would be reduced to reduce operation costs. The staff present at site during temporary closure would be sufficient in number and expertise to successfully carry out care, maintenance and monitoring duties, and to address and remediate any potential problems that may arise. An adequate number of equipment and supplies/reagents would be left on-site for any maintenance or reclamation activities that may need to take place.

## 6.4 Temporary Closure Contingency Program

The key staff present at site during temporary closure would be sufficient in number and expertise to successfully address and remediate any conditions or unforeseen events that may arise through the monitoring programs. The key staff at the site would also have access to external consultants and advisors, as required. The contingency options and actions for events or incidents defined for operations would be also implemented during the temporary closure (i.e., spill responses and reports) (AEM, 2015a).

## 6.5 Operational Monitoring Strategies

The overall objectives during operations are to provide programs to identify and mitigate potential adverse Project related impacts so that construction and operational activities do not cause any undue harm to water quality, sediment quality, vegetation, biota, wildlife, and wildlife habitats. The various monitoring programs required during operation will be reviewed and updated during operation to reflect conditions at the site as the mine approaches closure. The changes would allow the basic portions of the monitoring plans to continue to be used to cover the closure period activities.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## 6.6 Temporary Closure Schedule

Mining activities during short-term closure are typically stopped. However, activities such as care-and maintenance, monitoring, intermittent testing, periodic operation of equipment and appropriate facilities will be on-going as described above. Activities related to ensuring public and wildlife safety would be a priority and would focus upon maintenance and monitoring of all facilities and equipment to maintain physical and chemical stability. A sufficient number of care-and-maintenance staff would be present on site, and an appropriate level of security would be implemented at selected facilities. Access to temporarily inactive facilities would be restricted to authorized personnel only.

The temporary closure schedule would depend on when temporary closure occurs (i.e., what year of the operations stage) and its duration, both of which are commonly uncertain. Therefore, the schedule for the activities presented in Section 6.2 would be developed as temporary closure advances. Establishing a temporary closure schedule inherently contains uncertainty as this is not a planned activity, and the duration of a temporary closure will vary based on the cause for closure. As a result, the schedule will be progressive (AEM, 2015a).

The sequence of activities for short-term and long-term temporary closure would, in summary, be as follows:

- Restrict access to the site, buildings, and infrastructures to authorized personnel as required;
- Carry out an inventory of chemicals and reagents, petroleum products, and other hazardous materials and secure the inventory appropriately or remove some of it from site;
- Post warning signs and berms as needed around the open pit's perimeter and underground openings;
- Remove all mobile equipment except for small service equipment required for open pits and site inspections and place them in secure on-site storage;
- Temporary closure of unnecessary facilities and systems;
- Continue with environmental and geotechnical monitoring and sampling required for care, maintenance and monitoring at the regular level as set out in the mine operations and monitoring program, and in accordance with all applicable Licenses, permits, and authorizations.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### **Integrated Schedule of Activities** 7.0

Reclamation of the Meliadine site can be divided into the following three (3) general stages:

- Operations (Progressive Reclamation Stage): during which reclamation of the TSF will start with the initial placement of the cover material over the tailings surface. Reclamation of the open pits and underground mining will start at the end of operations;
- Active Closure: during which the decommissioning of major facilities will occur, and active flooding of the open pits will continue using water pumped from Meliadine Lake. Active care, maintenance and monitoring will be required for the decommissioned and remaining facilities throughout this stage;
- Post Closure: during which continued monitoring and maintenance will be carried out at a reduced frequency than during Operations and Active Closure stages, depending on the results of the monitoring and measures of success selected for closure.

The preliminary schedule of the Meliadine closure is presented in Appendix I and provides a schedule detailing the closure stages of major components of the Meliadine progressive closure, active closure and post closure. The main key periods included in the schedule are presented in Table 7-1.

Period (note 1)	Operations/Closure Main Phases
2020 to 2043	Mining and processing operations at Meliadine
2044 to 2050	Active Closure Monitoring
2051 to 2060	Post-Closure Monitoring
2020 to 2043	Progressive reclamation of TSF
2044 to 2046	Passive flooding of underground mine
2044 to 2050	Active open pits flooding
2044 and 2046	Infrastructures and facilities demolition
	Decommission WTP and Meliadine Lake effluent diffuser
2054	(Assuming that the required water management facilities, WTP and Meliadine Lake effluent diffuser will be maintained for 3 years as a contingency after the closure stage and that site water quality is acceptable for direct discharge to the environment.)
After 2050	Breach dikes/berms and reclaim channel and pond areas once water quality closure objectives are met.
2060	AWAR closure (end of post-closure period)

Table 7-1: Meliadine - Closure and Post-Closure Main Phases

Note 1: Preliminary only. To be confirmed with the final closure and reclamation plan.

It is anticipated that the schedule will be refined throughout the Meliadine Extension Mine life as the designs for closure are advanced and the closure methods and strategies are further developed. The schedule is subject to changes following mine plan and development as well as market conditions.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### Post-Closure Site Assessment 8.0

The ICRP is a live document and includes a commitment to adaptive management and monitoring during all stages of the mine life to demonstrate the safe performance of the facilities and to reduce any contamination on the site or in the adjacent area after operations cease. Monitoring during operations and in closure will identify non-compliant conditions, allow timely maintenance and clean up as needed, allow timely planning for adaptive and corrective measures, and enable successful completion of the ICRP. In this way, the Meliadine Extension is not anticipated to contribute residual impacts to the environment after closure and reclamation (SLI, 2021).

Monitoring programs is already ongoing and will continue throughout operation to provide additional baseline information on which to base the Final Closure and Reclamation plan (FCRP) document. The adaptive management plans to be used in closure will follow the actions completed during operations and will be coordinated with the existing operational monitoring programs to set appropriate trigger levels, and mitigation plans and actions.

Monitoring programs will be initiated during pre-development and operations to provide additional baseline information on which to base the ICRP and FRCP documents. The adaptive management plans to be used in closure and post-closure will follow the actions completed during operations and will be coordinated with the operational monitoring programs to set appropriate trigger levels, and mitigation plans and actions.

Monitoring and maintenance programs that are implemented during the closure and post-closure phases of the Project life will use the data collected during operational monitoring to assess the performance of the reclamation and closure procedures, and to identify long-term maintenance requirements, if any. The data collected during post-closure monitoring will allow the procedures and activities to be adjusted or modified as necessary to confirm ongoing environmental protection.

The general arrangement at the end of the closure stage and in post-closure is presented in Appendix H. As the engineering work for water management in closure and post-closure progresses, the general arrangement for closure and post-closure stages will be refined. Future versions if the Meliadine ICRP will include maps illustrating closure and post-closure drainage conditions to and from the pit lakes. The maps will also identify connectivity between surface waters and remnant water management structures in postclosure, and highlight connecting streams with potential for fish passage.

## 8.1 Closure and Post-Closure Monitoring Strategies

Guidance on monitoring and maintenance programs for closure and post-closure is provided in the guidelines for closure and reclamation (AANDC/MVLWB, 2013). «Post-closure monitoring will be required to confirm the success of the closure objectives once operations cease indefinitely. Closure criteria will assist in the development of post-closure monitoring programs and will provide clear interpretation of monitoring results. If it is determined that closure objectives were not met for individual project components (as demonstrated by the closure criteria not being met), the proponent will need to implement ongoing monitoring, maintenance measures, and possibly contingency plans. Where a catastrophic event or natural disaster occurs prior to relinquishment, additional monitoring and maintenance may be necessary. Proponents should consider establishing monitoring programs with involvement from local Aboriginal communities. If closure criteria are achieved, then a cessation in monitoring activities for the reclamation of

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



an individual project component may be approved by the Boards. However, if risks to the site remain, additional monitoring may be necessary. When closure criteria have been achieved and verified by Inspectors for specific components, the proponent is then eligible to request the appropriate reduction in their security deposit».

Development of monitoring and maintenance programs is an iterative process in consultation with communities and regulators as the Project advances. The closure and post-closure monitoring and maintenance programs will be extensions of efforts undertaken during the operations phase and would reflect the success of the management of the site during operations to limit the effect on the environment.

The actual conditions or impact from the operations within the mine footprint will be analysed and this information will be integrated to modify monitoring plans moving to closure and post closure. It is anticipated that monitoring and maintenance will be carried out during the active closure stage at frequencies similar to those required during operations. Post closure monitoring and maintenance will be carried out at a reduced frequency depending on the results of the monitoring and the measures of success selected for closure. As the closure effort is completed and the post-closure period begins, the various monitoring programs will be reviewed and updated again to cover the remaining (post-closure) monitoring period. It is also anticipated that after several years in the post-closure period, monitoring would no longer be required. The monitoring plan for closure and post-closure will be included in the Final Closure and Reclamation Plan.

The review and update of the onsite water quality forecast for Meliadine will be done throughout operations to foresee water quality during operations, closure and post-closure, as per the Water License 2AM-MEL1631 requirement. The future versions of the Meliadine ICRP will include additional details on the closure and post-closure water quality monitoring program within the plan, as information becomes available from operational data and from future versions of applicable management plans. The water quality monitoring plan for closure and post-closure will be presented in the Final Closure and Reclamation Plan.

The closure and post closure monitoring plan for soil quality will also be presented in the Final Closure and Reclamation Plan, based on information available from operational data and from future versions of applicable management plans.

It is planned to maintain access to the site with the AWAR until maintenance requirements at the Project site are anticipated to be minor and could be achieved with small crews sent to site via helicopter in the summer. It is anticipated that the need for ongoing maintenance would be reduced with time and will not be required once the site is physically and chemically stable.

## 8.2 Reporting

The preparation of the following reports is suggested in the AANDC/MVLWB (2013) guidelines for closure and reclamation of all components of mine sites:

Annual Closure and Reclamation Plan Progress Report: The general purpose of these annual reports is to provide an opportunity for all parties to track, modify, and report on reclamation. The annual review of research results also provides an opportunity to identify missing research tasks, which allows the research plans to continually evolve. The progress reports keep all parties informed about closure planning and allow the NWB to confirm that the proponent has remained on schedule. Any proposed changes to the Closure Reclamation Plan (CRP) should be presented with supporting rationale in these reports for NWB approval;

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



- Reclamation Completion Report: The general purpose of the reclamation completion report is to provide details, including figures, of the actual reclamation work completed, and an explanation of any work that deviated from the original or approved CRP. The report should also provide a preliminary assessment on whether appropriate closure objectives and criteria have been achieved. With each reclamation completion report, there may be an opportunity to revise the financial security estimate depending on the stage of the operation and the current CRP;
- Performance Assessment Report: A performance assessment report is prepared at the completion of the reclamation work and following submission of the reclamation completion report. The general purpose of the performance assessment report is to provide a detailed comparison of conditions at the site against the appropriate closure objectives and closure criteria. With each performance assessment report, there may be an opportunity to revise the security estimate depending on the stage of the operation and the current CRP.

The timelines for preparation and submission to NWB of the above-described reports will be according to the Meliadine Mine approved Water Licence requirements.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



#### **Financial Security** 9.0

A permanent closure and reclamation financial security cost estimate has been prepared with the present Project layout and infrastructure. The cost estimate covers the closure and reclamation of all Project facilities as described in this report and was prepared using RECLAIM Version 7.0 for permanent closure of the Project.

Agnico Eagle is required to submit a detailed financial security cost estimate for the Meliadine ICRP 2022 to Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) and to the Kivalliq Inuit Association (KIA) to support land use and water licensing requirements. RECLAIM Version 7.0 workbook has been used for this estimate, as per the Guidelines for Closure and Reclamation Cost Estimates for Mines, issued by Crown-Indigenous Relations and Northern Affairs Canada, Mackenzie Valley Land and Water Board and the Government of the Northwest Territories (INAC, MVLWB, GNWT, 2017).

This cost estimate provides for the closure measures described in detail in the Meliadine ICRP 2022. Most closure activities will occur within the active closure period, from 2044 to 2050 inclusively. The schedule of closure activities presented in Appendix I outlines the major closure measures and their expected timeline considered for the cost estimate.

For the purpose of this financial security cost estimate, no progressive rehabilitation measures have been considered. It will be possible to consider these measures in the upcoming calculations of the financial security cost estimate if they have been completed.

The updated 2022 estimated closure and reclamation costs for the Meliadine Mine represents a total of \$161 145 486. This total includes \$100 119 760 of direct costs and \$61 025 727 of indirect costs.

The financial security cost estimate assumptions and methodology used for the calculations, along with the complete RECLAIM 7.0 spreadsheets are presented in Appendix J. Differences between the Meliadine ICRP 2015 and ICRP 2020 cost estimates and the Meliadine ICRP 2022 cost estimate are presented in detail in Appendix J.

This last version of the ICRP and the financial security cost estimate includes the modifications discussed between Agnico Eagle, the Kivalliq Inuit Association (KivIA) and the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) for the Meliadine closure and reclamation and reflects the agreements between the parties.

# 9.1 Proposed Payment Schedule

The proposed payment schedule for closure cost and Letter of Credit (LOC) adjustment is presented in Appendix J. The payment schedule presents the construction schedule of the different infrastructures and amenities of the project and its corresponding closure cost spread-out throughout the life of mine of the of the mine and per deposit.

As shown in the schedule, the closure cost of a given component of the project would only be triggered the year that components are built or becomes operational. Agnico Eagle will submit a report at the start of Q4 of the previous year with the list of infrastructures and mine components that would be built the following year. The LOC would be adjusted accordingly related to the activities included in the report.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



The year of construction of the additional six turbines (second phase) has been tentatively put as 2027 for closure costing purposes. However, the year of construction of the additional 6 turbines will be confirmed within the annual summary of mining activities.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



## 10.0 Personnel

This report has been prepared by Anh-Long Nguyen and Anastasia Chang Leong, revised by Alain Lebel and approved by Anh-Long Nguyen.

We trust that this report is to your satisfaction. Should you have any question, please do not hesitate on contacting us.

SNC LAVALIN INC.

Prepared by:

Anh-Long Nguyen, Eng., M.Sc.A.

#OIQ:122858 #NAPEG: L2716 Study Manager Mining & Metallurgy Prepared by:

Anastasia Chang Leong

Geotechnical Engineer-in-Training

Mining & Metallurgy

Reviewed by:

Alain Lebel

Mine Environment Professional

Mining & Metallurgy

Approved by:

Anh-Long Nguyen, Eng., M.Sc.A.

#OIQ:122858 #NAPEG: L2716 Study Manager

Mining & Metallurgy

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report



## 11.0 References

AANDC (2002). Aboriginal Affairs and Northern Development Canada. Mine Site Reclamation Policy for Nunavut. Formerly Indian and Northern Affairs Canada (INAC).

AANDC (2007). (Aboriginal Affairs and Northern Development Canada. Mine Site Reclamation Guidelines for the Northwest Territories. Formerly Indian and Northern Affairs Canada (INAC). January 2007.

AANDC (2013). Aboriginal Affairs and Northern Development Canada and Mackenzie Valley Land and Water Board (AANDC/MVLWB). Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories. November 2013.

AEM (2014). Meliadine Gold Project, Nunavut. Final Environmental Impact Statement (FEIS). Volume 1 to 10. Submitted to the Nunavut Impact Review Board. April 2014

AEM (2015a). Agnico Eagle Mines Limited Report No. 6513-CRP-01 (April) Meliadine Gold Project. Preliminary Closure and Reclamation Plan. Version 1.0.

AEM (2015b). Agnico Eagle Mines Limited (February). Updated Technical Report on the Meliadine Gold Project, Nunavut, Canada

AEM (2015c). Agnico Eagle Mines Limited (April). Type A Water Licence Main Application Document. Version 1.

AEM (2017a). Agnico Eagle Mines Limited (April). Meliadine Incinerator Design Report and Drawings. 30-Day Notice to Nunavut Water Board In Accordance with Water License 2AM-MEL1631 (Part D, item 1)

AEM (2017b). Agnico Eagle Mines Limited 2016 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. March 2018.

AEM (2018). Agnico Eagle Mines Limited 2017 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. March 2018.

AEM (2019). Agnico Eagle Mines Limited 2018 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. March 2019.

AEM (2020a). Agnico Eagle Mines Limited. (March). Meliadine Gold Project 2019 Annual Report. Submitted to NWB, the NIRB, DFO. CIRNAC, and the KIA April 2020.

AEM (2020b). Agnico Eagle Mines Limited. (April) Meliadine Gold Mine - FEIS ADDENDUM Environmental Assessment of Treated Groundwater Effluent Discharge into Marine Environment, Rankin Inlet.

AEM (2020c). Agnico Eagle Mines Limited. Main Application Document, Type A Water Licence 2AM-MEL1631 Amendment, July 2020.

AEM (2020d). Agnico Eagle Mines Limited. Application for Water Licence Amendment, Nunavut Water Board, July 2020.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



AEM (2021a). Agnico Eagle Mines Limited. 2020 Annual Report. Submitted to NWB, the NIRB, DFO. CIRNAC, and the KIA, March 2021.

AEM (2021b). Agnico Eagle Mines Limited, Meliadine Division. Air Quality Monitoring Plan, Version 4, December 2021.

AEM (2021c). Agnico Eagle Mines Limited, Meliadine Division. Noise Abatement and Monitoring Plan, Version 4, December 2021.

AEM (2022a). Agnico Eagle Mines Limited. Meliadine Extension, Water Licence 2AM-MEL1613 Amendment, Main Application Document

AEM (2022b) Agnico Eagle Mines Limited. (March). 2021 Annual Report. Submitted to NWB, the NIRB, DFO. CIRNAC, and the KIA. April 2022.

AEM (2022c) Agnico Eagle mines Limited, Meliadine Division. Meliadine Mine – Meliadine Extension FEIS Addendum. July 2022.

AEM (2022d). Agnico Eagle Mines Limited, Meliadine Division. Groundwater Management Plan, Version 8, December 2022.

AEM (2022e). Agnico Eagle Mines Limited, Meliadine Division. Water Management Plan, Version 12, December 2022.

AEM (2022f). Agnico Eagle Mines Limited, Meliadine Division. Mine Waste Management, Version 9, December 2022.

AEM (2022g). Agnico Eagle Mines Limited, Meliadine Division. Roads Management Plan, Version 9, December 2022.

AEM (2022h). Agnico Eagle Mines Limited, Meliadine Division. Water Quality and Flow Monitoring Plan, Version 4, December 2022.

AEM (2022i). Agnico Eagle Mines Limited, Meliadine Division. Landfill and Waste Management Plan, Version 8, December 2022.

AEM (2022j). Agnico Eagle Mines Limited, Meliadine Division. Landfarm Management Plan, Version 4, December 2022.

AEM (2022k). Agnico Eagle Mines Limited, Meliadine Division. Borrow Pits and Quarries Management Plan, Version 7, December 2022.

AEM (2022). Agnico Eagle Mines Limited, Meliadine Division. Hazardous Materials Management Plan, Version 6, December 2022.

AEM (2022m). Agnico Eagle Mines Limited, Meliadine Division. Itivia Bulk Fuel Storage Facility Environmental Performance Monitoring Plan. December 2022. version 2 NWB

AEM (2022n). Agnico Eagle Mines Limited, Meliadine Division. Terrestrial Environment Management and Monitoring Plan, Version 4, February 2022.

AEM (2022o). Agnico Eagle Mines Limited, Meliadine Division. ARD-ML Sampling and Testing Plan (AEM 2022n)

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



AEM website: https://www.agnicoeagle.com/English/operations/operations/meliadine/default.aspx

Azimuth (2021). Environmental Effects Monitoring Cycle 2 Study Design, Meliadine Gold. Prepared for Agnico Eagle Mines Limited. February 2021.

CCME. Canadian Council of Ministers of the Environment, Canadian Water Quality Guidelines for the Protection of Aquatic Life (https://ccme.ca/en).

CESCC (2011). Canadian Endangered Species Conservation Council. 2011. Wild species 2010: the general status of species in Canada. National General Status Working Group: 302 pp.

COSEWIC (2012). Committee on the Status of Endangered Wildlife in Canada. 2012. Status of Endangered Wildlife in Canada. Available at http://www.cosewic.gc.ca/eng/sct1/index\_e.cfm. Accessed August 2012.

Environment Canada (2009). Environmental code of practice for metal mines, 2009.

Golder (2013). Site specific Water Quality Objectives (SSWQO) Assessment - Meliadine Gold Project, Nunavut. Document 371. Report to Agnico-Eagle Mines Ltd. February 22, 2013. 57 p.

Golder (2019a). Nuqsana Golder (March 2019). Cycle 1 Environmental Effects Monitoring Report and 2018 Aquatic Effects Monitoring Program Annual Report18110868-720-R-Rev0-2100

Golder (2020a). Meliadine Site Water Balance and Water Quality Model. Type A 2AM-MEL1631 Water Licence Amendment. Submitted to Agnico Eagle. August 2020

Golder (2022a). Westbay Monitoring Well System M20-3071 Groundwater Quality Assessment Meliadine Extension Factual Report. Golder Doc. 21468783-911-Rev0. July 2022.

Golder (2022b). Meliadine Extension - 2022 Thermal Assessment. Ref No. 22513890-938-R-Rev0. July 2022.

Golder (2022c). Meliadine Extension - Updated Summary of Hydrogeology Existing Conditions. Ref No. 22513890-942-R-Rev0. December 2022.

Golder (2022d). Updated Hydrogeology Modelling Report Meliadine Extension. Ref No. 22513890-941-R-Rev0. December 2022.

Health Canada (2022), Guidelines for Canadian Drinking Water Quality, September 2022.

IPCC (2014). (Intergovernmental Panel on Climate Change). Fifth Assessment Report (AR5). Summary for Policymakers. In: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Field, C.B., V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, K.L. Ebi, Y.O. Estrada, R.C. Genova, B. Girma, E.S. Kissel, A.N. Levy, S. MacCracken, P.R. Mastrandrea, and L.L. White (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 1-32.

Lorax (2022). Lorax Environmental Services Ltd. Meliadine Extension In-pit Deposition Alternatives WBWQM, December 16, 2022

Lorax (2023). Lorax Environmental Services Ltd. Meliadine Extension Water Balance and Water Quality Model Update - Summary of Model Results. Project: A667-1, January, 2023

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



KIA (2017). Kivalliq Inuit Association. Meliadine Project Inuit Impact & Benefit Agreement between the Kivallig Inuit Association and Agnico Eagle Mines Limited. March 1, 2017.

NRC (2015). Natural Resources Canada. 2015. Earthquake Canada. On-line calculation accessed October 2019.

NWB (2016). Nunavut Water Board. WATER LICENCE NO: 2AM-MEL1631. Issued April 1, 2016.

NWB (2021). Nunavut Water Board. Amendment no. 1 to WATER LICENCE NO: 2AM-MEL1631. Issued June 23, 2021.

NIRB (2019). Nunavut Impact Review Board. Project Certificate NIRB-006. February 26, 2019.

Okane (Okane Consultants Inc.) (2021). Meliadine Future Climate Change Datasets. Prepared for Agnico Eagle Mines Ltd. Rev 1, June 2021.

QIA (Qikiqtani Inuit Association). Undated. Abandonment and Reclamation Policy for Inuit Owned Lands (Version 2.0).

SARA (Species at Risk Act). 2012. Species at Risk Public Registry website. Available at http://www.sararegistry.ga.ca.

SLI (2019). SNC-Lavalin. Report 668523-4000-4EER-0001-00. Meliadine Interim Closure and Reclamation Plan 2019.

SLI (2020a). SNC-Lavalin. Technical Note 674942-4000-40ER-0001 00. Reclamation Work and Costs -Waterline for Treated Groundwater Effluent Discharge. June 2020.

SLI (2021). SNC-Lavalin. Technical Note 674942-4000-4EER-0002 03. Meliadine Interim Closure and Reclamation Plan – Update 2020, April 2021.

Tetra Tech (2017a). (April) Design report for Itivia laydown area culvert Meliadine Project, Nunavut. Tetra Tech project number: 28920. AEM Number: 6515-C-230-005-230-REP-002

Tetra Tech (2017b). (July). Design Report for Operation Landfill (Stage 1), Meliadine Gold Project Tetra. FILE: 704-ENG.EARC03076-01.WM13. AEM Number: 6515-C-230-005-230-REP-002

Tetra Tech (2018). (February). Construction summary (as-built) report for landfarm, Meliadine project, NU. Project number: 28920. AEM Number: 6515-E-132-007-132-REP-016

Tetra Tech (2019). (February) Construction summary report for Rankin Inlet bypass road and culverts, Meliadine project, NU. Project number: 28920. AEM Number: 6515-E-132-007-132-REP-010

Tetra Tech (2020). IFR Prefeasibility Level Design\_WRSF3&Water Management Infrastructure 07072020, Meliadine Project, July 2020 Water License Amendment, July 03, 2020.

Tetra Tech (2021). Rankin Inlet Design Storm and Precipitation Frequency Quantiles Update Meliadine Gold Mine, Nunavut. August 18, 2021.

Tetra Tech (2023a). Prefeasibility Level Design of Water Management Infrastructures for Operation Phase, Meliadine Extension Project, Nunavut. January 2023.

Tetra Tech (2023b). Prefeasibility Level Design of Waste Rock Storage Facilities, Meliadine Extension Project, Nunavut. January 2023.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report



Tetra Tech (2023c). Stability Analyses for the Proposed Tailings Storage Facility (TSF), Meliadine Extension Project, Nunavut. January 2023

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

The following terms are utilized in this document following the definitions provided in the Mine Site Reclamation Guidelines for the Northwest Territories (INAC 2007), the Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories (AANDC/MVLWB, 2013) and the Meliadine Gold Project Type "A" Water Licence 2AM-MEL1631.

This Appendix includes discipline-specific technical terms and key closure and reclamation planning terms (Adapted from SLI, 2021).

**Abandonment:** The permanent dismantlement of a facility so it is permanently incapable of its intended use. This includes the removal of associated equipment and structures.

Acid Base Accounting (ABA): Acid base accounting; a static test that defines the amounts, and relative balance, of potentially acid-generating and acid-neutralizing (or base) minerals in a sample.

Acid Rock Drainage (ARD): Acid rock drainage/metal leaching. The production of acidic leachate, seepage or drainage from underground workings, open pits, ore piles, waste rock or construction rock that can lead to the release of metals to groundwater or surface water during the life of the Project and beyond closure.

Active layer: The layer of ground above the permafrost which thaws and freezes annually.

Adaptive management: A management plan that describes a way of managing risks associated with uncertainty and provides a flexible framework for mitigation measures to be implemented and actions to be taken when specified thresholds are exceeded.

Advanced mineral exploration: Any appurtenant undertaking in which the proponent requires a Type A or Type B water licence in order to carry out the proposed activities.

All-Weather Access Road (AWAR): The all-weather access road and associated water crossings between the Hamlet of Rankin Inlet and the Meliadine Gold Project mine site.

Aquatic Effects Monitoring Plan (AEMP): A monitoring program designed during the Environmental Impact Statement stage of the Project to determine the short and long-term effects in the aquatic environment resulting from the Project, to evaluate the accuracy of impact predictions, to assess the effectiveness of planned impact mitigation measures and to identify additional impact mitigation measures to avert or reduce environmental effects. An overarching "umbrella" program that conceptually provides an opportunity to integrate results of individual, but related, monitoring programs in accordance with the Water Licence.

Backfill: Material excavated from a site and reused for filling the surface or underground void created by mining.

Background: An area near the site under evaluation not influenced by chemicals released from the site, or other impacts created by onsite activity.

Baseline: A surveyed condition and reference used for future surveys.

Berm: A mound or wall, usually of earth, used to retain substances or to prevent substances from entering an area.

Best management practices: Any program, technology, process, operating method, measure, or device that controls, prevents, removes, or reduces pollution and impact on the environment.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

**Biodiversity:** The variety of plants and animals that live in a specific area.

Bioremediation: The use of microorganisms or vegetation to reduce contaminant levels in soil or water.

Borrow pit: A source of fill or embanking material.

Canadian Council of the Minister of Environment (CCME): The organizations of Canadian Ministers of Environment that set guidelines for environmental protection across Canada such as the Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life.

Care and maintenance: A term to describe the status of a mine when it undergoes a temporary closure. In respect of a mine, means the status of the facility when the License ceases production or commercial operation temporarily for an undefined period of time.

Closure: When a mine ceases operation without the intent to resume mining activities in the future.

Closure criteria: Details to set precise measures of when the objective has been satisfied.

Closure goal: The guiding statement that provides the virion and purpose of reclamation. Attainment of the closure goal happens when the proponent has satisfied all closure objectives. By its nature, the closure goal is a broad, high-level statement and not directly measurable.

Closure objectives: Statements that describe what the selected closure activities are aiming to achieve: they are guided by the closure principles. Closure objectives are typically specific to project components, are measurable and achievable, and allow for the development of closure criteria.

Closure options: A set of proposed alternatives for closing and reclaiming each mine components. The closure options are evaluated to determine the selected closure activity, which must be approved by the NWB.

Closure principles: The four core closure principles are 1) physical stability, 2) chemical stability, 3) no long-term active care requirements, and 4) future use (including aesthetics and values). The principles guide the selection of closure objectives.

Commercial operation: In respect of a mine, an average rate of production that is equal to or greater than 25% of the design capacity of the mine over a period of ninety consecutive days.

Construction: Activities undertaken to construct or build any components of, or associated with, the development of the Meliadine Gold Project.

Contact water: Any water that may be physically or chemically affected by mining activities.

Contaminant: Any physical, chemical, biological or radiological substance in the air, soil or water that has an adverse effect. Any chemical substance with a concentration that exceeds background levels or which is not naturally occurring in the environment.

Contouring: The process of shaping the land surface to fit the form of the surrounding land.

Core Receiving Environmental Monitoring Program (CREMP): A monitoring program designed to determine the short and long-term effects in the aquatic environment resulting from the Project, to evaluate the accuracy of impact predictions, to assess the effectiveness of planned impact mitigation measures and to identify additional impact mitigation measures to avert or reduce environmental effects.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

Cumulative Effects: The combined environmental impacts that accumulate over time and space as a result of a series of similar or related actions or activities.

Decommissioning: The process of permanently closing a site and removing equipment, buildings and structures. Rehabilitation and plans for future maintenance of affected land and water are also included.

Deleterious substances: A substance as defined in section 34(1) of the Fisheries Act.

Dike: Retaining structure designed for water control to enable safe open pit mining and for containing tailings impoundments.

**Discharge:** The release of any water or waste to the receiving environment.

Disposal: The relocation, containment, treatment or processing of unwanted materials. This may involve the removal of contaminants or their conversion to less harmful forms.

Domestic waste: All solid waste generated form the accommodations, kitchen facilities and all other site facilities, excluding those hazardous wastes associated with the mining and processing of ore.

**Drainage:** The removal of excess surface water or groundwater from land by natural runoff and permeation, or by surface or subsurface drains.

Effluent: Treated or untreated liquid waste material that is discharged into the environment from all site water management facilities or from a structure such as a settling pond or a treatment plant.

End land use: The allowable use of disturbed land following reclamation. Municipal zoning and/or approval may be required for specific land uses.

**Engagement:** The communication and outreach activities a proponent is required to undertake with affected communities and Aboriginal organizations/governments prior to and during the operation of a project, including closure and reclamation phases.

Engineered structure: Any facility, which was designed and approved by a Professional Engineer registered with the Association of Professional Engineers, Geologists and Geophysicists of Nunavut.

Environment: The components of the Earth, and includes: land, water and air, including all layers of the atmosphere; all organic and inorganic matter and living organisms; and the interacting natural systems that include the aforementioned components.

Environmental assessment: An assessment of the environmental effects of a project that is conducted in accordance with the Canadian Environmental Assessment Act and its regulations.

Environmental management system: A management system that incorporates environmentally and socially responsible practices into the project operations.

Erosion: The wearing away of rock, soil or other surface material by water, rain, waves, wind or ice; the process may be accelerated by human activities.

Explosives: Gunpowder, blasting powder, nitroglycerine, gun-cotton, dynamite, blasting gelatine, gelignite, fulminates of mercury or of other metals and every other substance made, manufactured or used with a view to producing a violent effect by explosion.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

Final discharge point: In respect of an effluent, an identifiable discharge point of a mine beyond which the operator of the mine no longer exercises control over the quality of the effluent (Metal Mining Effluent Regulations).

Fish habitat: Areas used by fish for spawning, nursery, rearing, foraging and overwintering.

Geotechnical Engineer: A professional engineer registered with the Association of Professional Engineers, Geologist and Geophysicists of Nunavut and whose principal field of specialization with the engineering properties of earth materials in dealing with man-made structures and earthworks that will be built on a site. These can include shallow and deep foundations, retaining walls, dams, and embankments.

**Geothermal analysis:** The analysis of temperature below the ground surface.

Glacial till: Unsorted and unlayered rock debris deposited by glacier.

Greywater: The component of effluent produced from domestic use (i.e. washing, bathing, food preparation and laundering), excluding sewage.

Ground thermal regime: Temperature conditions below the ground surface; a condition of heat losses and gains from geothermal sources and the atmosphere.

Groundwater: All subsurface water that occurs beneath the water table in rocks and geologic formations that are fully saturated. Water that occupies pores and fractures in rock and soil below the ground surface in a liquid or frozen state.

Habitat: The place where animal or plant naturally lives and grows.

Hazardous materials/waste: A contaminant which is a dangerous good that is no longer used for its original purpose and is intended for recycling, treatment, disposal or storage. Materials or contaminant which are categorized as dangerous goods under the Transportation of Dangerous Good Act (1992) and/or that is no longer used for their original purpose and is intended for recycling, treatment, disposal or storage.

Humidity cell test (HCT): A type of kinetic test in which a small sample (about 1 kg) is placed in an enclosed chamber in a laboratory, alternating cycles of moist and dry air is constantly pumped through the chamber, and once a week the sample is rinsed with water; chemical analysis of rinse water yields concentrations of elements and other parameters used to calculate reaction rates.

Hydrology: The science that deals with water, its properties, distribution and circulation over the Earth's surface.

In situ treatment: A method of managing or treating contaminated soils, sludges and waters "in place" in a manner that does not require the contaminated material to be physically removed or excavated from where it originated.

**Incinerator:** The dual chamber, high temperature facility designed with the capacity to service the camp.

Interim Closure and Reclamation Plan (ICRP): A conceptual detailed plan on the reclamation of mine components which will not be closed until the end of the mining operations, and operational detail for components which are to be progressively reclaimed throughout the mine life.

Kinetic test: A geochemical procedure for characterizing the chemical status of a sample through time during continued exposure to a known set of environmental conditions, such as a humidity cell.

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

Land owner: The responsible authority with administrative control and ownership of a type of land classified as crown land, commissioners land or Inuit Owned Land.

- a. Crown land is a land belonging to Her Majesty or in respect of which Government has the power of disposition. In Nunavut, this power rests with Aboriginal Affairs and Northern Development Canada (AANDC).
- b. Commissions land is a land belonging to the Commissioner for the Government of Nunavut; which typically is a land within an established municipality administered by a Municipal Corporation and/or the Department of Community Government and Services (CGS).
- c. Inuit Owned Land (IOL) are those lands vested in the Designated Inuit Organization (DIO) pursuant the Nunavut Land Claims Agreement. For this Project the DIO is the Kivalliq Inuit Association.

#### Land use permit:

- For Crown land a Class A Permit or Class B Permit as required by the Territorial Land Use Regulations SOR/82-217, s.1; SOR/88-169, s.2 administered by AANDC Lands Department.
- b. For IOL's- Land Use Licence I, II or III or Commercial Lease I, II, III as defined by the DIO.
- C. For Commissioners land - a permit or lease as required by the Municipal Land Administration Policy.

Landfarm: The lined, engineered facility designed to treat petroleum hydrocarbon contaminated snow and soil that may be generated during mining activities using bioremediation.

Landfill: An engineered waste management facility at which waste is disposed by placing it on or in land in a manner that minimizes adverse human health and environmental effects.

Leachate: Water or other liquid that has washed (leached) from a solid material, such as a layer of soil or water; leachate may contain contaminants.

Long-term active care: A post-closure mine site is in long-term active care when sustained monitoring and maintenance of active facilities is required (e.g., for more than 25 years). This should be avoided whenever possible.

**Metal leaching:** The mobilization of metals into solution under neutral, acidic or alkaline conditions.

Migration: The movement of chemicals, bacteria, and gases in flowing water or vapour.

Mine design: The detailed engineered designs for all mine components stamped by a design engineer.

Mine plan: The plan for the development of the mine, including the sequencing of the development.

Mine water: Any water, including groundwater, which is pumped or flows out of any underground workings or open pit.

Mitigation: The process of rectifying an impact by repairing, rehabilitating or restoring the affected environment, or the process of compensating for the impact by replacing or providing substitute resources or environments.

Monitoring: Observing the change in geophysical, hydrogeological or geochemical measurements over time.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

No net loss: A term found in Canada's Fisheries Act. It is based on the fundamental principle of balancing unavoidable losses of fish habitats with habitat replacement on a project-by-project basis in order to prevent depletion of Canada's fisheries resources.

Non-contact water: The runoff originating from areas unaffected by mining activity that does not come into contact with developed areas.

Nunavut Land Claims Agreement: The "Agreement between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada," including its preamble and schedules, and any amendments to that agreement made pursuant to it.

Objectives: Objectives describe what the reclamation activities are aiming to achieve. The goal of mine closure is to achieve the long-term objectives that are selected for the site.

Operations: The set of activities associated with mining, ore processing and recovery of gold; excluding construction and decommissioning activities.

Operator: The person who operates, has control or custody of, or is in charge of a mine or recognized closed mine.

Ore: Rock that is considered economic according to the parameters used in the ore reserve estimate. Ore will be processed at the mineral processing plant after it is mined from the Project underground mine and open pits.

Overburden: A general term referring to soil and broken rock, lying above ore and mine rock, that can usually be removed without blasting; at mines in soft sedimentary rock like coal, overburden can be synonymous with mine rock.

Passive long-term care: Occasional monitoring, coupled with infrequent maintenance or repairs that takes place following reclamation in the post closure phase of the mine site. Many mine sites require ongoing passive care, which can be an acceptable practice.

Passive Treatment: Treatment technologies that can function with little or no maintenance over long periods of time.

Permafrost: Permafrost is defined as ground that remains at or below 0°C for at least two years. Permafrost does not necessarily contain ice; rather, the definition is based solely on temperature criteria of the mineral or organic parent material.

Permafrost Aggradation: A naturally or artificially caused increase in the thickness and/or area extent of permafrost.

**Permanent Closure:** Final closure of the mine site after mining has ceased, when no further exploration, mining, or processing activities are anticipated at the site.

Permeability: The ease with which gases, liquids, or plant roots penetrate or pass through soil or a layer of soil. The rate of permeability depends upon the composition of the soil.

pH: A measure of the alkalinity or acidity of a solution, related to hydrogen ion concentration; a pH of 7.0 being neutral.

**Piezometer:** An instrument used to monitor pore water pressure.

Meliadine Interim Closu	Meliadine Interim Closure and Reclamation Plan – Update 2022	
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

Pore water pressure: The pressure of groundwater held within the spaces between sediment particles.

Pore water: The groundwater present within the spaces between sediment particles.

**Post-closure:** The period of time after active closure of the mine.

Potentially acid generating (PAG): Rock with an NP/AP ratio less than 2 as determined by static tests, as defined by MEND (2009). PAG rock can also be operationally defined based on the results of static testing such as ABA and NAG testing.

Progressive Reclamation: Actions that can be taken during mining operations before permanent closure, to take advantage of cost and operating efficiencies by using the resources available from mine operations to reduce the overall reclamation costs incurred. It enhances environmental protection and shortens the timeframe for achieving the reclamation objectives and goals.

**Project:** The Meliadine Gold Project as outlined in the Final Environmental Impact Statement. It comprises two (2) open pit mines, an underground mine, an All Weather Private Access Road from Rankin Inlet to the mine site, and site facilities in the Hamlet of Rankin Inlet (Itivia Harbor).

**Proponent:** Applicant for, or a holder of, a water licence and/or land use permit.

Quarry: The areas of surface excavation for extracting rock material for use as construction materials along the All Weather Private Access Road and facilities at the mine site.

Receiving environment: The aquatic and terrestrial environments that receive any discharge resulting from the Project.

Reclaim Pond: The pond located within the active zone of the Tailings Storage Facility, designed to contain process (tailings related) water, and where water in the pond will be used to satisfy mill process water make up requirements.

**Reclamation:** The process of returning a disturbed site to its natural state or one for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.

Reclamation Research: Literature reviews, laboratory or pilot-scale tests, engineering studies, and other methods of resolving uncertainties. Proponents conduct reclamation research to answer questions pertaining to environmental risks; the design of reclamation research plans aims to provide data and information which will reduce uncertainties for closure options, selected closure activities, and/or closure criteria.

Rehabilitation: Activities to ensure that the land will be returned to a form and productivity in conformity with a prior land use plan, including a stable ecological state that does not contribute substantially to environmental deterioration and is consistent with surrounding aesthetic values.

Remediation: The removal, reduction, or neutralization of substances, wastes or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety now or in the

Restoration: The renewing, repairing, cleaning-up, remediation or other management of soil, groundwater or sediment so that its functions and qualities are comparable to those of its original, unaltered state.

Re-vegetation: Replacing original ground cover following a disturbance to the land.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

Ripping: A method of loosening rock or soil using steel tynes attached to the rear of a bulldozer. The tynes are lowered into the ground and as the bulldozer moves forwards the soil or blocks of rock are displaced by the tynes.

Risk assessment: Analysis of potential threats and options for mitigation for a given site, component, or condition. Risk assessments consider factors such as risk acceptability, public perception of risk, socioeconomic impacts, benefits, and technical feasibility. It forms the basis for risk management.

Runoff: Water that is not absorbed by soil and drains off the land into bodies of water.

Salvageable Materials: Decommissioned materials which can be sold or reused elsewhere.

Scarification: Seedbed preparation to make a site more amenable to plant growth. This is typically conducted with a grader.

Security deposit: Funds held by the Crown or land owner that can be used in the case of abandonment of an undertaking to reclaim the site, or carry out any ongoing measures that may remain to be taken after the abandonment of the undertaking.

Sediment: Solid material, both mineral and organic, that has been moved by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.

Seepage: Any water that drains through or escapes from any structure designed to contain, withhold, divert or retain water or waste. Seepage also includes any flows that have emerged through open pits, runoff from rock storage facilities, ore stockpile areas, quarries, and landfill or landfarm areas.

Seismic: Relating to an earthquake or to other tremors of the Earth, such as those caused by large explosions.

Selected closure activity: The closure and reclamation activity chosen from the closure options for each Project component.

Sewage: All toilet wastes and greywater.

Stakeholders: Industry, federal agencies, the territorial government, Aboriginal organizations/governments, land owners, affected communities, and other parties with an interest in a project.

Sump: An excavation in impermeable soil for the purpose of catching or storing water or waste.

Surface water: Natural water bodies such as river, streams, brooks, ponds and lakes, as well as artificial watercourses, such as irrigation, industrial and navigational canals, in direct contact with the atmosphere. Sustainable development: Industrial development that does not detract from the potential of the natural environment to ensure benefits for future generations.

Tailings: Material rejected from a mill after most of the recoverable valuable minerals have been extracted.

Tailings Storage Facility: The facility designed to permanently contain the solid fraction of the mill tailings.

Taliks: Unfrozen zones that can exist within, below, or above permafrost layers. They are usually located below deep water bodies.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### **Glossary of Terms and Definitions**

**Temporary closure:** When a mine ceases operations with the intent to resume mining activities in the future. Temporary closures can last for a period of weeks, or for several years, based on economical, environmental, political, or social factors.

**Total dissolved solids:** A measure of the amount of dissolved substances in a waterbody.

**Total suspended solids:** A measure of the particulate matter suspended in the water column.

Traditional knowledge: A cumulative, collective body of knowledge, experience, and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change. The practical knowledge that has been gathered through the experience of living in close contact with nature and has been passed along or communicated orally and handed down from generation to generation.

Turbidity: The degree of clarity in the water column typically reflected as the amount of suspended particulate matter in a waterbody.

Type A water licence: A Type A water licence is required if the use is of a type set out in column 2 of Schedule 2 and satisfies a criterion set out in column 5 in respect of an undertaking set out in column 1 of the Nunavut Water Regulations SOR/2013-69

(Note: despite definition of Type B water licence item a), a Type A licence is the appropriate licence for a use of waters if a Type A licence is required for another use of waters, or a deposit of waste, in respect of the same undertaking.)

Type B water licence: A Type B water licence required if

- a) The use is of a type set out in column2 of Schedule 2 and satisfies a criterion set out in column 4 in respect of an undertaking set out in column 1, or
- b) The use satisfies the criterion set out in paragraph 4(1)(a) but does not satisfy one or more criterion set out in paragraphs 4(1)(b) to (d) of the Nunavut Water Regulations SOR/2013-69.

Waste rock: All rock materials, except ore and tailings that are produced as a result of mining operations. All unprocessed rock materials that are or were produced as a result of mining operations and have no current economic value.

Wastewater: The water generated by site activities or originates on-site that requires treatment or any other water management activity.

Wastewater treatment system: A tertiary treatment plant designed to remove organic material and

Watershed: A region or area bordered by ridges of higher ground that drains into a particular watercourse or body of water.

Water table: The level below where the ground is saturated with water.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### List of Acronyms, Abbreviations, Units and Symbols

#### List of Acronyms and Abbreviations

**AANDC** Aboriginal Affairs and Northern Development Canada (formerly known as Indian and

Northern Affairs Canada)

**ABA** Acid-Base Accounting

**AEMP** Aquatic Effects Monitoring Plan

Agnico Eagle Agnico Eagle Mines Limited

ARD Acid Rock Drainage

**ANFO** Ammonium Nitrate/Fuel Oil **AWAR** All-weather Access Road **BIF Banded Iron Formation** 

**CCME-WQG** Canadian Council for Ministers of the Environment Water Quality Guidelines

**CIRNAC** Crown-Indigenous Relations and Northern Affairs Canada

CLARC Community Lands and Resources Committee

**CLEY** Culture, Language, Elders and Youth **CGS** Community and Government Services

Comaplex **Comaplex Mines Corporation** 

CP Collection Pond

**CRA** Commercial, Recreational and Aboriginal

**CRP** Closure and Reclamation Plan

D-CP Water Retention Dike

**DFO** Fisheries and Oceans Canada

Environment and Climate Change Canada **ECCC** 

**EMPP Environmental Management and Protection Plan** 

**EWTP Effluent Water Treatment Plant** 

**FCRP** Final Closure and Reclamation Plan

**FEIS** Final Environmental Impact Statement

Golder Golder Associates Ltd. GN Government of Nunavut

**GWMP** Groundwater Management Plan

**HADD** Harmful Alteration Disruption or Destruction

Meliadine Interim Closu	re and Reclamation Plan – Update 2022	Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### List of Acronyms, Abbreviations, Units and Symbols

**HCT Humidity Cell Test** 

**HTO Hunters and Trappers Organizations** 

IDF Inflow Design Flood

**INAC** Indian and Northern Affairs Canada **ISQG** Interim Sediment Quality Guidelines

**KIA** Kivalliq Inuit Association

Type A Water Licence 2AM-MEL1631 Licence

**LSA** Local Study Area

**MDMER** Metal and Diamond Mining Effluent Regulations

**MEND** Mining Environment Neutral Drainage

Mine Meliadine Gold Project

ML Metal Leaching

**MMER** Metal Mining Effluent Regulations

**MVLWB** Mackenzie Valley Land and Water Board

**NIRB** Nunavut Impact Review Board

**NLCA** Nunavut Land Claims Agreement

non-PAG non-Potentially Acid-Generating

NPR Net Potential Ratio

**NRC** Natural Resources Canada

**NWB** Nunavut Water Board

**NWR Nunavut Water Regulations** 

**NWNSRTA** Nunavut Waters and Nunavut Surface Rights Tribunal Act

Potentially Acid-Generating **PAG** 

**Project** Meliadine Gold Project **PEL** Probable Effect Level **RSA** Regional Study Area RO Reverse Osmoses SD Support Document

SFE Shake Flask Extraction

**SSWQO** Site Specific Water Quality Objectives

Meliadine Interim Closu	re and Reclamation Plan – Update 2022	Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

### List of Acronyms, Abbreviations, Units and Symbols

STP Sewage Treatment Plant

**SETP-WTC** Saline Effluent Treatment Plant – Water Treatment Complex

**TDS Total Dissolved Solids** 

**TEMMP** Terrestrial Environment Management and Monitoring Plan

**TSF** Tailings Storage Facility TSS **Total Suspended Solids** WMP Water Management Plan **WRSF** Waste Rock Storage Facility

**WRTP** Waste Rock Transfer Pad

WTP Water Treatment Plant

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

#### List of Acronyms, Abbreviations, Units and Symbols

#### List of Units and Symbols

% percent degrees

°C degrees Celsius

°C/m degrees Celsius per metre

below ground surface Bgs cm/s centimetre per second

dBA decibels gravity g

H:V horizontal to vertical

ha hectares km kilometre

km/h kilometres per hour km<sup>2</sup> square kilometres

**kPa** kilopascal metres m

 $m^2$ square metres

m²/year cubic metre per year

m<sup>3</sup> cubic metres

m³/day cubic metres per day m³/hour cubic metre per hour

m³/s cubic metre(s) per second

cubic metre per year m³/year

masl metres above sea level

mg milligram mm millimetres

mm/hour millimetres per hour mm/year millimetres per year mg/L milligrams per litre

mg/kg milligrams per kilogram

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

### List of Acronyms, Abbreviations, Units and Symbols

M-m3 million cubic metres

M-m³/year million cubic metre per year

Mt million tonnes

tonnes

μm

tonne per cubic metre t/m³

tpd tonnes per day micrometre

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

# **Appendix C**

#### **Record of Engagement**

This is a table that outlines all engagement specific to closure that has occurred to date. No issue has been identified. Progressive reclamation work planned or completed is presented in the ICRP.

#### **Engagement specific to closure**

In 2018, reclamation work occurred at the Itivia quarry. Agnico Eagle proceeded to the reclamation according to the quarry conditions by removing all equipment and material, stabilizing and gently sloping the walls. Once the reclamation work was completed, a GN Regional Lands Administrator and a Hamlet foreman inspected the quarry and confirmed that they were satisfied with the current state of the Itivia quarry site.

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

# **Appendix D**

# **Regulatory Instruments**

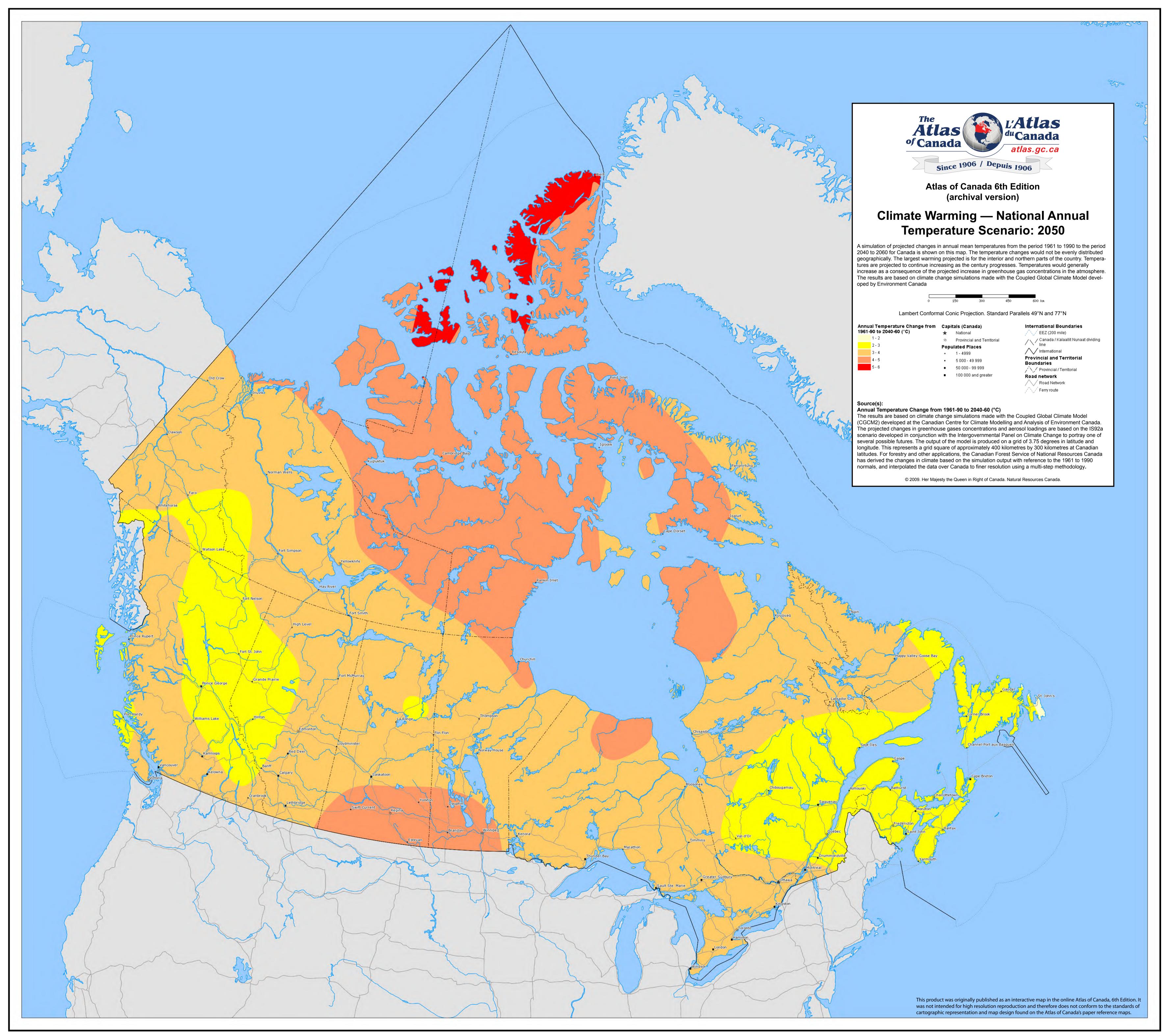
Issued By	ID	Description	Issue	Expiry
KIA	KVPL11D01	Production lease	2017/06/30	2027/06/29
KIA	KVCA07Q08	Tiriganiaq/Westmeg/Meliadine quarry permit	2018/07/19	2024/11/12
KIA	KVCA11Q01	Quarry Permit (along AWAR)	2018/04/19	2024/04/19
KIA	KVRW11F02	Road Lease	2012/04/19	2032/07/31
KIA	n/a	Water Compensation 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	006	Project certificate (Amendment 001)	2019/02/26	N/A
NIRB	006	Project Certificate (Amendment 002)	2022/02/02	N/A
NIRB	16QN071	Screening decision (Itivia Quarry)	-	-
GN-NAD	LE-03-320- 0036	Laydown area lease	2021/07/01	2031/06/30
GN-CGS	01-600-23	Quarry permit – site D	2022/04/01	2023/03/31
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
CIRNAC	55K/16-42-2	Saline Effluent Discharge and Diffuser Lease	2019/06/28	2034/13/07
Transport Canada	2019-600003	Placement of Diffuser	2022/05/11	n/a

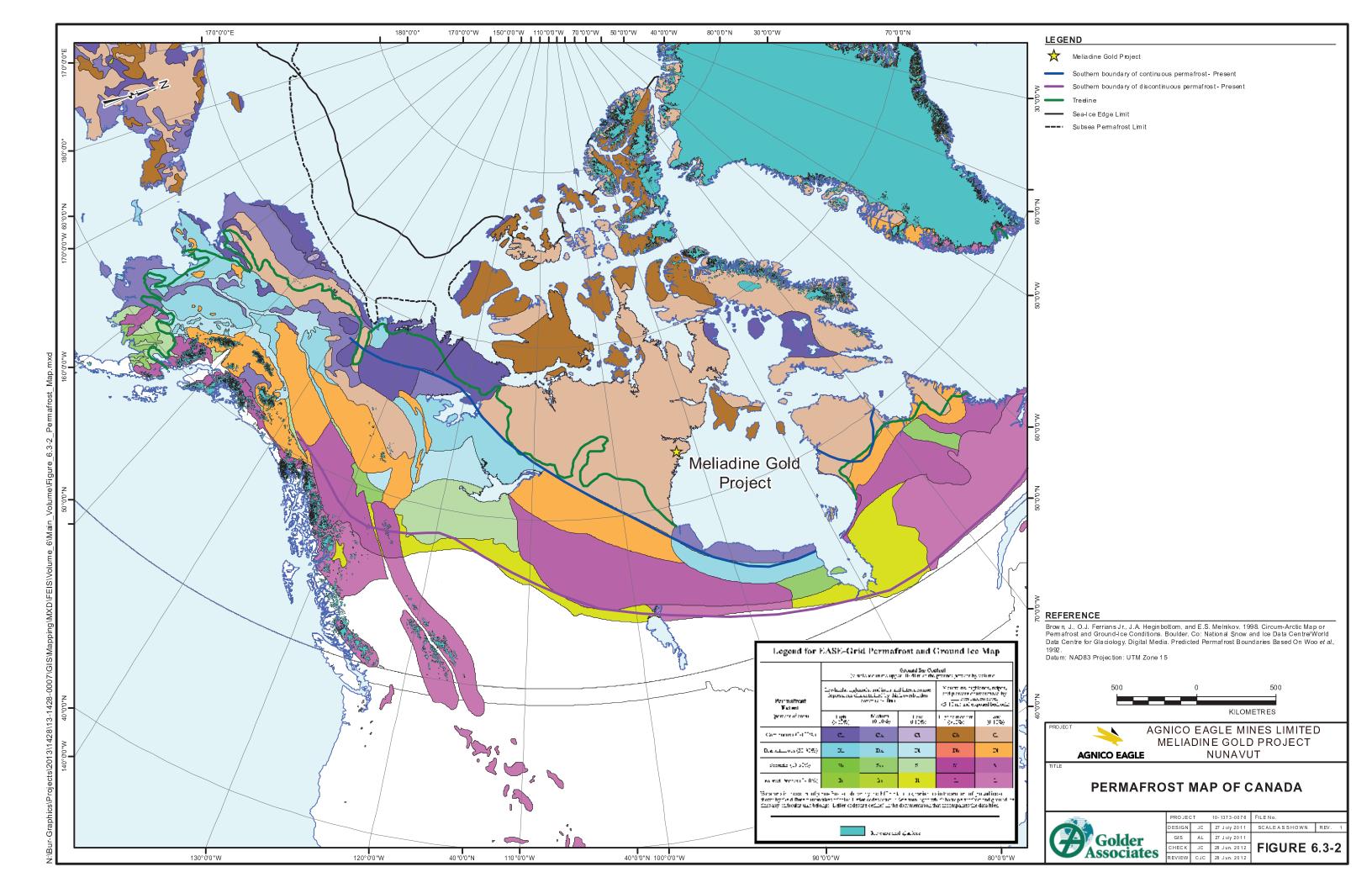
Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

# **Appendix E**

### **Permafrost Map**

Meliadine Interim Closure and Reclamation Plan - Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

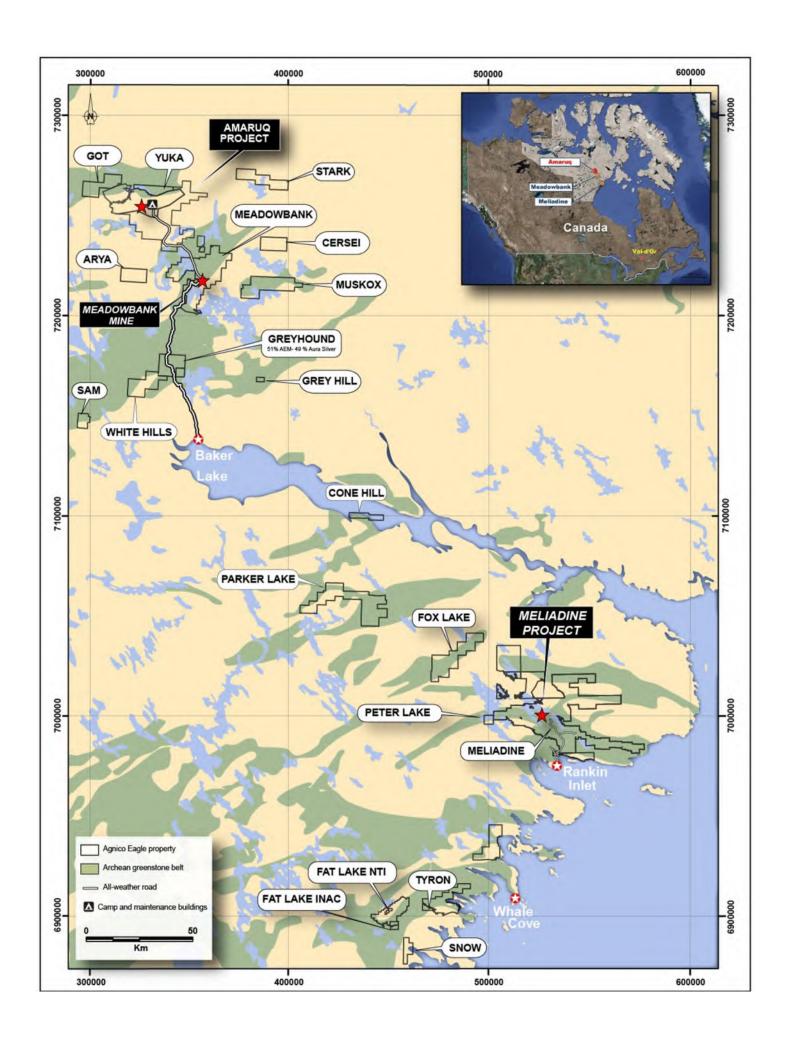


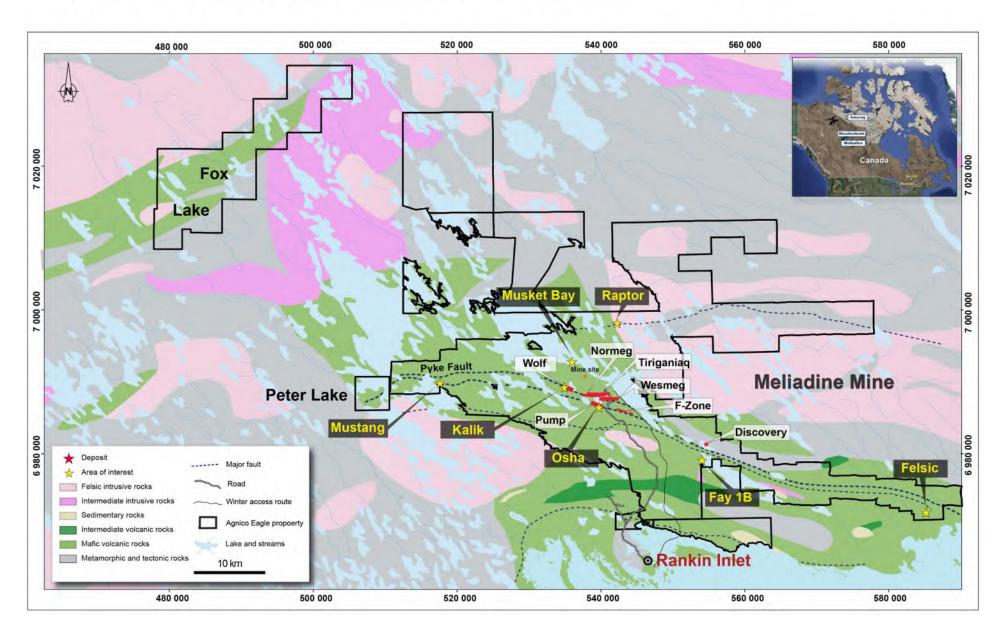


# **Appendix F**

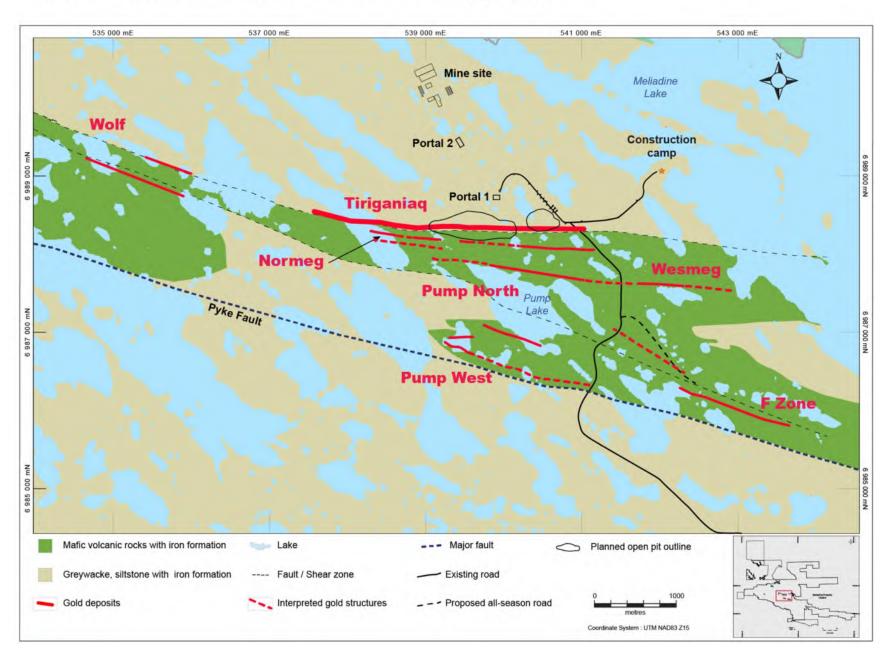
Meliadine Geology, Seismic Zone, Groundwater Flow and Bathymetry

Meliadine Interim Closure and Reclamation Plan - Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report





# AGNICO EAGLE Meliadine Mine - Local Geology Map



#### 2015 National Building Code Seismic Hazard Calculation

INFORMATION: Eastern Canada English (613) 995-5548 français (613) 995-0600 Facsimile (613) 992-8836 Western Canada English (250) 363-6500 Facsimile (250) 363-6565

Site: 63.023N 92.218W User File Reference: Meliadine Mine Site

Requested by: SNC-Lavalin (for Agnico Eagle Mines Limited)

Probability of exceedance per annum	0.000404	0.001	0.0021	0.01
Probability of exceedance in 50 years	2 %	5 %	10 %	40 %
Sa (0.05)	0.047	0.027	0.017	0.005
Sa (0.1)	0.067	0.039	0.026	0.009
Sa (0.2)	0.066	0.042	0.028	0.011
Sa (0.3)	0.057	0.037	0.026	0.009
Sa (0.5)	0.047	0.031	0.021	0.007
Sa (1.0)	0.028	0.018	0.012	0.004
Sa (2.0)	0.013	0.008	0.005	0.001
Sa (5.0)	0.003	0.002	0.001	0.000
Sa (10.0)	0.001	0.001	0.001	0.000
PGA (g)	0.037	0.022	0.015	0.005
PGV (m/s)	0.035	0.022	0.014	0.004

Notes: Spectral (Sa(T), where T is the period in seconds) and peak ground acceleration (PGA) values are given in units of g (9.81  $\text{m/s}^2$ ). Peak ground velocity is given in m/s. Values are for "firm ground" (NBCC2015 Site Class C, average shear wave velocity 450 m/s). NBCC2015 and CSAS6-14 values are highlighted in yellow. Three additional periods are provided - their use is discussed in the NBCC2015 Commentary. Only 2 significant figures are to be used. These values have been interpolated from a 10-km-spaced grid of points. Depending on the gradient of the nearby points, values at this location calculated directly from the hazard program may vary. More than 95 percent of interpolated values are within 2 percent of the directly calculated values.

#### References

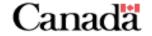
National Building Code of Canada 2015 NRCC no. 56190; Appendix C: Table C-3, Seismic Design Data for Selected Locations in Canada

Structural Commentaries (User's Guide - NBC 2015: Part 4 of Division B) Commentary J: Design for Seismic Effects

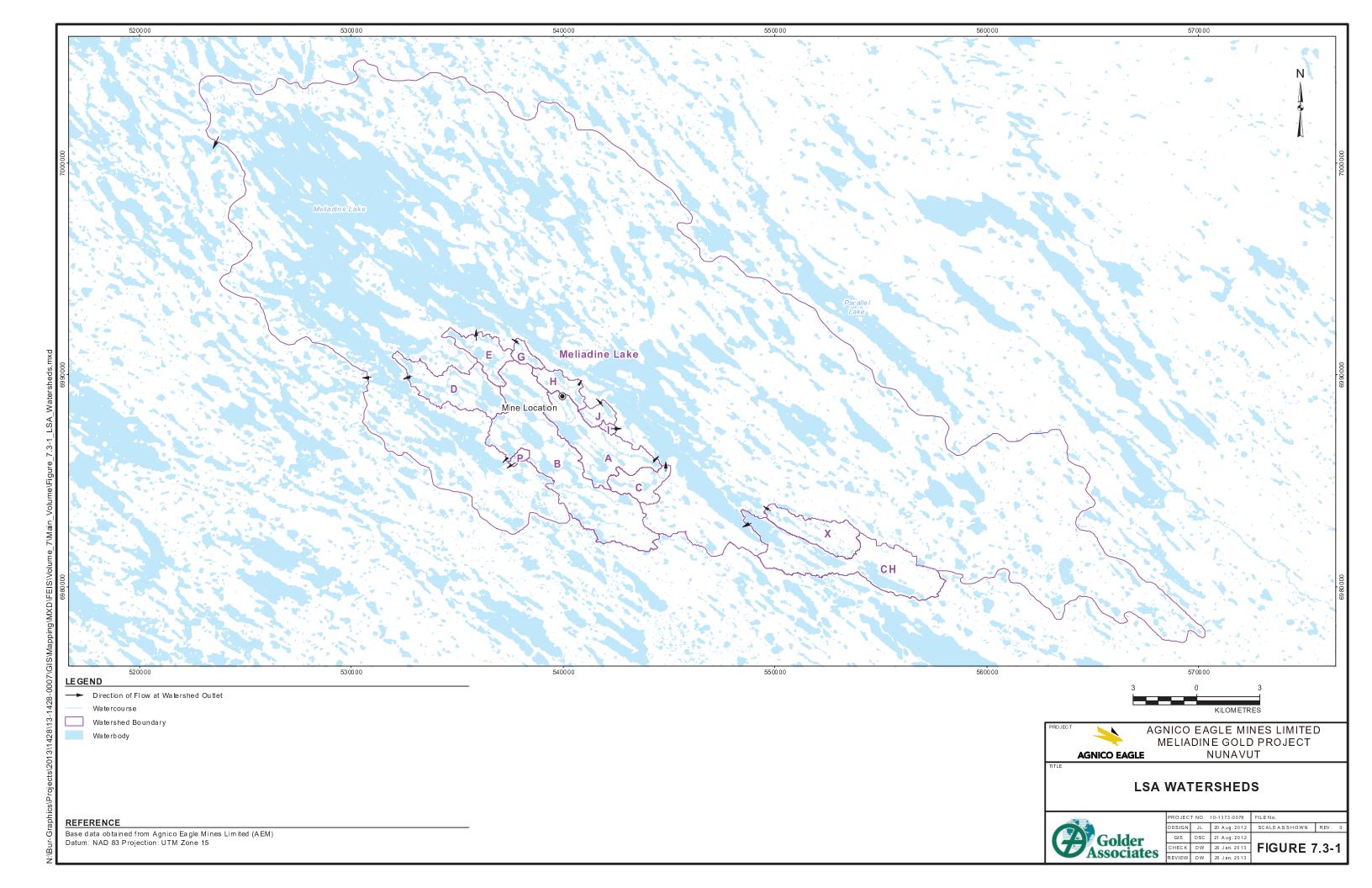
**Geological Survey of Canada Open File 7893** Fifth Generation Seismic Hazard Model for Canada: Grid values of mean hazard to be used with the 2015 National Building Code of Canada

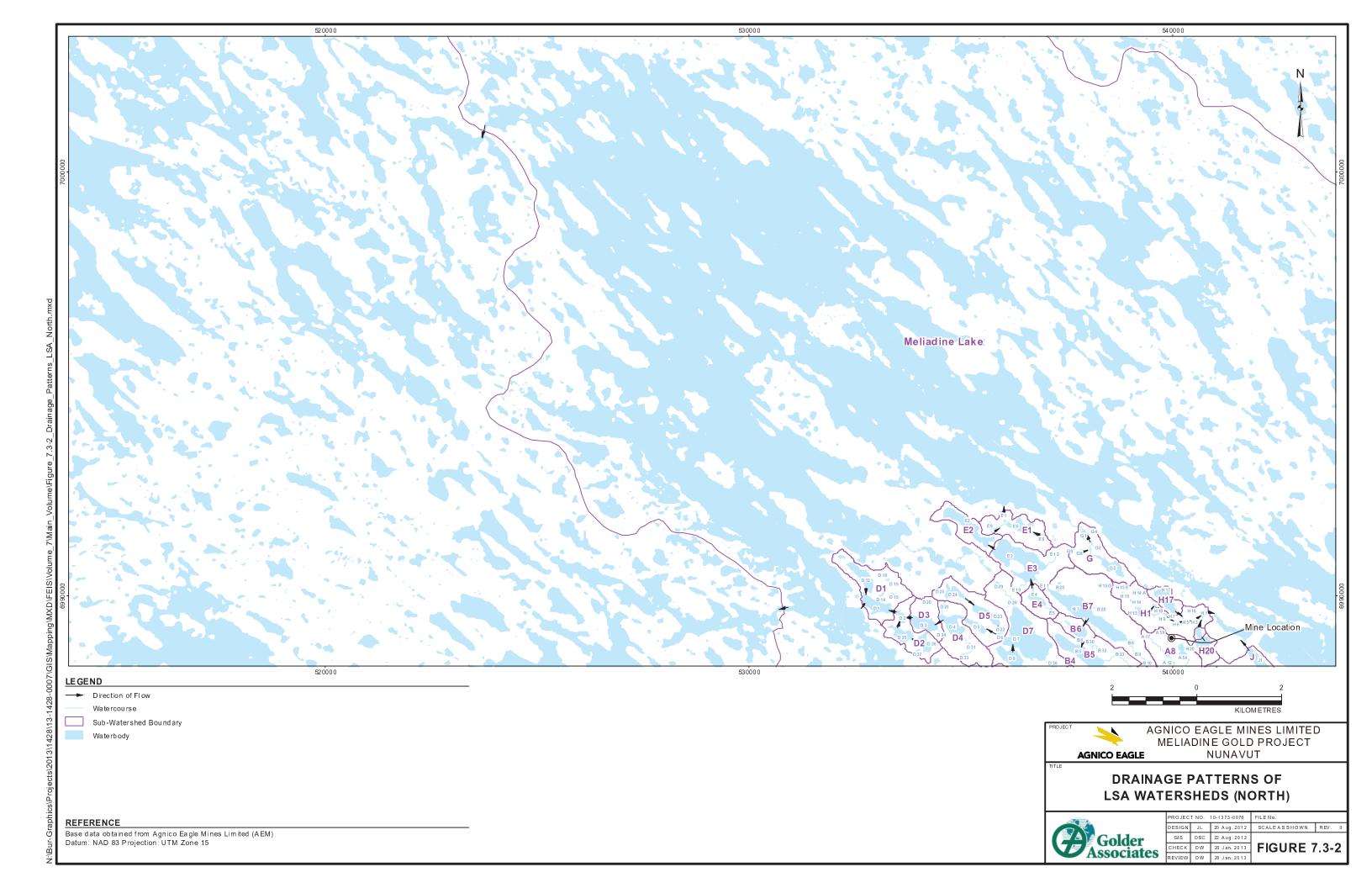
See the websites www.EarthquakesCanada.ca and www.nationalcodes.ca for more information

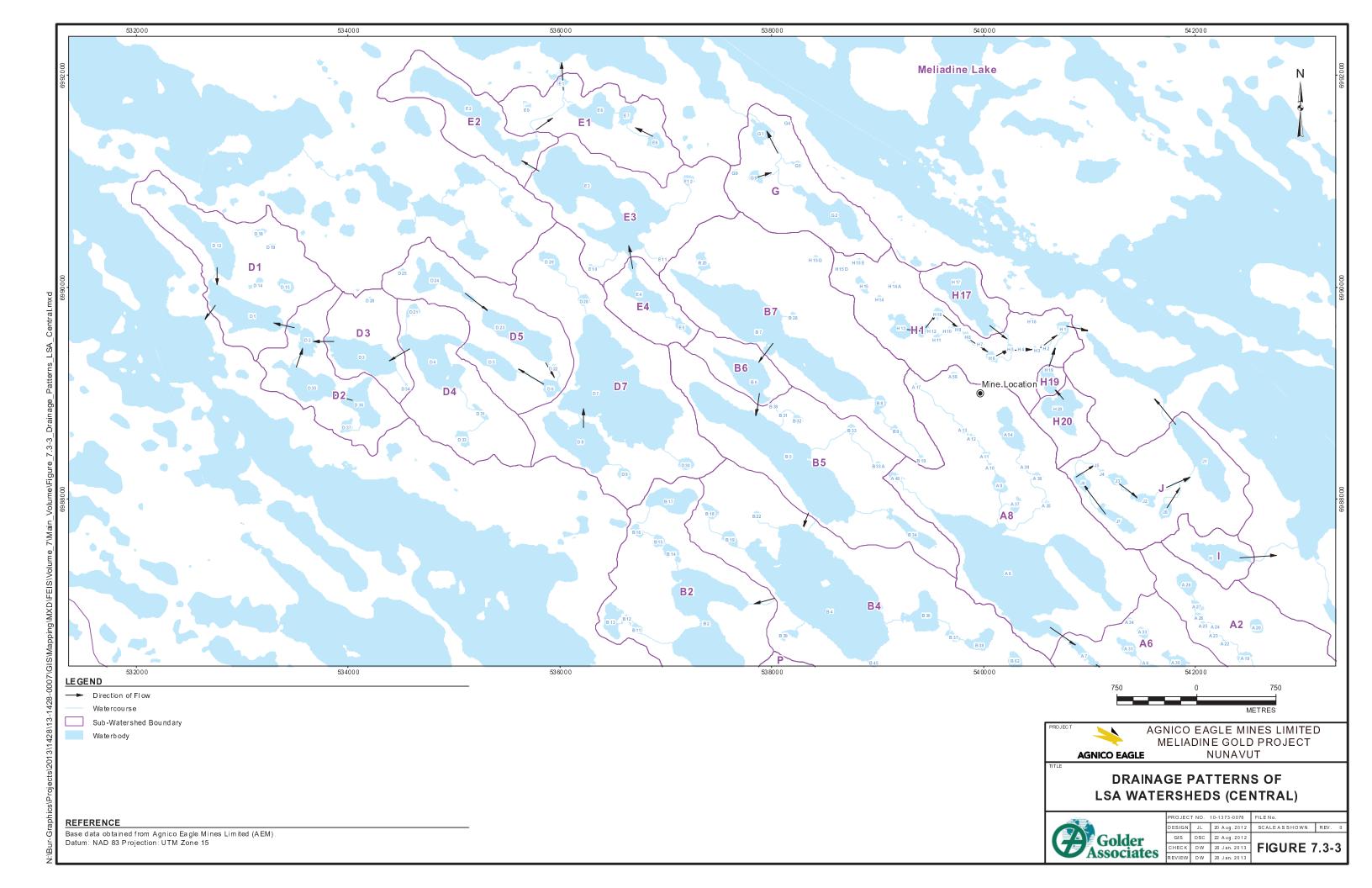


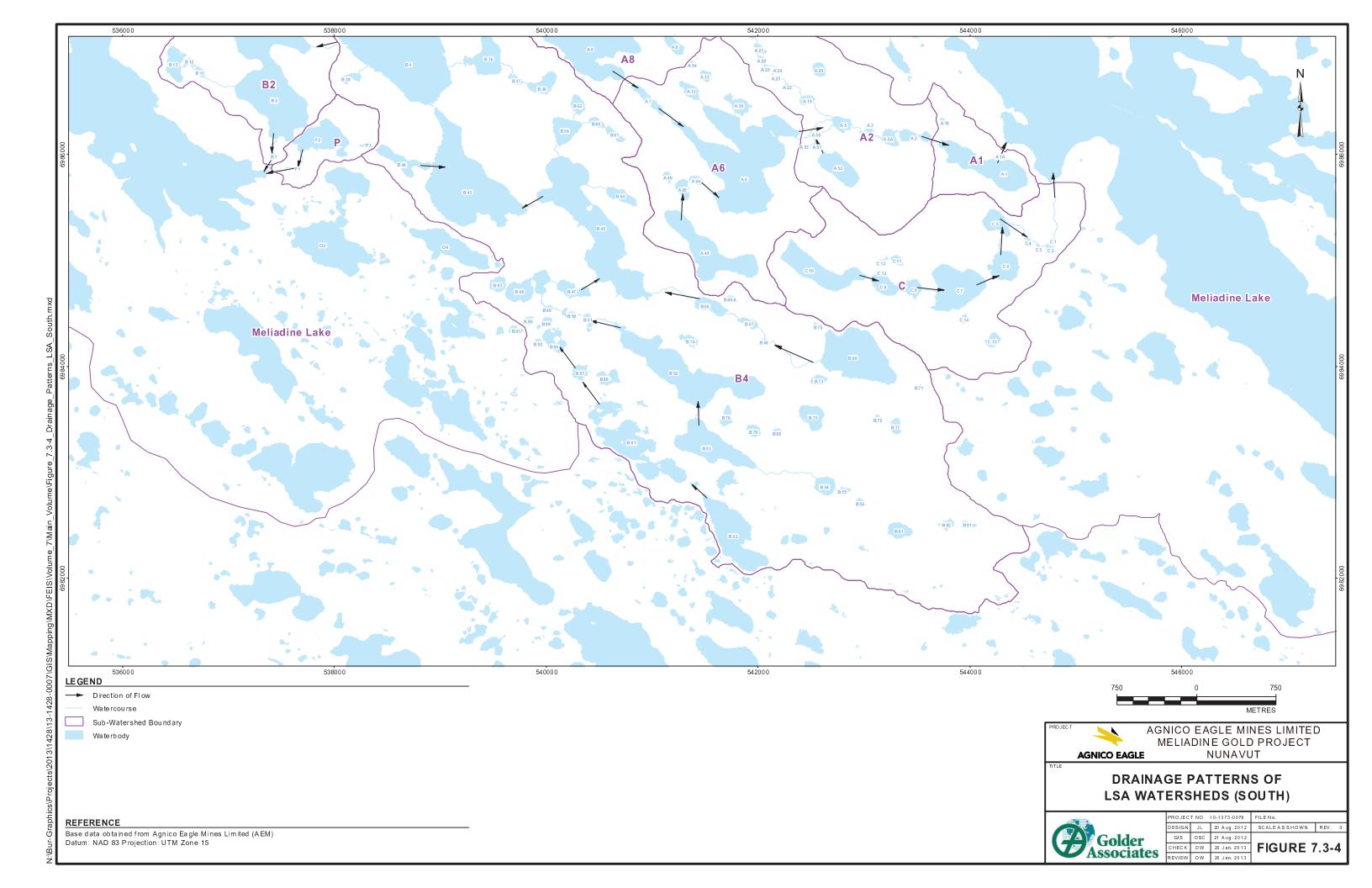


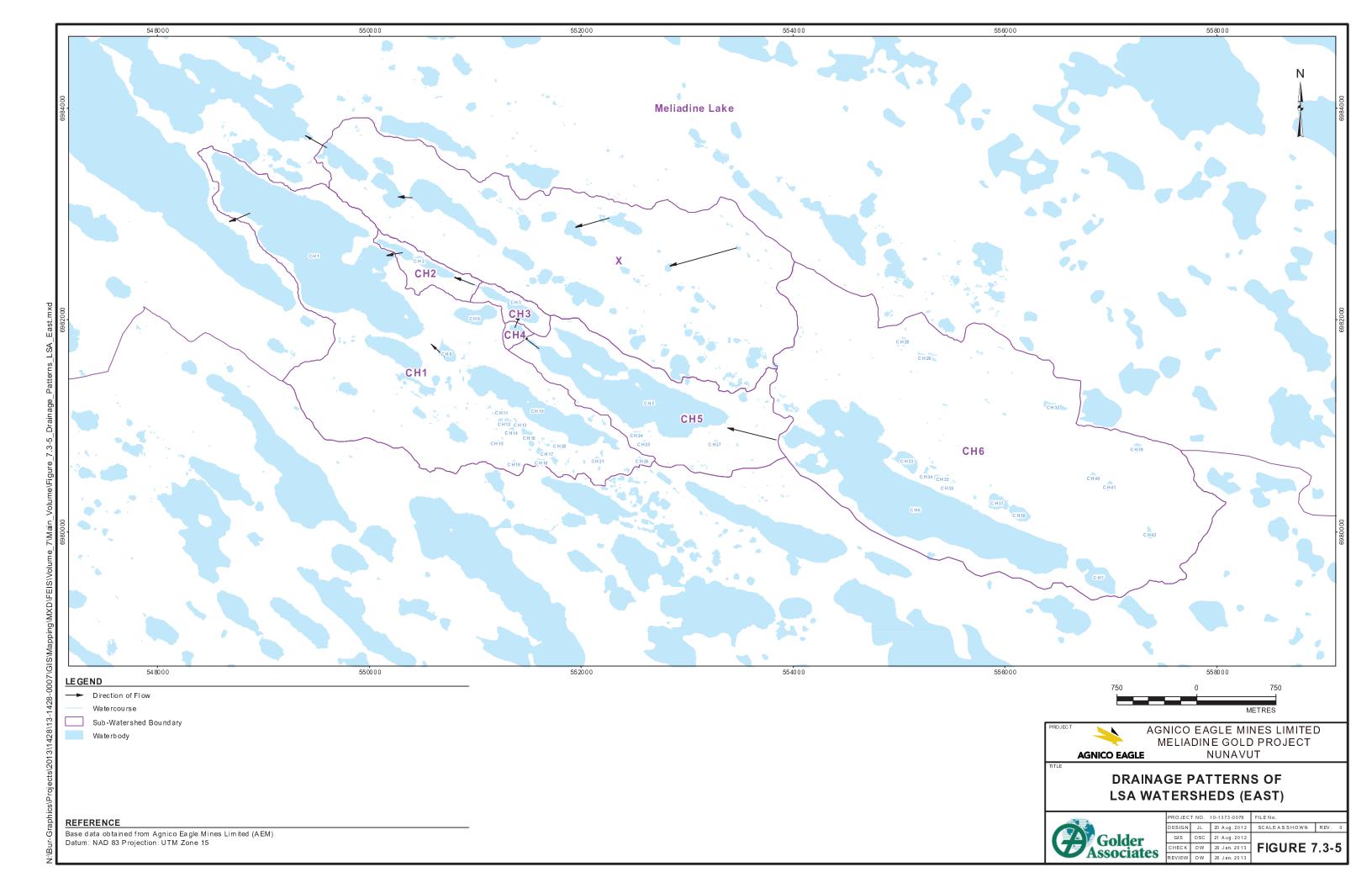
2019-11-25 14:04 UT

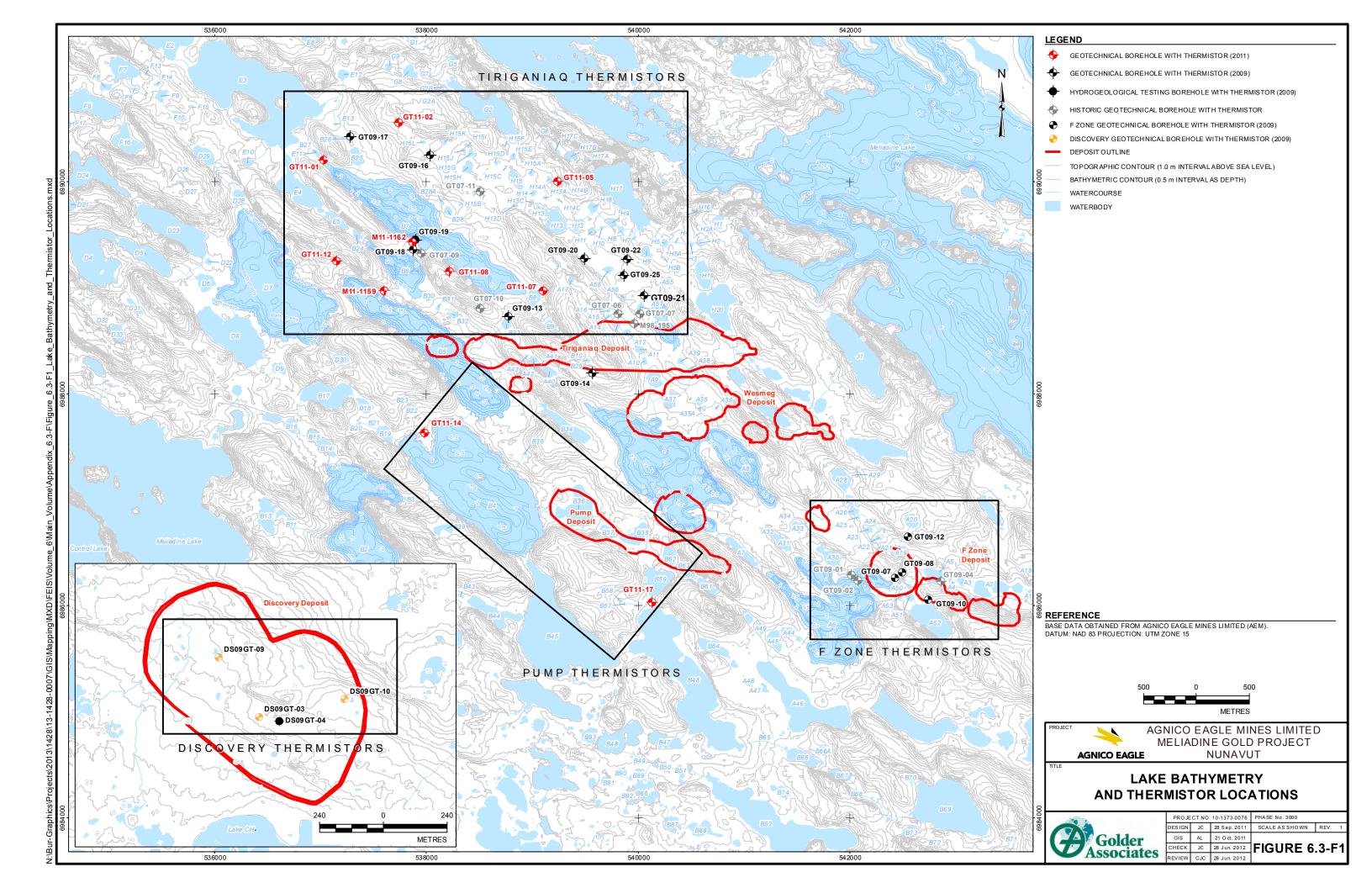


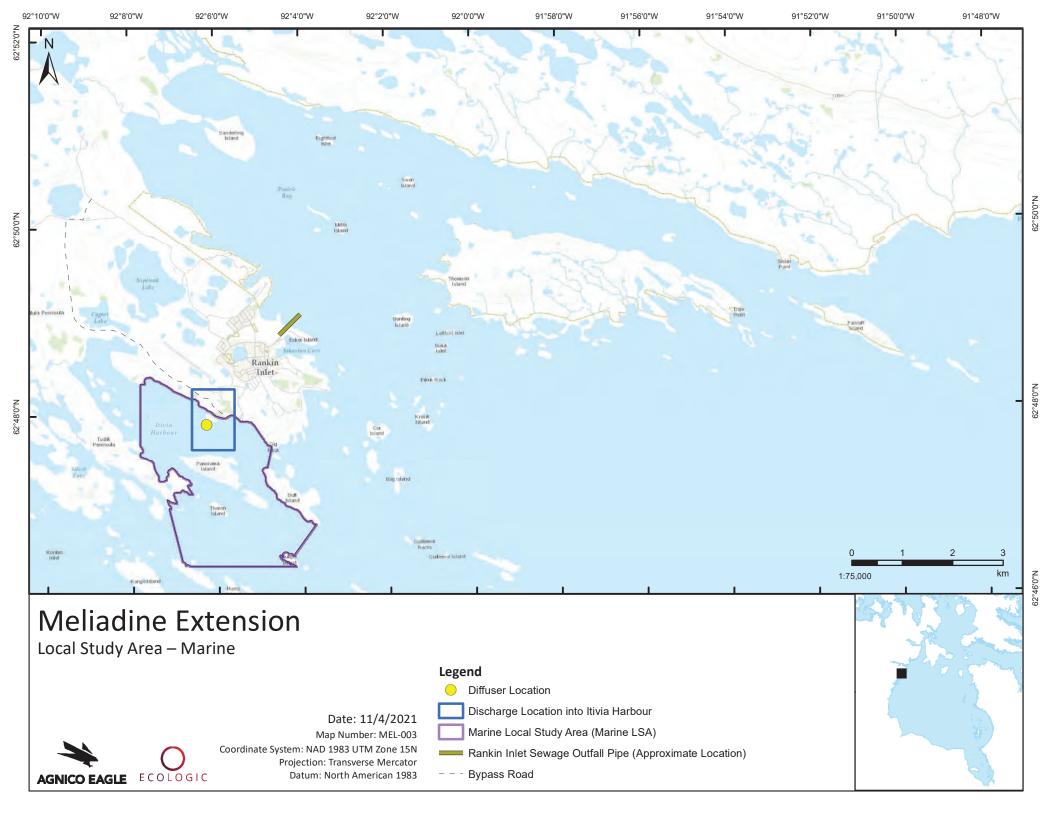












# **Appendix G**

### **Ecological Land**

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

# **Appendix G**

#### **Ecological Land**

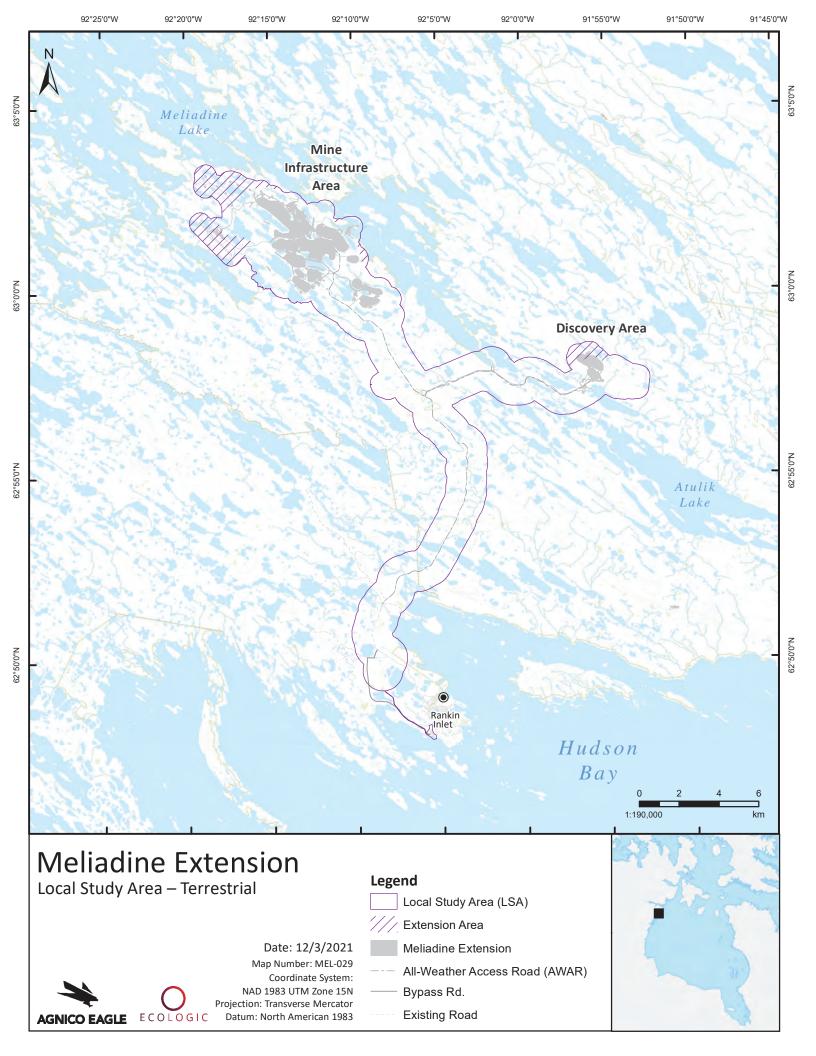
Total Area and Percent Cover of Land Cover Classes within the Regional Study Area (FEIS, AEM, 2014)

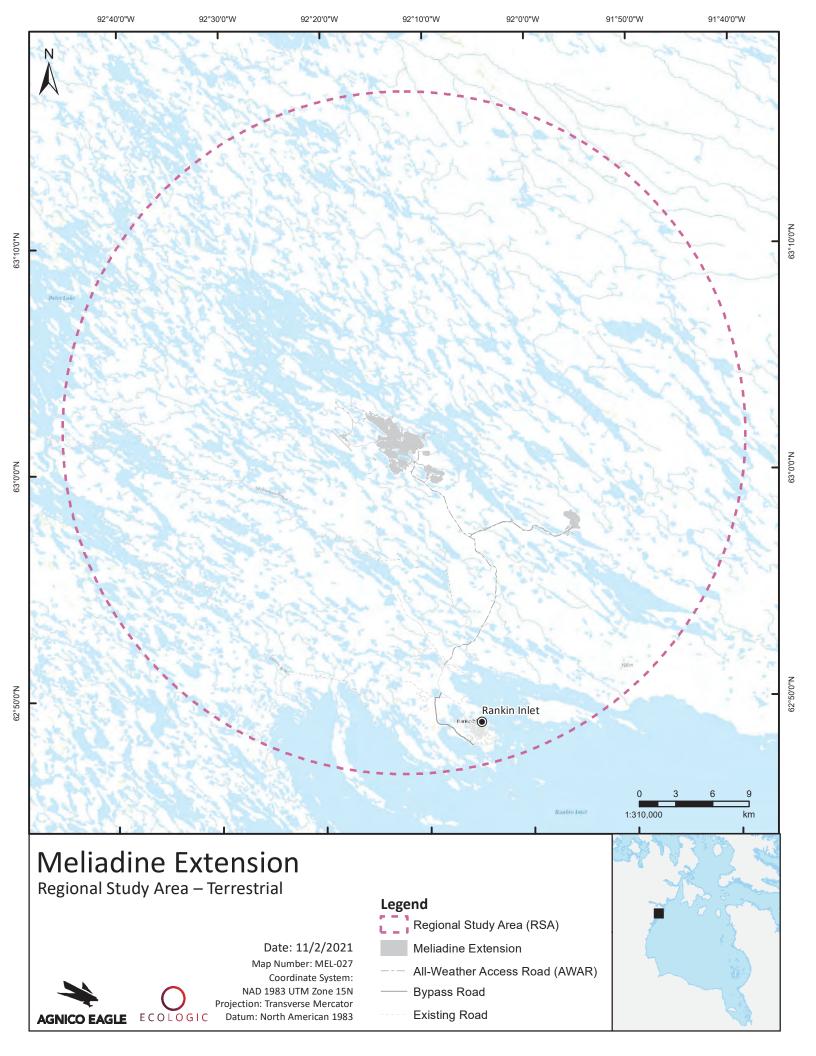
Regional Land Cover Class	Regional Land Cover Class Description	Total Area of RSA (ha)	Total percent of RSA
Heath			
Heath boulder	Occurs on rapidly to well-drained sites that contain a high proportion of boulder deposits in association with bedrock outcrop.	26,499	11
Heath lichen – hair lichen	Typically associated with eskers and the crests and upper slopes of small ridges with poorly developed, rapidly drained soils.	4,503	2
Heath lichen – Cetraria	Typically occurs on the lower slopes of ridges and eskers or as veneers over flat rocky plains characterized by frost boils.	1,733	1
Heath tundra	Occurs on well-drained soils.	109,826	45
	Heath vegetation subtotal	142,562	58
Wetlands / Riparian			
Low shrub	Associated with imperfectly to poorly drained soils characteristic of riparian areas and depressions.	3,478	1
Tussock-hummock	Typically found in flat to low-lying areas, where soils are poorly to very poorly drained.	25,699	10
	Wetlands / riparian subtotal	29,177	12
Miscellaneous			
Bare ground (rock outcrop)	Represents areas with limited to no vegetation cover and is typically associated with eskers, steep sandy slopes, and the tidal an inter-tidal beaches along Hudson's Bay.	5,263	2
Water	Associated with rivers and lakes, as well as portions of Hudson's Bay.	69,298	28
	Miscellaneous subtotal	74,561	30
	Total	246,300	100

Note: Some numbers are rounded for presentation purposes. Therefore, it may appear that the totals do not equal the sum of the individual values.

ha = hectares; RSA = Regional Study Area

Meliadine Interim Closure and Reclamation Plan – Update 2022		Original -V.00
2023/01/13	682731-5000-4EER-0001	Technical Report

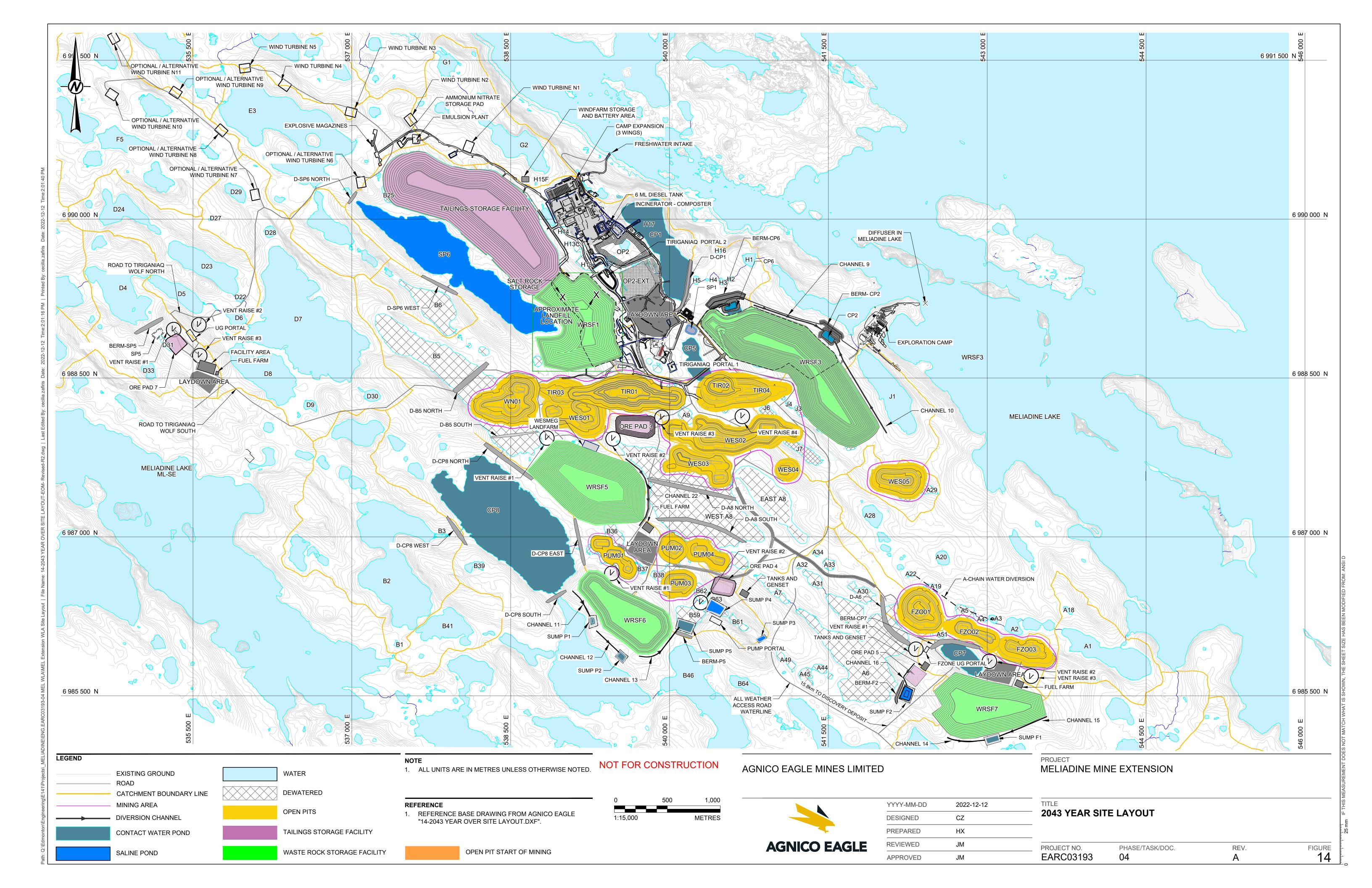


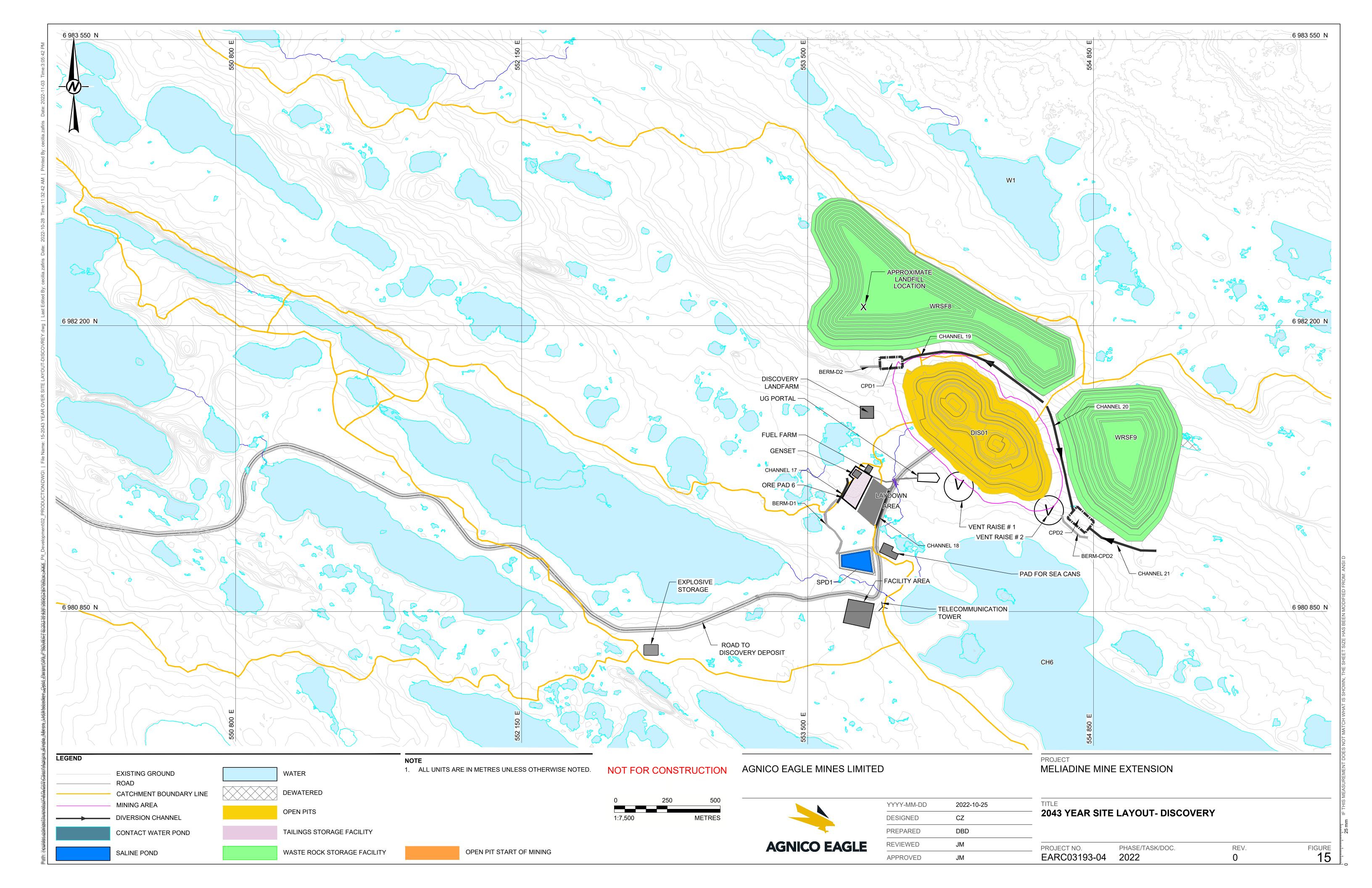


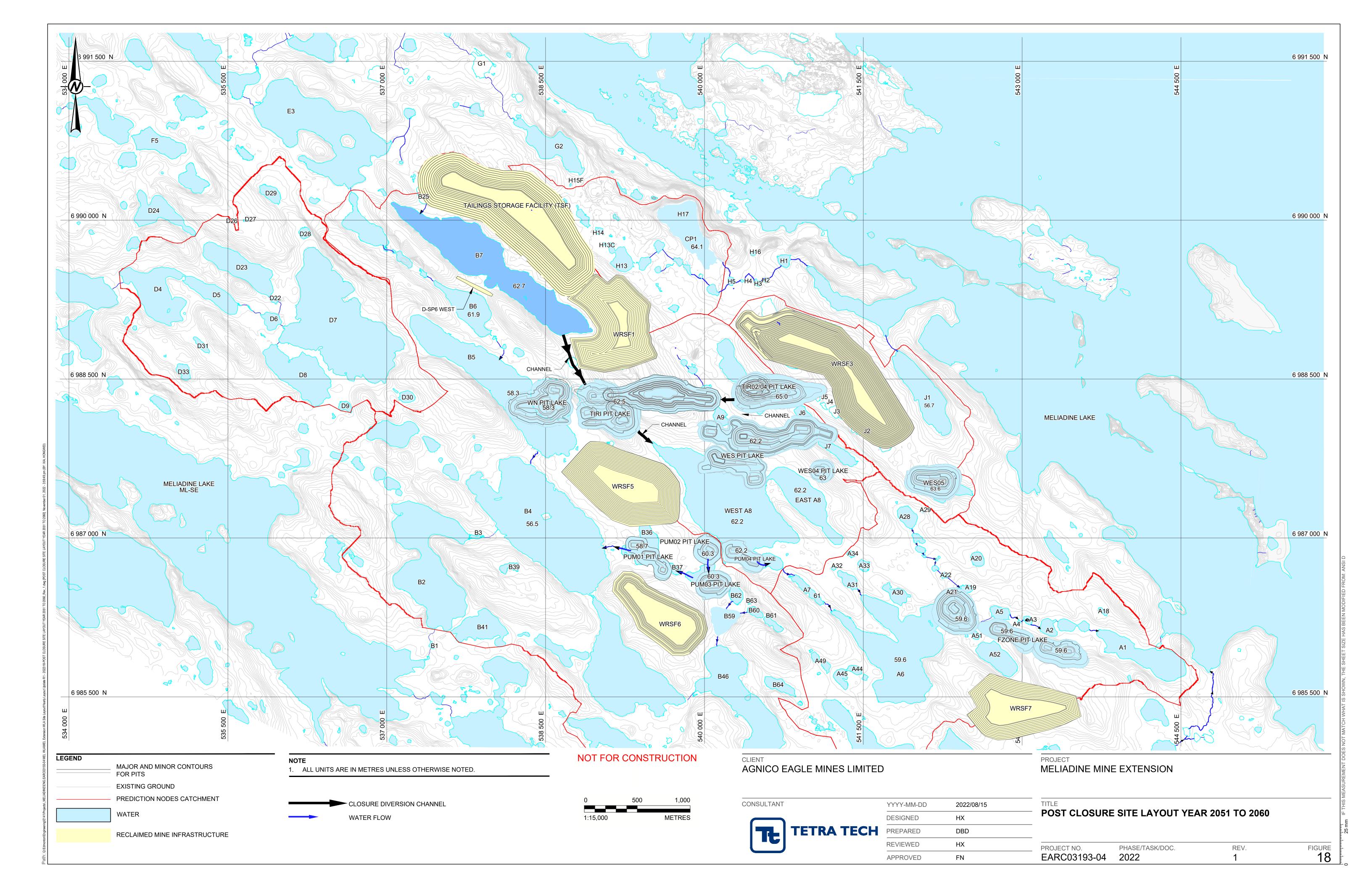
# **Appendix H**

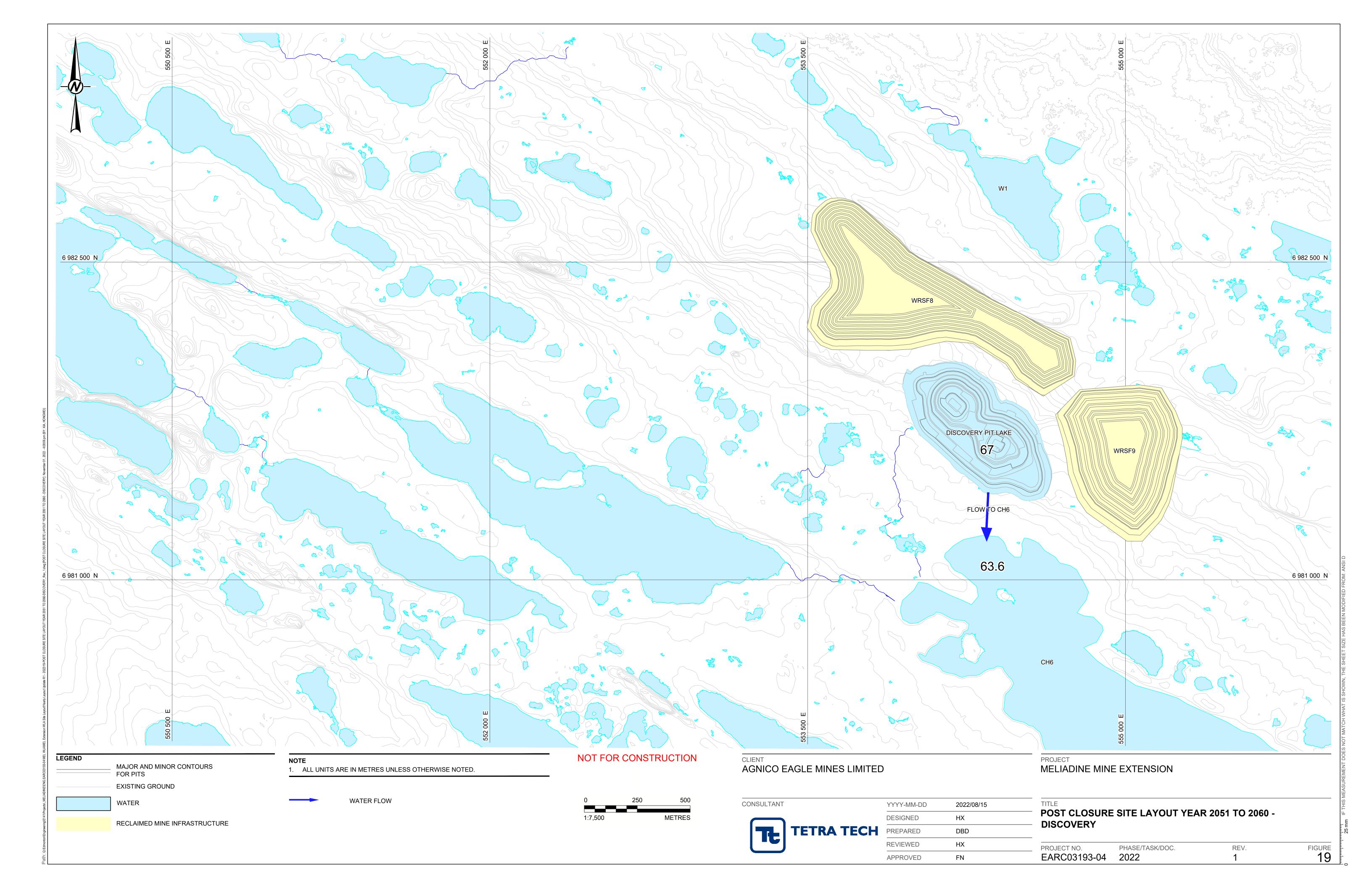
# Operation, Closure and Post Closure General Site Layout

Meliadine Interim Closu	Original -V.00	
2023/01/13	682731-5000-4EER-0001	Technical Report









# **Appendix I**

# **Closure Integrated Schedule**

Meliadine Interim Closu	Original -V.00		
2023/01/13	682731-5000-4EER-0001	Technical Report	

							Opera	ation St	age (Pr	ogressive Reclamation)								Active	Closure Stag	ge		Po	st-Closure S	tage	
Component	Description	Yr -4 2020	Yr -3 2021	Yr -2 2022	Yr -1 Yr 1 Yr 2 Yr 3 2023 2024 2025 2026	Yr 4 2027	Yr 5 Yr 9	6 Yr 7 9 2030	Yr 8 2031	Yr 9 Yr 10 Yr 11 Yr 1 2032 2033 2034 203	2 Yr 13 5 2036	Yr 14	Yr 15 2038	Yr 16 2039	Yr 17 Y 2040 2	Yr 18 Yr 19 Yr 2041 2042 204	20 Yr 2	1 Yr 22 Yr 23 4 2045 2046	Yr 24 Yr 25 2047 2048	Yr 26 Yr 27 2049 2050	Yr 28 Yr 29 2051 2052	Yr 30 Yr 31 2053 2054	Yr 32 Yr 33 2055 2056	Yr 34 Yr 35 2057 2058	Yr 36 Yr 37 2059 2060
	Decommission machinery and equipment and ship off-site (leaving only on-site equipment required for closure and post-closure activities).																								
Machinery, Mobile Equipment and Containers (Sea	Mobilization of demolition shear that will be required for buildings and facilities demolition during active closure phase.																								
Cans)	Remove equipment used for closure activities (e.g., trucks, backhoes, etc.).																								
	Remove equipment used for long-term maintenance (e.g., backhoes).																								
	Containers (sea cans) off-site demobilization. <sup>a</sup>														•	Prog	gressive	demobilization	•	•					
	Passive flooding (groundwater seepage).																	Passive	flooding						
Lindorground Mino Workings	Decommission of surface openings as needed.																								
Underground Mine Workings	Underground backfill.																								
	Flooding of UG mine with saline water from SP6																								
	Active flooding from Meliadine Lake.																	Act	ive flooding						
Open Pits	Place warning signs around Open Pits perimeter and replace as needed, construct rock berm(s).																								
	Pump and piping decommissioning after open pits flooding.																Т								
TSF	Rockfill placement along slope (erosion and thermal protection).									Progressive reclamation															
	Cover placement (soil and rockfill).		Progressive reclamation																						
	Regrading and contouring of the borrow area of WRSF 1 Extension																								
WRSF	Cover placement (rockfill) at WRSF 8 and WRSF 9												Progress	sive recla	amation	1									
	Waste rock transfer from Saline WRSF 1 (PUMP) to underground																								
Mine Infrastructure and Support Buildings	Decommission buildings, facilities, wind turbines, pads and re-grade areas as needed.																								
3.	Decommission on site roads																								
Meliadine Lake Pumping System	Decommission pumping system.																								
	Breach dikes / berms and reclaim channel and pond areas.																								
Water Management Facilities	Decommission of treated groundwater waterline and diffuser on the AWAR and waterline on Discovery Road																								
water Management Facilities	Decomission water management facilities on site b																								
	Decommission WTP and Meliadine Lake effluent diffuser. <sup>b</sup>																								
Off-site Facilities	Decommission floating dock, tank farm and laydown pad at Rankin Inlet (Itivia Harbour).																								
AWAR and Quarries	Decommission AWAR, Discovery and Bypass road.																								
, cana adamos	Quarries reclamation. <sup>c</sup>									Progressive reclamation															
Long-term Care and Maintenance (assumed for	r 10 years after closure)																								
Monitoring <sup>d</sup>	a bling of afficient during a graph in																	Act	ive Closure				Post-Closure	)	

<sup>&</sup>lt;sup>a</sup> Assuming that on-site containers will gradually be shipped off-site during operations.

b Assuming that the required water management facilities, WTP and Meliadine Lake effluent diffuser will be maintained for 3 years as a contigency after the closure stage and that site water quality is acceptable for direct discharge to the environment.

c Assuming progressive reclamation of quarries during operation when no longer required, except quarries that have been kept for road maintenance.
d Assumed for 10 years after operation; however, closure schedule depends on monitoring results. Activities will occur until water quality satisfies water licence criteria for direct discharge and/or acess to the site is no longer required.

# **Appendix J**

# Financial Security Cost Estimate Assumptions and **RECLAIM 7.0 Spreadsheets**

Meliadine Interim Closu	Original -V.00	
2023/01/13	682731-5000-4EER-0001	Technical Report



Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen
Rev. Date Page

e Extension ICRP Opuate 2022	Rev.	Date	Page
682731-2000-4EER-0001	01	2023-01-13	i

Title of Meliadine Extension ICRP Update 2022 – Financial Security Cost Estimate document: Methodology and Assumptions

Client: AGNICO EAGLE MINES LTD.

Project: Meliadine Interim Closure and Reclamation Plan - Update 2022

Prepared / Alain Lebel

Updated by: Environment Specialist

Reviewed by: Anh-Long Nguyen, Eng., M. Sc.

#OIQ: 122858

Approved by: Anh-Long Nguyen, Eng., M. Sc.

#OIQ: 122858

Alai VVI

Ant four Wengering.



Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen

Rev. Date Page

01 2023-01-13 ii

682731-2000-4EER-0001

#### LIST OF REVISIONS

Revision					Pages Revised	Remarks
#	Prep.	Rev.	App.	Date		
PA	ANSM	JL/AL/ALN	ALN	2021-09-09	All	Issue for internal comments
PB	ANSM	JL/AL/ALN	ALN	2021-09-17	All	Issue for client's comments
00	ANSM	JL/AL/ALN	ALN	2022-03-07	All	Issue final
01	AL	ALN	ALN	2023-01-13	As indicated	Issue Final

# NOTICE TO READER

This document contains the expression of the professional opinion of SNC-Lavalin Inc. ("SNC-Lavalin") as to the matters set out herein, using its professional judgment and reasonable care. It is to be read in the context of the agreement dated May 17th, 2021 (the "Agreement") between SNC-Lavalin and Agnico Eagle Mines Ltd. (the "Client") and the methodology, procedures and techniques used, SNC-Lavalin's assumptions, and the circumstances and constraints under which its mandate was performed. This document is written solely for the purpose stated in the Agreement, and for the sole and exclusive benefit of the Client, whose remedies are limited to those set out in the Agreement. This document is meant to be read as a whole, and sections or parts thereof should thus not be read or relied upon out of context.

SNC-Lavalin has, in preparing estimates, as the case may be, followed accepted methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgment and reasonable care, and is thus of the opinion that there is a high probability that actual values will be consistent with the estimate(s). Unless expressly stated otherwise, assumptions, data and information supplied by, or gathered from other sources (including the Client, other consultants, testing laboratories and equipment suppliers, etc.) upon which SNC-Lavalin's opinion as set out herein are based have not been verified by SNC-Lavalin; SNC-Lavalin makes no representation as to its accuracy and disclaims all liability with respect thereto.

To the extent permitted by law, SNC-Lavalin disclaims any liability to the Client and to third parties in respect of the publication, reference, quoting, or distribution of this report or any of its contents to and reliance thereon by any third party.



682731-2000-4EER-0001

Prepared / Updated by : Alain Lebel Reviewed by : Anh-Long Nguyen

 Rev.
 Date
 Page

 01
 2023-01-13
 iii

# **TABLE OF CONTENTS**

1.0	Introduction	1
2.0	Closure Measures and Considerations	1
3.0 3.1 3.2 3.3	Cost Estimate  Model Summary of Costs Direct Cost Assumptions 3.3.1 Open Pits 3.3.2 Underground Mining 3.3.3 Tailings Storage Facility 3.3.4 Waste Rock and Overburden Storage Facilities 3.3.5 Buildings and Equipment 3.3.6 Chemicals and Soil Management 3.3.7 Water Management	
3.4	3.3.8 Interim Care and Maintenance Indirect Costs  3.4.1 Mobilization / Demobilization  3.4.2 Active-Closure and Post-Closure Monitoring and Maintenance  3.4.3 Other Indirect Costs	23 23 23
4.0	Comparison of Closure Cost Estimates for Phase 1 and Meliadine Extension	26
5.0	Closure Costs for Alternatives	28
6.0	References	31
	List of tables	
Toble	e 3-1: Summary of Financial Security Cost Estimate for Meliadine Extension	2
Table	e 3-2: Summary of closure quantities for open pit control access	5
	e 3-4: Buildings List and Dimensionse 3-5: Sumps Excavation Volume	
	e 3-6: Volumes to be backfilled per channele 4-1: Comparison Closure Cost Estimated for Phase 1 and Meliadine Extension	
	e 5-1: Proposed Backfill Volume in Exhausted Pitse 5-2: Comparison Closure Cost Estimated for Meliadine Extension and Alternatives	



682731-2000-4EER-0001

Prepared / Updated by : Alain Lebel Reviewed by : Anh-Long Nguyen

Reviewed by . Affir-Long Nguyen					
Rev.	Date	Page			
01	2023-01-13	iv			

# List of Appendix

APPENDIX A: RECLAIM 7.0

APPENDIX B: Closure Cost Sequence for Letter of Credit (LOC) for Meliadine Extension

APPENDIX C: Site Layout



# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen							
Rev.	Date	Page					
01	2023-01-13	1					

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

#### 1.0 Introduction

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Gold Project (the Project), located approximately 25 km north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. In the Approved Project, the mine plan includes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two (2) open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one (1) underground mine and operation of Discovery zone (open pit and underground mine). For the Meliadine Extension, AEM plans the implementation of 15 new open pits and 4 new underground mines.

Agnico Eagle is required to submit a detailed financial security cost estimate for the Meliadine Gold Project Interim Closure and Reclamation Plan (ICRP) to Indigenous and Northern Affairs Canada (INAC) and to the Kivalliq Inuit Association (KIA) to support land use and water licensing requirements. RECLAIM 7.0 workbook was used for this estimate, as per Guidelines for Closure and Reclamation Cost Estimates for Mines, issued by Indigenous and Northern Affairs Canada, Mackenzie Valley Land and Water Board and the Government of the Northwest Territories (INAC, MVLWB, GNWT, 2017).



The general purpose of the Meliadine ICRP Update 2022 is to update the interim closure and reclamation plan (ICRP) produced for the development phase of the Project, including the activities part of the Meliadine Water Licence 2AM-MEL1631 Amendment, which are included in the Meliadine FEIS and Meliadine Project Certificate n.006, and add the new infrastructures planned for the Meliadine Extension. The financial security cost estimate presented herein includes those additional activities, in addition to the elements included in the previous version of the cost estimate (SLI, 2021).

This last version of the ICRP and the financial security cost estimate (SLI, 2021) includes the modifications discussed between Agnico Eagle, the Kivallig Inuit Association (KIA) and the Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) for the Meliadine closure and reclamation and reflects the agreements between the parties.

#### Closure Measures and Considerations 2.0

The cost estimate in this technical note covers the closure and reclamation of all facilities currently identified within the Meliadine Gold Project property including the following:

- Open pits;
- Underground mine;
- Tailings Storage Facility (TSF);
- Waste Rock Storage Facilities;
- Support facilities on the property including accommodations and services building, process plant (mill) and contractor facilities, power plant, water and wastewater treatment facilities, bulk fuel storage facilities, contractor facilities, warehouses and cold storage, assay lab, emulsion plant, paste plant, incinerators, wind turbine, pipelines, laydown areas, including the P-Area laydown facilities, quarries and borrow areas and on-site roads;
- Roads to future operation area;
- Rankin Inlet Site Facilities (Itivia Harbour);
- Discovery Site Facilities;
- Discovery Road;
- All Weather Access Road (AWAR);







# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen Page Rev. Date

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

01 2023-01-13 2

> Bypass Road, from Itivia Harbour to the AWAR (bypassing Rankin Inlet).



The present updated Meliadine ICRP 2022 and cost estimate are based on the current Meliadine Extension Life of Mine (LOM), including the mining and supporting activities planned, as well as the activities related to the ore processing and tailings deposition. Most closure activities will occur within the active closure period, from 2044 to 2050.

For the purpose of this financial security cost estimate, progressive rehabilitation measures are not considered in the calculations. Only when completed, these will have to be considered in future versions of the ICRP.

#### Cost Estimate 3.0

#### 3.1 Model

RECLAIM is a model developed in Microsoft Excel used to calculate the estimation of reclamation costs for mine sites in Northern Canada. It provides line items for each reclamation activity which might be required at a given site. For each, the model presents the "quantity" of work multiplied by the appropriate "Unit Cost" provided in the model or based in past or current Agnico Eagle experience (i.e. from Amaruq, Meliadine or Meadowbank projects).

RECLAIM version 7.0 consists of eleven (11) reclamation costing worksheets used to compute the overall closure cost estimate. These include direct costs associated with the following mining components:

- > Open pit;
- > Underground mine;
- Tailings Storage Facilities;
- Rock pile;
- Building and equipment;
- Chemicals, hazardous materials, and contaminated soils;
- Water treatment;
- > Water management;
- Interim care and maintenance.

It also includes the following indirect costs:

- > Closure and post-closure monitoring and maintenance;
- Mobilization and demobilization.

Additional cost factors such as engineering, project management, health and safety / QA-QC / Engagement, bonding/insurance and contingency are automatically calculated in the cost summary worksheet, based on applied percentages to the total direct cost.



Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen
Rev. Date Page

682731-2000-4EER-0001

01 2023-01-13 3

# 3.2 Summary of Costs



The updated 2022 estimated closure and reclamation costs for the Meliadine Gold Project Meliadine Extension using RECLAIM Version 7.0 represents a total of \$161 389 127. This total includes \$100 305 745 of direct costs and \$61 083 382 of indirect costs. The costs are summarized in Table 3-1 presented below.

**Table 3-1: Summary of Financial Security Cost Estimate for Meliadine Extension** 

Cost Items	Subtotal (Land and Water Liability)
Direct Costs	
Open Pit	\$ 5 171 737
Tiriganiaq Pit 1	\$ 493 788
Tiriganiaq Pit 2	\$ 102 527
Tiriganiaq Pit 3	\$ 108 852
Tiriganiaq Pit 4	\$ 554 512
Wesmeg Pit 1	\$ 187 538
Wesmeg Pit 2	\$ 620 107
Wesmeg Pit 3	\$ 187 883
Wesmeg Pit 4	\$ 79 539
Wesmeg Pit 5	\$ 346 470
Wesmeg North pit 1	\$ 547 910
Pump Pit 1	\$ 99 <i>4</i> 56
Pump Pit 2	\$ 139 178
Pump Pit 3	\$ 125 775
Pump Pit 4	\$ 77 723
F-Zone Pit 1	\$ 498 285
F-Zone Pit 2	\$ 101 102
F-Zone Pit 3	\$ 116 363
Discovery Pit 1	\$ 784 728
Underground Mine	\$ 4 074 194
Tiriganiaq Underground Mine	\$ 1 155 400
Pump Underground Mine	\$ 730 373
F-Zone Underground Mine	\$ 750 373
Tiriganiaq-Wolf Underground Mine	\$ 750 373
Discovery Underground Mine	\$ 687 674
Tailings Storage Facility	\$ 10 871 451
Waste Rock Storage Facilities	\$ 18 074 636
WRSF 1 Extension	\$ 500 722
WRSF 3 Extension	\$ 30 000
WRSF 5	\$ 30 000
WRSF 6	\$ 30 000



# Meliadine Extension ICRP Update 2022

 Reviewed by : Anh-Long Nguyen

 Rev.
 Date
 Page

 01
 2023-01-13
 4

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001



Cost Items	Subtotal (Land and Water Liability)
WRSF 7	\$ 30 000
WRSF 8 (Discovery)	\$ 8 023 765
WRSF 9 (Discovery)	\$ 5 162 649
Saline Rock Pile	\$ 4 267 500
Buildings and Equipment	\$ 38 003 287
Meliadine site	\$ 34 654 270
Itivia Harbour, AWAR and Bypass Road	\$ 1 703 339
Discovery	\$ 1 645 678
Chemicals and Contaminated Soil Management	\$ 3 136 389
Meliadine Site	\$ 2 882 691
Discovery Site	\$ 253 698
Surface and Groundwater Management	\$ 11 204 657
Interim Care and Maintenance	\$ 9 583 408
Subtotal Direct Costs	\$ 100 119 760
	Indirect Costs
Mobilization / Demobilization	\$ 10 803 535
Closure monitoring and Maintenance	\$ 10 849 286
Post-Closure and Maintenance	\$ 8 355 780
Engineering (5 %)	\$ 5 005 988
Project Management (5 %)	\$ 5 005 988
Health and Safety Plans / Monitoring / QA-QC and Engagement Costs (2 %)	\$ 2 002 395
Bonding / Insurance (1 %)	\$ 1 001 198
Contingency (18 %)	\$ 18 021 557
Market Price Adjustment (0 %)	\$ 0
Subtotal Indirect Costs	\$ 61 025 727
GRAND TOTAL	\$ 161 145 487

Refer to **Appendix A** for the RECLAIM spreadsheets, presenting the detailed breakdown of closure and reclamation costs by mining components.

The methodology and assumptions used for the calculations of the direct costs and the indirect cost calculations are explained in the sections below.

Note that the liability distribution (land versus water) presented in the RECLAIM spreadsheets of **Appendix A** does not represent the distribution agreed between the parties for the financial security.

The key differences between this present cost estimate and the cost estimate prepared for the 2020 ICRP (SLI, 2021) are presented in section 4.0.



# Meliadine Extension ICRP Update 2022

682731-2000-4EER-0001

Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen
Rev. Date Page

 Rev.
 Date
 Page

 01
 2023-01-13
 5

# 3.3 Direct Cost Assumptions

The direct costs include the cost related to the physical work activities to be completed for the various project components, as well as the interim care and maintenance requirements.

In most cases, costs have been developed using unit rates provided by the RECLAIM 7.0 template applied to calculated quantities. Where an appropriate RECLAIM supplied rate was not available, an independent rate was used from operational data or from precedent data for similarly sized AEM projects located in comparable conditions. In this case, Meliadine, Meadowbank and Amaruq (SLI, 2021, SLI, 2020a and AEM, 2016) sites were mainly used as comparable projects. Unit rates used assume third party contractor pricing.

The methodology and assumptions used for the financial cost estimate are provided for each closure component in sections 3.3.1 to 3.3.8. Specific quantities and unit rates used for each item can also be found in the RECLAIM spreadsheets available in **Appendix A**, if not specified below. For the site general arrangement plan and road layouts, refer to **Appendix C**.

# 3.3.1 Open Pits

The entrance (access ramp) and the perimeter of each pit will be blocked with non-acid generating (NPAG) berms to control access of wildlife and motorized vehicles in the open pits during flooding.

- > Berms are assumed to be 1 m high and 1 m wide at crest, with 1.5 H:1V side slopes
- Rock barricade at ramp access is assumed to be 2 m thick, 20 m wide and 1.5H:1V front and back slopes = 320 m³
- > Sign are installed every 150m around all the open pits.



The following table summarize the control access of each pits. Perimeter of each pit have been established according to the layout figures (AEM, 2022a):

Table 3-2: Summary of closure quantities for open pit control access

Pit	Perimeter (m)	Berm volume (m³)	Rock barricade Volume (m³)	Number of signs
Tiriganiaq Pit 1 (Tir01)	1930	4825	320	13
Tiriganiaq Pit 2 (Tir02) (note 1)	N/A	N/A	320	N/A
Tiriganiaq Pit 3 (Tir03)	564	1410	320	4
Tiriganiaq Pit 4 (Tir04)	2151	5378	320	15
Wesmeg Pit 1 (WES01)	1116	2790	320	8
Wesmeg Pit 2 (WES02)	2945	7363	320	20
Wesmeg Pit 3 (WES03)	1570	3925	320	11
Wesmeg Pit 4 (WES04)	740	1850	320	5
Wesmeg Pit 5 (WES05)	1460	3650	320	10
Wesmeg North Pit 1 (WN01)	1825	4563	320	13
Pump Pit 1 (PUM01)	1012	2530	320	7
Pump Pit 2 (PUM02)	850	2125	320	6



date 2022 Reviewed by : Anh-Long Nguyen

 Rev.
 Date
 Page

 01
 2023-01-13
 6

Prepared / Updated by : Alain Lebel

682731-2000-41	EER-0001
----------------	----------

Pit	Perimeter (m)	Berm volume (m³)	Rock barricade Volume (m³)	Number of signs
Pump Pit 3 (PUM03)	1012	2530	320	7
Pump Pit 4 (PUM04)	1020	2550	320	7
F-Zone Pit 1 (FZ001)	1400	3500	320	10
F-Zone Pit 2 (FZ002)	1230	3075	320	9
F-Zone Pit 3 (FZ003)	1270	3175	320	9
Discovery Pit 1 (DIS01)	2170	5425	320	15

Note:

# Pit Flooding



Following the completion of mining operation, the open pits will be flooded with water from Meliadine Lake. As shown in Table 3-3, a total volume of approximately 62 920 435 m³ will be required to flood all of the pits, which consist of 55 188 471 m³ from Meliadine Lake and 7 731 964 m³ transferred from CP1 to Tiriganiaq Pit 2 and Pit 4. It is estimated that the pit flooding will occur over seven (7) years. Flooding will be achieved primarily by active pumping from Meliadine Lake, with the planned pumping period during the open water season of each year. For Tiriganiaq Pit 2 and Pit 4, it will be flooded with 7.73 Mm³ of water transferred from the collection pond CP1. The following table summarizes the total volume of water required for the flooding of each pit.

Table 3-3: Annual flooding rates and the total water pumped for each open pits

Pit	Volume Required for Pit Flooding (m³)	Percentage of Total Volume (%)
Tiriganiaq Pit 1 (Tir01)	received overflow from Tir02/04	0
Tiriganiaq Pit 2 (Tir02)	from Meliadine Lake: 1 752 000 from CP1: 7 731 964	15.1
Tiriganiaq Pit 3 (Tir03)	1 356 000	2.2
Tiriganiaq Pit 4 (Tir04)	included with Tir02	
Wesmeg Pit 1 (WES01)	2 349 400	3.7
Wesmeg Pit 2 (WES02)	9 183 846	14.6
Wesmeg Pit 3 (WES03)	2 717 000	4.3
Wesmeg Pit 4 (WES04)	284 400	0.5
Wesmeg Pit 5 (WES05)	4 194 000	6.7
Wesmeg North Pit 1 (WN01)	8 772 000	13.9
Pump Pit 1 (PUM01)	838 800	1.3
Pump Pit 2 (PUM02)	754 800	1.2
Pump Pit 3 (PUM03)	1 380 600	2.2

<sup>1)</sup> No berm nor sign are considered for Tiriganiaq Pit 2 because the pit is included in Tiriganiaq Pit 4.



# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen

Rev. Date

Prepared / Updated by : Alain Lebel

Rev.	Date	Page
01	2023-01-13	7

682731-2000-4EER-0001	



Pit	Volume Required for Pit Flooding (m³)	Percentage of Total Volume (%)
Pump Pit 4 (PUM04)	761 200	1.2
F-Zone Pit 1 (FZ001)	5 587 908	9.3
F-Zone Pit 2 (FZ002)	1 168 517	1.9
F-Zone Pit 3 (FZ003)	1 318 000	2.1
Discovery Pit 1 (DIS01)	12 500 000	19.9
Total Volume	Meliadine Lake: 55 188 471 CP1: 7 731 964 Total: 62 920 435	100 %

# **Pumping Station**

- > Supply and install the pumping station required for pit flooding based on 2019 Whale Tail Pit Expansion Project (AEM, 2019b) for \$800 000. The cost was divided between the 18 open pits to be flooded according to the water volume to be pumped into each pit (see Table 3-3).
- > Stationary pumping equipment will be removed based on 2019 Whale Tail Security (AEM, 2019b) for \$10 000 per open pit thus: 18 Open Pits x \$10 000\$ = \$170 000.
- > Installation and removal of approximately 10.62 km of pipeline from the freshwater intake at Meliadine Lake to the open pits will be required for pit flooding. It was assumed the pipelines that are already on site will be re-used for this purpose, thus the supply of new pipes would not be required. Length of pipelines have been measured from the layout figures (AEM, 2022a):

Tiriganiaq Pit 1: 5 km of pipeline from Meliadine lake

Tiriganiaq Pit 2: 500 m of additional pipeline from Tiriganiaq Pit 1
Wesmeg Pit 2: 500 m of additional pipeline from Tiriganiaq Pit 2
Wesmeg Pit 4: 300 m of additional pipeline from Wesmeg Pit 2
Wesmeg Pit 5: 1000 m of additional pipeline from Wesmeg Pit 4
Pump Pit 2: 900 m of additional pipeline from Wesmeg Pit 3
Pump Pit 3: 260 m of additional pipeline from Pump Pit 2

F-Zone Pit 1: 1.9 km of pipeline from Meliadine lake
Discovery Pit: 260 m of pipeline from lake CH6

## **Pumping System Maintenance**

- > Pumping system maintenance by two (2) skilled laborers over 7 years, 12 hours per day, during the four (4) months open water season. Accommodation is also considered for the two (2) laborers.
- > Annual pump servicing by two (2) manufacturer consultants once a year for a seven (7) days trip, 12 hours per day. Accommodation is also considered for the two (2) consultants.

Capital and annual costs for pits flooding have been divided between the 18 open pits according to the water volume to be pumped into each pit (see Table 3-3).





# Meliadine Extension ICRP Update 2022

682731-2000-4EER-0001

Prepared / Updated by : Alain Lebel						
Reviewed by : Anh-Long Nguyen						
Rev. Date Page						
01	2023-01-13	8				

# 3.3.2 Underground Mining

The underground mine will be flooded at closure by natural groundwater inflows. Openings and access to the underground mines will be capped. The ground surface around the sealed surface opening will be contoured to minimize natural surface water accumulation and potential flow underground.

### **Control Access and Backfill**

The main activities for the closure of underground are:

- > Removal of the following Portal (TTOG STEEL) at Tiriganiaq Portal #1, Pump, F-Zone and Tiriganiaq -Wolf: A TTOG of 100 m long x diameter of 6.3 m (1980 m²) of steel that will be cut and disposed in the landfill have been assumed for each underground mine.
- > Removal of Tiriganiaq Portal #2 (concrete): 131 m long x diameter of 8.0 m (3300 m²) of concrete wall that will be disposed in the landfill. Unit cost for the breaking of concrete foundation of buildings was used for the estimation of Portal #2 removal;
- > Removal of Discovery's Portal (TTOG STEEL): Assumed 12.5 m long with sides of 5.5 m by 5.2 m (SLI 2020d) (203 m²) of steel that will be cut and disposed in the land fill.
- > One sign will be place near the access of each underground mine.
- > Backfill and contour of Tiriganiaq Portal #1, Pump, F-Zone and Tiriganiaq-Wolf portal: The following dimensions have been assumed for each portal: 105 m length with slope x 8 m deep x 30 m wide for a backfill volume of 12 600 m<sup>3</sup>.
- Backfill and contour of Tiriganiaq Portal #2: The following dimensions have been assumed based on 2020 ICRP portal dimensions: 116m length with slope x 15 m deep x 30 m wide for a backfill volume 26 100 m<sup>3</sup>.
- > Backfill and contour Discovery Portal: Based on the rock cut and overburden volumes of Amaruq portal concept. The volume of backfill is assumed to be approximately 18 914 m<sup>3</sup>.
- > Capping of fourteen (14) raises with concrete: Fourteen (14) raises have been calculated based on the layout figures (AEM, 2022a). Based on SNC-Lavalin experience in similar Northern projects, a lump sum of \$20 000 per raise was assumed for a total of \$280 000.

# **Hazardous Materials Removal**

The cost estimation for the hazardous materials removal includes:

- Removal of hazardous materials from underground for each underground mine. As indicated by AEM, a total of 2016 hours/site will be required to execute this activity for a total of \$342 720 per underground mine.
- Removal and decontamination of stationary and electric equipment for each underground mine. As indicated by AEM a total of 2688 hours/site will be required to execute this activity for a total of \$131,712 per underground mine;
- > Removal and decontamination of underground mobile equipment from Tiriganiaq, Pump, F-Zone and Tiriganiaq-Wolf: As indicated by AEM, a total of 336 hours/site will be required to execute this activity for a total of \$16 464;
- Removal of miscellaneous and hazardous materials.: It is assumed that 250 kg of such material will remain underground at the beginning of the closure operation at \$10 per kg based on past SNC-Lavalin experience for a total of \$2500 per underground mine.

### Instrumentation

In addition to the instrumentation placed during operation, it is assumed that additional instrumentation will be supplied and installed for monitoring purposes during closure and post-closure. A provision of \$250,000 is accounted





# Meliadine Extension ICRP Update 2022

Reviewed by	: Ann-Long Nguyen
Rev.	Date

Prepared / Updated by : Alain Lebel

Page 01 2023-01-13 9

682731-2000-4EER-0001

for additional instrumentation (i.e. 5 permanent instrumentations per underground mine x 5 underground mines x \$10 000 per instrument).

#### **Tailings Storage Facility** 3.3.3



The tailings produced in the mill will have a solids content of 85% and a water content of 17% by mass. The tailings storage facility (TSF) will be located west of the mill and east of lake SP6 as per the layout figures (AEM, 2022a).

Approximately 51.6.1 Mt of tailings will be produced during life of mine.

The TSF will be constructed using a cell-by-cell approach to limit the active deposition area such that dust generation, and surface erosion can be effectively managed and progressive reclamation and closure of the TSF can be conducted during the operation phase. The current cover system for the TSF includes a layer of waste rock on the slopes and a layered combination of waste rock and overburden on the crest (AEM, 2022b)

### Tailing waste rock cover



For closure, it was assumed that TSF slopes will be entirely covered during operation, leaving only the top surface of the cells to be covered. According to the layout figures (AEM, 2022a) the top surface of the TSF is approximately 267 822 m<sup>2</sup>.



It is planned to cover the top surface of the TSF with 0.5 m of overburden overlaid by a 2.5 m thick waste rock layer. It is assumed that the required overburden material source will be transported from the temporary overburden stockpile and the waste rock will come from the WRSF1. To complete the TSF reclamation, 24 691 m³ of overburden at \$5.10/m<sup>3</sup> and 885 106 m<sup>3</sup> of waste rock at \$12.05/m<sup>3</sup> will be required, for a total of 10 791 451 \$.

#### Instrumentation



It was assumed that eight (8) permanent instruments will be supplied and installed in the TSF for post-closure monitoring. Supply and installation of a single instrument was estimated at \$10 000, based on the Meadowbank instrumentation installation.

# 3.3.4 Waste Rock and Overburden Storage Facilities



Waste rock from the open pits and underground mining that will not be used for site development purposes will be transported to the waste rock storage facilities (WRSFs) until the end of mining operations. Six (7) WRSFs are planned for the Extension Project: WRSF1 extension, WRSF 3 extension, WRSF 5, WRSF 6, WRSF 7, WRSF 8 (Discovery), and WRSF 9 (Discovery).

Overburden material stripped as part of the mine development will either be co-disposed within the WRSFs or be stored within the temporary overburden stockpile facility for later use as cover material for TSF closure. Nonpotentially acid generating (NPAG) and non-metal leaching (NML) material will be used for TSF cover.

The cost estimate assumes that part of WRSF 1 will be used as potential borrow material for the TSF reclamation and for the construction of the perimeter berms around the open pits. WRSF 1 will hence require to be regraded and contoured to ensure long term stability.

Permanent instrument supply and installation were also considered in the estimate for the WRSFs.

### Gradation and contouring of WRSF 1 and WRSF 1 Ext.



Grading of waste rock assuming a quantity equal to a 1.0 m thickness over 50% of WRSF 1 footprint (i.e., 336 048 m³) for a total cost of \$352 850. For the WRSF 1 extension 50 % of the footprint, 112 258 m<sup>3</sup> for a cost of \$ 117 871.

# Gradation and contouring of WRSF 8 and WRSF 9





# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen Rev. Date

Prepared / Updated by : Alain Lebel

Page 01 2023-01-13 10

682731-2000-4EER-0001



WRSF 8 and WRSF 9 will include waste rock characterized as potentially acid generating (PAG). A cover composed of NPAG waste rock will then be required. The cover is expected to be 6.0 m thick. A total footprint of approximately 839 334 m<sup>2</sup> have been determined according to layout figures (AEM, 2022a). According to AEM (AEM 2021), it is assumed that 80% of the cover will be placed during operations as progressive reclamation. The remaining 20% of WRSF 8 and WRSF 9 will be covered at closure. Therefore, to complete both, 1 089 329 m³ of NPAG waste rock at \$12.05/m³ will be used for a total cost of \$13 126 414.

#### Instrumentation

Three (3) additional permanent instruments will be supplied and installed in each WRSF: 3 x 6 WRSFs x \$10 000 per instrument = \$180 000 based on the Meadowbank instrumentation installation (SLI, 2020a).

# **Saline Waste Rock**

Saline waste rock will be returned as cemented rock fill into the underground mine during the mining cycle. At the end of operation, there will be about 300 000 t of saline waste rock at Pump area which will require to be transferred to Tiriganiaq underground mine (AEM, 2021).

A unit cost of \$11.40/m³ was used for the transportation of the saline waste rock pile from Pump area to the Tiriganiag area. An additional re-handling cost of \$17.05/m<sup>3</sup> was used for the transportation and placement of the saline waste rock pile in the Tiriganiaq underground mine (assuming that different heavy equipment is required for underground transportation). To estimate the volume to be transported underground, an assumed density of 2.82 t/m<sup>3</sup> with a swell factor of 1.41 was used, based on AEM information. Therefore, the reclamation cost to manage the left-over saline waste rock is estimated at \$4 267 500.

# 3.3.5 Buildings and Equipment

Buildings and infrastructures will be dismantled at closure. Demolition waste will be transported to the Meliadine landfill and the salvageable material will be sent off site by barge. The access roads will be scarified, and the quarries slopes will be adjusted and contoured to ensure wildlife and community safety.

The footprints of buildings infrastructures and facilities for Meliadine, Itivia Harbour and Discovery were reviewed and adjusted for the Meliadine Extension. All dimensions are presented in Tables 3-4 and 3-5. The changes were communicated by AEM during the mandate for all new infrastructures. Otherwise, buildings and facilities dimensions were taken from Meliadine 2020 ICRP (SNC-Lavalin, 2021). Refer to Appendix C for the general site arrangement and road layouts.

The area of each building was scaled by the ratio of the total building height over an average building height of 3 m for estimation purposes. Scaled footprints are also presented on Tables 3-4 and 3-5.



Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen

 Rev.
 Date
 Page

 01
 2023-01-13
 11

682731-2000-4EER-0001

**Table 3-4: Buildings List and Dimensions** 

Buildings / Infrastructures	Footprint (m²)	Height (m)	Stories (3 m high)	Total Demolition Scaled for Height (m²)	Concrete Foundation (m²)
	MEL	IADINE S	SITE		
Accommodation complex	12 600	4.5	1.5	18 900	
Main Building process plant	12 420	35.8	11.9	148 212	12 420
Crusher and conveyor	1524	3	1	1524	698
Tire Shop	70	5.8	1.9	134	70
Offices Repair Lab Warehouse (workers dry Offices Multi Services Building)	3995	16.1	5.4	21 454	3995
Emulsion plant	439	5.8	1.9	851	189
Fuel tanks on-site	807	14	4.7	3768	
Wash bay	325	9	3	976	325
KCG Temp.	557	9	3	1673	557
KCG Perm.	912	9	3	2738	912
Batch Plant	1105	8.2	2.7	3013	
Power Plant	1976	14.3	4.8	9392	2566
Paste Plant	660	16.5	5.5	3630	660
Guard House	37	3	1	37	
Incinerator	380	8.4	2.8	533	190
Maintenance Shop (Mechanical shops and Megadome)	3279	5.8	1.9	6285	
Exploration Camp	4257	3	1	4257	
Assay Lab/Core shack	1750	9.8	3.3	5705	1750
Communication Tower	12	61	20.3	247	6
Wind Turbine N1	8000	86			
Wind Turbine N2	6400	86			
Wind Turbine N3	6400	86			
Wind Turbine N4	6400	86			
Wind Turbine N5	6400	86			
Storage and battery area for wind turbines	3279	0			
Fuel Farm (Tiriganiaq-Wolf)	807	14	4.7	3768	
Fuel Farm (F-Zone)	807	14	4.7	3768	
Fuel Farm	807	14	4.7	3768	
Facility area (Tiriganiaq-Wolf)	1584	3	1	1584	
Landfill	7750	0			
SP6 Landfarm	44 418	0			
Water Treatment Complex (house EWTP and SETP)	1897	9.4	3.1	5880	1897



Prepared / Updated by : Alain Lebel Reviewed by : Anh-Long Nguyen

 Rev.
 Date
 Page

 01
 2023-01-13
 12

Buildings / Infrastructures	Footprint (m²)	Height (m)	Stories (3 m high)	Total Demolition Scaled for Height (m²)	Concrete Foundation (m²)
Water Management Workshop (Former EWTP)	392	10.0	3.3	1294	392
SWTP (Saline Water Treatment Plant)	1844	9.8	3.3	6085	1844
RO	750	0			
Portable water	76	0			
Sewage treatment plant	400	0			
ITIVIA SITE					
Fuel tanks	4918	3.0	1.0	4918	4918
Saline water tank	23.4	3.0	1.0	23.4	

Source: AEM communication (2019, 2020, 2021)

Table 3-5: Buildings List and Dimensions for Discovery site

Buildings / Infrastructures	Footprint (m²)	Height (m)	Stories (3 m high)	Total Demolition Scaled for Height (m²)	Associated pad dimension (m²)
Explosive storage magazine	26.0	2.5	1.0	26.0	20x20
Emergency shelter / lunchroom  Dry trailer	320.5	2.5	1.0	320.0	120v125
Office complex	187.0	2.5	1.0	187.0	120x125
Maintenance shop	1076.8	2.5	1.0	1076.8	
Communication tower	12.2	61.0	20.3	247.5	56x8.5
Power plant / Electrical substation	172.0	2.5	1.0	172.0	Note 4
Fuel farm / gas boy	807.4	14.0	4.7	3767.8	40x30
Cement batch plant					20x20
Compressor room	697.4	2.5	1.0	697.38	Note 4
Brine mixing plant					Note 4
Industrial pad	N/A	N/A	N/A	N/A	100x175
Water treatment plant	Lump sum for plant decommissions		35x33		
Container storage pad	N/A	N/A	N/A	N/A	60x55
Ore pad	N/A	N/A	N/A	N/A	160x80
Notes	·			·	·

#### Notes

- 1) These buildings/infrastructures will be constructed in the Facilities area.
- 2) These buildings/infrastructures are considered to be part of the service buildings.
- 3) It was assumed that every building with a height of 2.5 m is considered to be one floor building.
- 4) It was assumed that the power plant and the buildings associated with the service buildings will be constructed on the industrial pad.

Source: Adapted from List of infrastructures (provided by AEM, October 2020)



# Meliadine Extension ICRP Update 2022

Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen
Rev. Date Pag

682731-2000-4EER-0001

Rev.	ev. Date	
01	2023-01-13	13

# **Decontamination of surface mobile equipment**

A total of 187 surface mobile equipment is considered (SLI, 2021), with an additional 15 % contingency to consider for additional surface equipment not yet on site. Eight (8) hours per equipment are considered for decontamination (1 720 hours total). As presented in section 3.3.2, decontamination of underground equipment is included in the underground mine section. Due to the limited capacity of the landfill, it was assumed that all decontaminated surface mobile equipment will be transported to Itivia Harbour and shipped off-site (i.e. transportation cost of equipment is available in Mobilization / Demobilization section).

# Removal of buildings and scarification of foundations

- > Building footprints at Meliadine site are listed in Table 3-4 with demolition areas scaled for heights assuming 3 m stories. The low unit cost was selected since it was assumed that all demolition waste from buildings demolition will be disposed in the on-site landfill. High unit cost was selected for the main building of the process plant and the fuel tanks because of the more complex demolition expected due to their dimensions and components of the infrastructures.
- > For buildings demolition at Discovery, the high unit cost (\$65.00/m2) was selected since it was assumed that all demolition waste from buildings will have to be transported to the Meliadine site to be disposed in the on-site landfill. For the buildings including a dome (maintenance shop and service building), a provision of \$5 000 was accounted for the dome dismantling.
- > At Meliadine site, removal of concrete structures and foundations is considered at 1 m below the final ground surface, based on building concrete foundations listed on Table 3-4.
- > At Discovery site, it was assumed that no buildings are built on a concrete foundation slab.
- Strading and contouring of building pads are included using the building footprint with an additional 10 % contingency to consider for slightly larger pads. A unit cost of \$8.47/m³ was selected based on Agnico Eagle cost in similar projects (AEM 2015b, 2016 and SLI 2020a), assuming 1,0 m thick pads

### **Wind Turbines**



- > Installation of up to eleven (11) wind turbines. Five (5) wind turbines will be constructed during the first phase of construction and six (6) more during the second phase.
- > The first 5 wind turbines shall be built and be operational for 2024. The remaining 6 wind turbines are assumed to be built and be operational 3 years later in 2027. Note that the actual date of installation of the remaining 6 wind turbines remains to be confirmed.
- > Based on SNC-Lavalin experience in similar Northern projects, a cost of \$393 000 per wind turbine will be assumed. The cost assumes that the wind turbine will be dismantled for re-use purposes, including all of its ancillary equipment such as the battery storage buildings. The total reclamation cost of the eleven (11) wind turbines is 11 x \$393 000 = \$4 323 000.

#### Landfill and landfarm reclamation

- Based on the preliminary closure and reclamation plan (AEM, 2022d) and the Landfill and Waste Management Plan (AEM, 2022e), landfills are expected to be covered with a 3.7 m thick waste rock layer. Assuming a surface of 7 750 m² that will require to be covered (Tetra Tech, 2017b), 28 675 m³ of waste rock will have to be transported and placed for both Meliadine and Discovery landfill reclamation.
- > Based on the Landfarm Management Plan (AEM, 2022f), landfarms will be covered with a 2,0 m thick layer of waste rock or other similar material used for reclamation. The total area includes these four (4) infrastructures: Landfarm, Landfarm Extension, Wesmeg Landfarm and Discovery Landfarm.

# Ore pad reclamation



# Meliadine Extension ICRP Update 2022

Rev. Date			
Reviewed by : Anh-Long Nguyen			
r repared / Opdated by . Alain Leber			

Prenared / I Indated by : Alain Lehel

682731-2000-4EER-0001

Rev.	Date	Page
01	2023-01-13	14

> At Meliadine site, a total area of approximately 32.9 ha will be graded and contoured over an assumed thickness of 1,0 m at a unit cost of \$8.47/m³ for the ore pad reclamation. This unit cost was selected based on past Agnico Eagle experience (AEM 2015b, 2016 and SLI, 2020a). The total area was calculated according to layout figures (AEM, 2022a), and includes the following infrastructures:

Ore Pad 2: 102 956 m<sup>2</sup>
Ore Pad 2 Extension: 80 718 m<sup>2</sup>
Ore Pad 3 (TRI-WES-NOR area): 68 070 m<sup>2</sup>
Ore Pad 4 (Pump area): 32 680 m<sup>2</sup>
Ore Pad 5 (F-Zone area): 22 120 m<sup>2</sup>
Ore Pad 7 (Tiriganiag-Wolf area): 22 500 m<sup>2</sup>

At Discovery site, a total area of 1,37 ha will be graded and contoured over an assumed thickness of 10 m at a unit cost of \$8.47/ m³ for the ore pad reclamation. This unit cost was selected based on past Agnico Eagle experience (AEM 2015b, 2016 and SLI, 2020a). The total area was calculated according to layout figures (AEM, 2022a), and includes the following infrastructure:

Ore Pad 6: 13 750 m²

### Pads and staging areas

> Laydown areas for containers (sea cans) which represents a total area of 28 ha will be graded and contoured at a unit cost of \$8.47 per m³. This unit cost was selected based on past Agnico Eagle experience (AEM 2015b, 2016 and SLI, 2020a). The total area was calculated according to the layout figures (AEM, 2022a), and the Approved Project and includes the following infrastructures:

Laydown area (TIRI-WES-NOR): 139 342 m²
Laydown area (Tiriganiaq-Wolf): 30 540 m²
Laydown area (Pump): 50 190 m²
Laydown area (Approved Project): 44 483 m²
Laydown area (Discovery): 16 240 m²

### Reclaim roads areas at Meliadine site

- > Approximately 15 km of on-site roads (access and haul roads) will be scarified. Assuming that the average width of on-site road is 12 m, an area of 18 ha will be scarified.
- > A total of 16 culverts from the Approved Project plus 20 % contingency was assumed on Meliadine site (AEM, 2022c) which represent 20 culverts. A unit cost of \$4 000 was considered for the removal of each culvert, based on the ICRP 2019 of Meadowbank site (SLI, 2020a).
- > Approximately 9.25 km of road to the future operation areas (Wesmeg North, Wesmeg, Pump and FZone) will be scarified. Assuming an average width of 17 m, an area of 15.73 ha will be scarified.

#### Itivia Harbour Area

- > Footprints of the infrastructures located at Itivia Harbour are listed in Table 3-4. It was assumed that all infrastructures of Itivia Harbour are one-story buildings.
- > Removal and/or burial of concrete structures and foundations to 1,0 m below the final ground surface is based on building concrete foundations listed on Table 3-4. It was assumed that the fuel tanks will have a concrete foundation to be removed.
- > Grading and contouring of 1,0 m thick pads for infrastructures is included for the fuel tanks (1.63 ha) and the saline water tank. A unit cost of \$8.47 per m³ was selected based on past Agnico Eagle experience (AEM, 2015b and 2016, SLI, 2020a).









# Meliadine Extension ICRP Update 2022

682731-2000-4EER-0001

Prepared / U				
Reviewed by	: Anh-Long Nguyen			
Rev.	Date	Page		
01	2023-01-13	15		

- > Laydown areas for containers (sea cans) disposal that represents a total area of 66 800 m<sup>2</sup> will be graded and contoured over an assumed depth of 1 m at a unit cost of \$8.47 per m<sup>3</sup>. This unit cost was selected based on past Agnico Eagle experience (AEM, 2015b and 2016, SLI, 2020a).
- Lump sum of \$50 000 is assumed for the reclamation of the floating dock, including the demobilization of the portable crane located at Itivia Harbour.

# Reclaim roads at Discovery site

- > Approximately 2.07 km of on-site roads (access haul roads) will be scarified. Considering their specific width (from 8.5 to 10 m), this represents a total of 2.06 ha to be scarified.
- A total of four (4) culverts will be removed at closure. A unit cost of \$4 000 was considered for the removal of each culvert based on Meliadine and Meadowbank estimate (SLI 2020a and 2020b) for a total of \$16 000.
- Approximately 15.8 km of Discovery Road will be scarified. Assuming that the average width of offsite road is 17 m, an area of 26.86 ha will be scarified. A total of four (4) water crossing composed of four (4) culverts per water crossings will be removed. A lump sum of \$4 000 per culvert removal is accounted for in the calculation, based on the ICRP 2019 of Meadowbank site (SLI, 2020a). A total of sixteen (16) culverts are removed for the Discovery road. A small pad will also be scarified. and a boat launch will be removed along the Discovery Road.
- A waterline installed along the road Discovery Road is covered with material on approximately 80 to 90% of its total length of 21 km. At closure the waterline system will be decommissioned and the covered sections of the waterline will be excavated.
- Using the reclamation cost related to the excavation of the covered waterline sections based on CIRNAC 2020 estimate as agreed with Agnico Eagle and CIRNAC, a reclamation cost of \$48 801 was associated with the waterline components excavation along the Discovery Road.

# **Reclaim Quarries-Borrow area**

- Quarry slopes setback to 1H:1V slope assuming cut/fill with blasted rock from the upper slope used to form lower slope.
- The 2019 Meadowbank ICRP (SLI, 2020b) estimated that a total volume of 14 319 m³ of blasted rock would be required for the reclamation of 22 quarries along the AWAR to Baker Lake. The same order of magnitude quantity was assumed for the Meliadine site with a similar number of quarries to be reclaimed i.e. 18 quarries (AEM 2022g). For Discovery, based on the same order of magnitude of quantities estimated at Meadowbank and Meliadine, it was considered that approximately 1 000 m<sup>3</sup> of blasted rock would be required for the reclamation of one (1) quarry. This represents a cost of \$17 800.
- Based on information provided by AEM (AEM, 2021) regarding borrow pits, approximately 53.0 ha will be graded and contoured with gently sloping walls over an assumed 1.0 m depth, which translates to a total volume of approximately 530 095 m<sup>3</sup>. A unit cost of \$8.47 per m<sup>3</sup> was selected based on past Agnico Eagle experience (AEM, 2015b and 2016, SLI, 2020a) resulting in a total cost of \$4 489 905.

# AWAR and Bypass Road

- The AWAR road surface will have to become impassable for vehicles (i.e., cars and trucks) by scarifying the 23.8 km long roadbed (AEM, 2015a). Assuming a 6.5 m width, an area of 19.5 ha will be scarified.
- A lump sum of \$4 000 per culvert removal and \$25 000 per bridge removal (unit cost based on ICRP 2019 of Meadowbank (SLI, 2020a) is accounted for in the calculation. A total of eight (8) culverts and two (2) bridges (AEM, 2015a) are considered for the AWAR.





# Meliadine Extension ICRP Update 2022

 Reviewed by : Anh-Long Nguyen

 Rev.
 Date
 Page

 01
 2023-01-13
 16

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

- > A Bypass road was built to Itivia Harbour. Its design and width are similar to the AWAR (AEM, 2015a): 6.2 km long x 6.5 m wide for a total area of 4.0 ha that will be scarified.
- > A lump sum of \$4 000 per culvert removal (SLI, 2018) is assumed. A total of 19 culverts (AEM, 2015a) are considered for the Bypass road.

# <u>Waterline for saline effluent discharge into marine environment - Covered sections along the AWAR and Bypass Road</u>

- > The two (2) waterlines will be covered with material on approximately 80 to 90% of their total length of 82 km along the AWAR and Bypass road (2 pipelines x 41 km = 82 km length). At closure the waterline system for the treated groundwater discharge will be decommissioned and the covered sections of waterlines will be excavated.
- > The reclamation cost related to the excavation of the covered waterline sections is based on CIRNAC 2020 estimate as agreed with Agnico Eagle and CIRNAC. A reclamation cost of \$97 601 was associated with the waterline components excavation along the AWAR and Bypass road.
- > A small laydown area at Itivia Harbour of 1 ha is assumed for the treated groundwater waterline diffuser and will be graded.
- > For the reclamation cost associated with the other waterline components (i.e. pipelines, outfall pipe and diffuser) to be dismantled, removed, and disposed on-site in a landfill, refer to section 3.3.7.

# 3.3.6 Chemicals and Soil Management

Chemicals and soil management were reviewed in accordance with the information available in the Landfarm Management Plan (AEM, 2022f), the Hazardous Materials Management Plan (AEM, 2022h) and the Meliadine Annual Report 2018 and 2019 (AEM, 2019a, 2020a).

## **Building Decontamination**

Meliadine site:

> Building decontamination was considered for the maintenance shop, the power plant, the fuel storage, the emulsion plant and the garage area in the P laydown area (garage and wash bay area). A total cost of \$42 788 was estimated for decontamination including 50 man-days.

### Discovery site:

> Building decontamination was considered for the maintenance shop, power plant, fuel storage and explosive magazine. It was assumed that the required time for decontamination would be 50% of the time required for similar building at Meliadine, as they are generally smaller. A total cost of \$16 368 was estimated for decontamination, including 19 man-days (228 hours).

### **Hazardous Material**

Meliadine site:

- > The waste oil quantity remaining at the end of operation is estimated at 40 000 liters, corresponding to 5 % of the maximal storage capacity of 800 000 liters.
- > Fuel dregs assumed to be 0.5% of bulk fuel storage capacity (47 182 200 liters on site and at Itivia Harbour and 350 000 L at Tiriganiaq-Wolf), for a total of \$102 194.
- > One (1) year accumulation of oil and glycol contaminated wastewater is considered, for a total of 60 000 liters (Meliadine Annual Report 2018, AEM, 2019a).



# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen

Rev.	Date	Page
01	2023-01-13	17

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

- > A lump sum of \$3 000 is considered for battery disposal, based on Meadowbank ICRP 2019 (SLI 2020a).
- Mill and water treatment reagents at closure assumed to be 5 % of annual consumption (5 % of 6 798 tons) (AEM 2022h). The total amount for this item is \$849 750.
- A total of 10 000 kg of assay lab and environmental reagents are assumed (AEM, 2022h) for \$25
- Machine shop paints and solvents to be disposed of at closure assumed to be 7 500 litres for a total of \$11 250.

### Discovery site:

- The estimated quantities of hazardous material are based on 16.5% of the quantities for Meliadine (SLI, 2020a) based on the production rate between Meliadine and Discovery. As mentioned by Agnico Eagle, production rate at Discovery is estimated to be approximately 1/6 of the total of Meliadine production rate.
- For Meliadine, the waste oil quantity remaining at the end of operation is estimated at 40 000 L corresponding to 5 % of the maximal storage capacity of 800 000 L (AEM, 2022h). The waste oil quantity remaining at the end of operation at Discovery is estimated to be 16.5% of the Meliadine quantity, corresponding to 6 600 L, for a total disposal cost of \$2 838.
- > Fuel dregs are assumed to be 0.5% (1 750 L) of the bulk fuel storage capacity on site of 350 000 L (information provided by Agnico Eagle, 2020), for a total disposal cost of \$753.
- A lump sum of \$495 is considered for battery disposal based on 16.5% of the Meliadine disposal cost (SLI, 2020a).
- Water treatment reagents at closure are assumed to be 5 % of annual consumption. Based on a yearly consumption of 420 085 kg of chemicals (AEM, 2020c document CAPEX-OPEX DWTP estimated.xlsx), a total of 21 004 kg would remain, representing a total disposal cost of \$52 511.
- Machine shop paints and solvents to be disposed of at closure are assumed to be 16.5% of the amount estimated for Meliadine (SLI, 2020c) for a total of 1238 L representing a total disposal cost of \$1 856.
- For Meliadine, the glycol to be disposed of at closure is estimated at 60 000 L based on the maximum quantity on site (AEM, 2022h). For Discovery 16.5% of the amount estimated for Meliadine is considered for a total of 9900 L representing a disposal cost of \$24 750.

An allowance of \$7 500 and \$50 000 was provided for Hazmat removal audit for the Approved Project and Meliadine Extension.

### **Contaminated Soil and Soil Characterization**

### Meliadine site:

- A contingency of 5 000 m<sup>3</sup> of hydrocarbon contaminated soil requiring on-site remediation at closure is considered for the operation of each of the three (3) landfarms, based on total capacity of the landfarm (AEM, 2022f).
- The total of contaminated soil to excavate, load and haul to the landfarm at closure is estimated at 700 m<sup>3</sup>, based on the closure and reclamation volume estimate (AEM, 2022f).
- A volume of contaminated soil representing 5% (250 m³) of the total volume of contaminated soil is considered for heavily contaminated soil not treatable on site and to be managed as hazmat
- > Lump sums of \$32 500 and \$130 000 which represent 30% contingency is considered for the Approved Project and Meliadine Extension for contaminated soils investigation, respectively.



# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen			
Rev.	Date	Р	

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

age 2023-01-13 01 18

# Discovery site:

- The quantities of contaminated soil to transport, treat for on-site remediation and ship off site for decontamination is considered to be 25% of the quantities estimated for Meliadine (SLI, 2020c) based on the site footprint comparison between Meliadine and Discovery.
- The total of contaminated soil to excavate, load and haul from Discovery to the Meliadine landfarm at closure is estimated at 175 m3, for a total cost of \$1 628.
- A contingency of 1 250 m<sup>3</sup> of hydrocarbon contaminated soil requiring on-site remediation at closure is considered for Discovery representing \$58 750.
- A volume of contaminated soil, representing 5% (62 5 m<sup>3</sup>) of the total volume of contaminated soil is considered as heavily contaminated soil not treatable on site and to be managed as hazmat material, representing a disposal cost of \$62 500.
- For the contaminated soil investigation at Discovery site, lump sums of \$6 250 and \$25 000 was considered for the Approved Project and Meliadine Extension, respectively (representing 25% of the Meliadine costs)

# 3.3.7 Water Management



According to the Water Management Plan (AEM, 2022c) and MTOs received from Tetra Tech, the water management systems include the following component:





- Eight (8) berms;
- Fourteen (14) channels;
- Ten (10) contact water ponds;
- Reverse osmosis (RO) treatment plant (considered in Buildings and equipment section);
- Effluent water treatment plant (EWTP) (considered in Buildings and equipment section);
- Saline Effluent Treatment Plant Water Treatment Complex (SETP-WTC) (considered in Buildings and equipment section);
- Sewage treatment plant (STP) (considered in Buildings and equipment section);
- Potable water treatment plant (WTP) (considered in Buildings and equipment section);
- Network of surface pumps, pipelines and culverts;
- Freshwater intake causeway:
- Effluent diffuser in Meliadine Lake;
- A waterline system and a diffuser for saline effluent discharge into marine environment.

The containment ponds, dikes and berms will remain in place to collect the surface runoff water and seepage from the Mine until the water quality meets discharge criteria. Once the water quality meets discharge criteria, dikes will be breached, and berms will be removed to allow runoff to follow natural flow paths. Dike breaching will involve the removal of a portion of the dikes to a minimum depth of 1 m below average water level or back to original ground levels.

Once monitoring results have indicated that contact water conveyed in channels and sumps meets acceptable water quality, the infrastructure will be graded, and surface treated according to site specific conditions to minimize windblown dust and erosion from surface runoff, if required.







# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen			
Rev.	Date	Pa	
0.4	0000 04 40	4.	

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

Rev.	Date	Page
01	2023-01-13	19

Per AEM information (AEM 2021), during active closure, saline water will be collected and discharged to the underground mine, while surface contact water will be collected and discharged to the underground mine or used for pit reflooding. It is assumed that water treatment will not be required continuously during the 7 years of active closure. For the annual closure cost estimate, a temporary water treatment plant is considered for a total period equivalent to three (3) years of active closure and its cost is included in the "Interim Care and Maintenance" portion of the estimate and presented in Section 3.3.8.

### Breach dike embankment



There are thirteen (13) containment dikes that will require to be breached 1 m below the average water level (D-CP1, D-CP6, D-SP6 North, D-SP6 West, D-A6, D-A8 North, D-A8 South, D-CP8 North, D-CP8 South, D-CP8 West, D-CP8 East, D-B5 North and D-B5 South).

It was assumed that each breach will have a 20 m width. Quantity for D-CP1 and D-CP6 have been assumed to be the same as in the Approved Project. For the other dikes, water level was determined according to Tetra Tech Technical Memo (Tetra Tech, 2021a):

- > D-CP1 (Tetra Tech, 2017a): Crest elevation of 67 m and average water elevation at 66.2 m, therefore the breach must be 1.8 m deep x 20 m wide breach x 19 6 m wide dike at crest = 705.6 m<sup>3</sup> excavation.
- D-CP6: Design is assumed identical to D-CP1, therefore a 705.6 m<sup>3</sup> excavation will be required to breach D-CP6.
- D-SP6 North: Crest elevation of 65.5 m and average water elevation at 62.7 m, therefore the breach must be 3.8 m deep x 20 m wide breach x 20 m wide dike at crest =  $1520 \text{ m}^3$  excavation.
- D-SP6 West: Crest elevation of 65.5 m and average water elevation at 62.7 m, therefore the breach must be 3.8 m deep x 20 m wide breach x 20 m wide dike at crest =  $1520 \text{ m}^3$  excavation.
- D-A6: Crest elevation of 61.5 m and average water elevation at 59.5 m, therefore the breach must be 3 m deep x 20 m wide breach x 20 m wide dike at crest = 1200 m<sup>3</sup> excavation.
- D-A8 North: Crest elevation of 62.5 m and average water elevation at 60.45 m, therefore the breach must be 2.05 m deep x 20 m wide breach x 20 m wide dike at crest = 820 m<sup>3</sup> excavation
- D-A8 South: Crest elevation of 62.5 m and average water elevation at 60.45 m, therefore the breach must be 2.05 m deep x 20 m wide breach x 20 m wide dike at crest = 820 m<sup>3</sup> excavation.
- D-CP8 North: Crest elevation of 60 m and average water elevation at 57.96 m, therefore the breach must be 3.04 m deep x 20 m wide breach x 20 m wide dike at crest = 1200 m<sup>3</sup> excavation.
- D-CP8 South: Crest elevation of 60 m and average water elevation at 58 m, therefore the breach must be 3 m deep x 20 m wide breach x 20 m wide dike at crest =  $1200 \text{ m}^3$  excavation.
- D-CP8 West: Crest elevation of 60 m and average water elevation at 58 m, therefore the breach must be 3 m deep x 20 m wide breach x 20 m wide dike at crest =  $1200 \text{ m}^3$  excavation.
- D-CP8 East: Crest elevation of 60 m and average water elevation at 58 m, therefore the breach must be 3 m deep x 20 m wide breach x 20 m wide dike at crest = 1200 m<sup>3</sup> excavation.
- D-B5 North: Crest elevation of 60.0 m and average water elevation at 57.96 m, therefore the breach must be 2.04 m deep x 20 m wide breach x 20 m wide dike at crest = 816 m<sup>3</sup> excavation.
- D-B5 South: Same elevation planned for D-B5 North + 20% contingency have been used. Therefore, the breach must be 816  $m^3$  excavation x 25% = 1020  $m^3$ .











# **Water Management Pond**



682731-2000-4EER-0001

Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen
Rev Date

 Rev.
 Date
 Page

 01
 2023-01-13
 20

> The Sump will be backfilled. The following table shows volume to be backfilled for each sump. These volumes have been determined according to Tetra Tech MTOs (Tetra Tech, 2021b, 2021c, 2021d, 2021e and 2021f).

**Table 3-5: Sumps Excavation Volume** 

SUMP	Total Sump Excavation Volume (m³)
SUMP P1	36 971
SUMP P2	31 490
SUMP P3	9 614
SUMP P4	136 600
SUMP P5	97 800
SUMP F1	47 379
SUMP F2	92 550
SUMP W (Tiriganiaq-Wolf area)	293 386

- > SPD1 (Discovery) will be backfilled with NPAG waste rock material. The volume of material required is 87 760 m³ (Tetra Tech, 2020).
- > CPD1 (Discovery) will also be backfilled with NPAG waste rock material. The volume of material required is 25 250 m³ (Tetra Tech, 2020).
- > For lake SP6, approximately 80 000 m³ of contact water will be transferred to the underground. The lake will then be flooded with approximately 612 000 m³ of water from Meliadine Lake. The water transfer to and from lake SP6 shall occur during one (1) open water season.





# Meliadine Extension ICRP Update 2022

Reviewed by	: Anh-Long Nguyen	
Rev.	Date	Page
01	2023-01-13	21

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

# **Reclamation of Berms and Channels**



Berms (CP2 Thermal Berm, Berm-CP7, Berm-D1, Berm-D2, Berm-CPD2, Berm-SP5, Berm-P5 and Berm-F2) will be removed:

- > CP2 Thermal Berm (Tetra Tech, 2021f) The berm volume corresponds to the volume of Clean Rock Fill added to Overburden Till volume, for a total volume of 25 900 m³.
- > Berm-CP7 (Tetra Tech, 2021c) The berm volume corresponds to the volume of Clean Rock Fill added to Overburden Till volume, for a total volume of 91 364 m³.
- > Berm-D1 will be removed entirely, representing an excavation volume of approximately 6139 m3, based on overburden and riprap volumes.
- > Berm-D2 will be removed entirely, representing an excavation volume of 1 720 m3, based on overburden and riprap volumes (Tetra Tech, 2020).
- > Berm-CPD2 (Tetra Tech, 2021b) The berm volume corresponds to the volume of Clean Rock Fill added to Overburden Till volume, for a total volume of 21 400 m³.
- > Berm-SP5 (Tetra Tech, 2021f) The berm volume corresponds to the volume of Clean Rock Fill added to Overburden Till volume, for a total volume of 215 240 m³.
- > Berm-P5 (Tetra Tech, 2021e) Total volume material is 29 388 m<sup>3</sup>.
- > Berm-F2 (Tetra Tech, 2021c) Total volume material is 35 785 m<sup>3</sup>.

Reclamation of water collection channels consists of backfilling and surface leveling. The following table shows volume to be backfilled for each channel.

Table 3-6: Volumes to be backfilled per channel

Diversion Channel	Total Excavation Volume (m³)	Reference
Channel 9	5960	Tetra Tech 2021f total Excavation – Riprap Volume
Channel 10	5240	Tetra Tech 2021f total Excavation – Riprap Volume
Channel 11	1750	AEM 2022
Channel 12	1744	Tetra Tech 2021e SNC-Lavalin1
Channel 13	383	Tetra Tech 2021e SNC-Lavalin1
Channel 14	1710	Tetra Tech 2021c total Excavation – Riprap Volume
Channel 15	1726	Tetra Tech 2021c total Excavation – Riprap Volume
Channel 16	721	Tetra Tech 2021c total Excavation – Riprap Volume
Channel 17	1790	Tetra Tech 2021b total Excavation – Riprap Volume
Channel 18	430	Tetra Tech 2021b total Excavation – Riprap Volume
Channel 19	5408	Tetra Tech 2021b total Excavation – Riprap Volume
Channel 20	3010	Tetra Tech 2021b total Excavation – Riprap Volume
Channel 21	5840	Tetra Tech 2021b total Excavation – Riprap Volume
Channel 22	4450	AEM 2022

Since there was missing information in Tetra Tech MTOs, quantities have been determined by SNC-Lavalin. Length was measured on the updated layout figures (AEM, 2022a). Volume of a typical cross section has been determined from Tetra Tech MTOs.





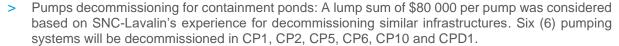
# Meliadine Extension ICRP Update 2022

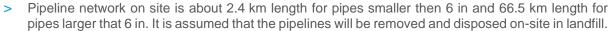
Reviewed by	: Anh-Long Nguyen	
Rev.	Date	Page
01	2023-01-13	22

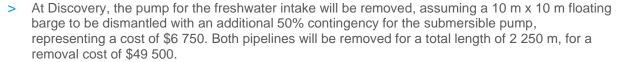
Prepared / Updated by : Alain Lebel

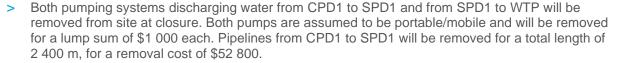
682731-2000-4EER-0001

# Pumps and Pipelines Decommissioning









# Water Diffuser Reclamation at Meliadine Lake and Itivia Harbour

- > Effluent diffuser reclamation at Meliadine Lake at \$3 000 based on Meadowbank ICRP 2019 (SLI, 2020a). Additionally, the removal of a 390 m long pipe is also included for \$8 580;
- > Saline water effluent diffuser for trucked groundwater at Itivia Harbour will be dismantled for \$3 000 based on Meadowbank ICRP 2019 (SLI, 2020a). Based on the Groundwater Management Plan (AEM, 2022i), the removal of a 778 m long pipe is also included for an additional \$17 116;
- Removal of the pump associated with the freshwater intake for \$3 000, based on Meadowbank ICRP 2019 (SLI 2020a).

### Waterline components for saline effluent discharge into marine environment

- Based on the FEIS Addendum for the treated groundwater effluent discharge (AEM, 2020b), a waterline (2 pipes) of approximately 41 km each (82 km total) along the AWAR and the Bypass road will be removed with an associated cost of \$1 804 000. The pipeline network components will be dismantled, removed and disposed on-site in a landfill.
- A diffuser will be removed from Melvin Bay with an associated cost of \$6 000. The outfall pipe of 75 m for the diffuser will also be removed with an associated cost of \$5 400. Both will be disposed onsite in the landfill.
- > The waterline of approximately 21 km along the road between Meliadine and Discovery will be removed with an associated cost of \$ 554 400. The pipeline network components will be dismantled, removed and disposed on-site in a landfill.

# **Temporary Water Treatment Plant Operation**

- As a contingency, temporary water treatment plant operation cost is estimated at \$692 676annually over a total period equivalent to three (3) years of active closure, based on the following considerations: Operation of the temporary water treatment plant considered for treatment of reclaim water during 6 months per year (treatment required of 742 075 m³ per year, corresponding to CP1 maximum volume in normal condition). A unit cost of \$0.75 per m³ is used (AEM communication, December 2019) considering the pumping cost and the required reagents for water treatment. This unit cost will have to be reviewed based on upcoming water quality forecast and expected treatment technology.
- > For operation, two (2) skilled labor are considered for 12 hours/day during a period of six (6) months per year, with associated travel allowance costs.







# Meliadine Extension ICRP Update 2022

 Reviewed by : Anh-Long Nguyen

 Rev.
 Date
 Page

 01
 2023-01-13
 23

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

> Annual plant servicing provided by two (2) manufacturer consultants for a seven (7) days site visit each year (168 hours total) over three (3) years, with associated travel allowance costs.

### 3.3.8 Interim Care and Maintenance

Based on the 7 years active closure period, it is assumed that the Interim Care and Maintenance shall also last 7 years. This period includes the annual surveillance and annual water treatment for a total period equivalent to three (3) years. Monitoring and surveillance costs (i.e. for active closure) are presented in the Post Closure Monitoring and Maintenance section 3.4.2.

- > The annual operational cost for the interim water treatment for a total period equivalent to three (3) years is estimated at \$2 078 029 (see Temporary Water Treatment Plant Operation of section 3.3.7);
- > The annual cost related to surveillance, monitoring and inspection of the active closure period represents \$1 072 197, which corresponds to the annual monitoring and maintenance cost during the active closure period;
- > The total cost for seven (7) years of care and maintenance is evaluated at \$9 583 408.

# 3.4 Indirect Costs

The indirect costs include the cost related to post-closure monitoring and maintenance, mobilization and demobilization as well as some cost factors such as contingency, engineering, project management, health and safety / QA-QC / engagement costs and bonding / insurance.

Specific assumptions used for the financial security cost estimate are provided for each closure component in sections 3.4.1 to 3.4.3.

#### 3.4.1 Mobilization / Demobilization

During the active closure, mobilization costs have been accounted for by allowing costs for mobilization and demobilization of equipment from Meliadine site and Discovery site to Itivia Harbour (Rankin Inlet), the mobilization of workers to perform closure work, in addition to barge trips into and out of Itivia Harbour exclusively for Meliadine and Discovery closure.

- Mobilization and demobilization of heavy equipment (surface and underground) at Meliadine site is based on a distance of 30 km along the AWAR and the Bypass Road from Meliadine to Itivia Harbour (Rankin Inlet). A contingency of 15% was added to the number of mobile equipment to be demobilized to account for the additional equipment for surface mining not yet on site. Due to the limited capacity of the landfill, it was assumed that all mobile equipment will be demobilized offsite.
- At Discovery, the demobilization of the additional 36 heavy equipment for Discovery is based on a distance of 33.8 km from Discovery to Itivia Harbour (Rankin Inlet), for a total cost of \$11 070. Due to the limited capacity of the landfill, it was assumed that all mobile equipment will be demobilized off-site by barge.
- > Lump sum of \$1 000 000 for one (1) demolition shear for buildings and infrastructures demolition.
- > Seasonal work for of 75 workers over three (3) years period, considering a six (6) months per year demolition / reclamation seasons, with associated accommodation and transportation cost.
- > Demobilization of 3 000 seacans from Meliadine to Itivia Harbour (Rankin Inlet). It was estimated there is approximately 6 000 seacans on site and that 50 % of them will still be on site at the beginning of the active closure.
- > It was estimated that there will be approximately 1 500 seacans on Discovery site during operation (which represents 25% of Meliadine capacity) and that 50 % of them will still be on site at the



# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen		
Rev.	Date	Page
01	2023-01-13	24

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

beginning of closure. The demobilization of 750 seacans from Discovery to Itivia Harbour (Rankin Inlet) on 33.8 km represents a cost of \$230 625.

> Three (3) barges round trips are considered for seacans demobilization, demolition and hazardous material sent south (1 trip) and for equipment demobilization (2 trips), for a total cost of \$3 000 000.

### 3.4.2 Active-Closure and Post-Closure Monitoring and Maintenance

The post-closure costs are separated in two (2) main categories: the monitoring / inspection program and the site maintenance / surveillance. The active-closure period will extend over a seven (7) years period, including seven (7) monitoring events. The post-closure activities will extent for an additional 10-year period including ten (10) monitoring events. A 0% discount rate of net present value was used for the calculation of both active and post-closure costs. The costs related to site monitoring / inspection and maintenance / surveillance are presented below.

The annual operation cost of the interim water treatment plan is not included in the post-closure costs as it is already accounted for in "Interim care and maintenance" over a total period equivalent to three (3) years of active closure.

## **Monitoring and Inspections**

#### Meliadine site:

- > One (1) annual geotechnical inspection is planned per year for \$16 000 including one (1) week visit by one (1) specialized engineer, seven (7) days, twelve (12) hours per day at \$150/hour, plus \$3 000 of reporting work and associated travel and accommodation fees;
- > An estimated annual cost of \$42 927 for the surface water quality monitoring (in closure and postclosure), based on Meliadine water sampling program costs;
- > For active closure (2044 to 2050), an estimated annual cost of \$1 193 750 for general monitoring programs (i.e., aquatic, wildlife, air quality, noise monitoring program, vegetation study), based on Meliadine monitoring program costs (communication by AEM on November 9<sup>th</sup>, 2019) plus 25% contingency;
- > For post-closure (2051 to 2060), an estimated annual cost of \$596 875 for general monitoring programs, corresponding to 50 % of the active closure monitoring programs cost.

# Discovery site:

- One (1) annual geotechnical inspection is planned per year at Meliadine, during the closure and post-closure period. It is assumed that the inspection at Discovery will be completed at the same time than Meliadine, with the same personnel. For Discovery, an additional three (3) days of work will be required plus reporting fees for \$7 000. Accommodation and transportation fees are covered under the Meliadine estimate (SLI, 2020a).
- > An estimated annual cost of \$8 801 for the surface water quality monitoring (in closure and post closure) is based on Meliadine water sampling program costs. A total of seven (7) sampling stations are considered for closure and post-closure at Discovery.
- > For the active closure period, an estimated annual cost of \$238 750 for general monitoring programs (i.e., aquatic, wildlife, air quality, noise monitoring program, vegetation study) is assumed, based on25% of the Meliadine monitoring program cost (estimated at \$955 000) (SLI, 2020c).
- > For the post-closure period, an estimated annual cost of \$119 375 for general monitoring programs is considered, corresponding to 50 % of the active closure monitoring programs cost.

## **Maintenance and Surveillance**



### Meliadine Extension ICRP Update 2022

Rev.	Date	Page
01	2023-01-13	25

Prepared / Updated by : Alain Lebel

Reviewed by : Anh-Long Nguyen

682731-2000-4EER-0001

> For closure and post-closure, two (2) site caretakers provided with biweekly overnight visits, twelve (12) hours per day, 5 months of the year, along with annual allowances for a site vehicle and equipment (\$20 000) and accommodation and site maintenance (\$7 000).

#### 3.4.3 Other Indirect Costs

Other indirect costs are calculated based on a percentage of the direct costs total:

- > Project management and engineering fees are assumed at 5 % each of the direct closure costs;
- > Health and safety plans / monitoring, QA&QC and engagement costs (communication with stakeholders from the community) are assumed as 2 % of the direct closure costs;
- > Bonding / insurance fees are assumed as 1 % of the direct closure costs;
- > Finally, due to the current level of engineering and uncertainties, a contingency of 18 % of the direct closure costs was provided for.



4.0

# TECHNICAL NOTE Meliadine Extension ICRP Update 2022

682731-2000-4EER-0001

Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen
Rev. Date Page

2023-01-13

26

01

Comparison of Closure Cost Estimates for Phase 1 and Meliadine Extension

Table 4-1 compares the closure costs estimated for the following scenarios:

- > for Phase 1 prepared for the ICRP 2015 (AEM, 2015a);
- > the updates made for the ICRP 2020 (SLI, 2021) based on the changes made in relation with the new components of the Water License Amendment and as agreed with Agnico Eagle, CIRNAC and KIA during the Security Agreement revision; and
- > the cost estimate presented herein that includes Phase 1 plus the Meliadine Extension

**Appendix B** presents the closure cost sequence for the new infrastructure required the Meliadine Extension spread over time for the assessment of the Letter of Credit (LOC).

**Table 4-1: Comparison Closure Cost Estimated for Phase 1 and Meliadine Extension** 



Component Group	ICRP 2015 - Cost Estimate (\$) (Note 1)	ICRP 2020 V02 - Cost Estimate (\$) (Note 2)	ICRP 2022 - Cost Estimate (Phase 1 + Meliadine Extension) (\$)	ICR 2022 – Cost Estimate (Meliadine Extension Only) (\$) (Note 5)	Main Difference Explanations between 2020 and 2022 estimates	
Open pit	\$2 836 125	\$2 040 399	\$ 5 171 737	\$ 3 131 338	<ul> <li>Sixteen (16) additional open pits (total 18).</li> <li>Due to the amount of water to be pumped time to flood all pits is now seven (7) years instead of three (3) years.</li> </ul>	
Underground Mine	\$969 540	\$1 096 384	\$4 074 194	\$ 2 977 810	- Four (4) additional under ground mine (total 5).	
Tailings Storage Facility	\$1 489 584	\$5 081 950	\$10 871 451	\$ 5 789 501	<ul> <li>Tailing storage facility size increase</li> <li>Due to the larger size, three (3) additional permanent instrumentation are added</li> </ul>	
Waste Rock Storage Facilities	\$-	\$307 350	\$18 074 636	\$ 17 767 286	<ul> <li>Four (4) additional waste rock storage facilities are added and two (2) extension of existing facilities. Four (4) new saline WRSF. Most of saline waste rock placed back UG during operation. 300 t remaining at closure to place back UG.</li> <li>20% of surface of WRSF8 and WRSF 9 at Discovery to cover at closure.</li> </ul>	
Buildings and Equipment	\$18 916 071	\$20 247 209	\$38 003 287	\$17 756 078	-	
Meliadine	\$18 916 071	\$18 543 870	\$34 654 270	\$16 110 400	<ul> <li>New buildings have been added (ex. Tiriganiaq-Wolf area)</li> <li>Dimensions for few buildings have been increase.</li> <li>Eleven (11) new wind turbines which need to be dismantled.</li> <li>Three (3) new landfarm which need to be covered with waste rock.</li> <li>Additional laydown area and ore pad which need to be graded.</li> <li>Additional roads to reach new sites (Wesmeg, Tiriganiaq-Wolf, Wesmeg North, etc.)</li> <li>New borrow pits</li> </ul>	
Itivia Harbour, AWAR & Bypass Road	\$-	\$1 703 339	\$1 703 339	\$	- No change.	
Discovery	N/A	N/A	\$1 645 678	\$1 645 678	- Discovery site have been added to the estimate.	



# Meliadine Extension ICRP Update 2022

Prepared / Updated by : Alain Lebel Reviewed by : Anh-Long Nguyen

ic Extension forth opuate 2022	Rev.	Date	Page
682731-2000-4EER-0001	01	2023-01-13	27

Component Group	ICRP 2015 - Cost Estimate (\$) (Note 1)	ICRP 2020 V02 - Cost Estimate (\$) (Note 2)	ICRP 2022 - Cost Estimate (Phase 1 + Meliadine Extension) (\$)	ICR 2022 - Cost Estimate (Meliadine Extension Only) (\$) (Note 5)	Main Difference Explanations between 2020 and 2022 estimates
Chemicals and Contaminated Soil Management	1 917 862	\$ 2 359 406	\$3 136 389	\$776 983	<ul> <li>Additional landfarm which need to be decontaminated</li> <li>General increase of quantities to be treated due to the expansion of the site</li> </ul>
Surface and Groundwater Management	\$127 050	\$4 460 458	\$11 204 657	\$6 744 199	<ul> <li>Many berms, dikes and channels have been added to Meliadine site.</li> <li>Water management infrastructure for Discovery site have been added.</li> </ul>
Interim Care and Maintenance	\$ 1 684 380	\$5 294 620	\$ 9 583 408	\$4 288 788	<ul> <li>Closure period have been changed for seven (7) years instead of three (3) years.</li> <li>Include water treatment for a total period equivalent to three (3) years.</li> </ul>
Subtotal Direct Costs	\$27 940 612	\$40 887 775	\$100 119 760	\$59 231 983	
Mobilization / Demobilization	\$9 687 952	\$6 961 400	\$10 803 535	\$3 842 135	- Demobilize of heavy equipment from Discovery site have been added.
Closure and Post-Closure Monitoring and Maintenance	\$879 778	\$9 162 861	\$19 185 066	\$10 022 205	<ul> <li>Closure and post-closure activities for Discovery site have been added.</li> <li>Closure period have been changed for seven (7) years instead of three (3) years.</li> </ul>
Engineering	\$1 397 031	\$2 044 389	\$5 005 988	\$2 961 599	- Adjusted with direct costs
Project Management	\$1 397 031	\$2 044 389	\$5 005 988	\$2 961 599	- Adjusted with direct costs
Health and Safety Plans / Monitoring and QA/QC and Engagement Costs	\$279 406	\$817 755	\$2 002 395	\$1 184 640	- Adjusted with direct costs
Bonding / Insurance	\$279 406	\$408 878	\$1 092 112	\$592 320	- Adjusted with direct costs
Contingency	\$5 588 122	\$7 359 800	\$18 021 557	\$10 661 757	- Adjusted with direct costs
Market Price Factor Adjustment	- \$	- \$	\$	\$	- Adjusted with direct costs
Subtotal Indirect Costs	\$19 508 726	\$28 799 471	\$61 025 727	\$32 226 255	
GRAND TOTAL	\$47 449 338	\$69 687 246	\$161 145 486	\$91 458 237	

- ICRP 2015 cost estimate presented in Table 4-1 refers to the Preliminary Closure and Reclamation Plan, Version 1.0, April 2015 (AEM, 2015a)
- ICRP 2020 V01 cost estimate presented in Table 4-1 refers to Meliadine ICRP Update 2020, January 2021 (SLI, 2021).
- Water License Amendment modifications are detailed in the document herein and in the Meliadine ICRP Update 2020, January 2021 (SLI, 2021) and previously in the Meliadine (3) ICRP Update 2020, July 2020 (SLI, 2020c)
- Modifications discussed between Agnico Eagle, the KIA and CIRNAC for the Security Agreement revision, as presented in Appendix A.
- Estimate of closure cost related to new infrastructure required for the Meliadine Extension t only. Exclude Phase 1 infrastructure cost.







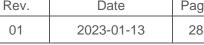


### Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen Rev. Date Page

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001





#### Closure Costs for Alternatives 5.0

As part of the application for the Meliadine Extension, Agnico Eagle is also seeking approval for the following options/alternatives should it be required (AEM, 2022d):

- > use of exhausted pits to store tailings to complement the current waste management strategy; and
- > use of exhausted pits to store waste rock to complement the current waste management strategy.

Agnico Eagle is proposing to backfill the exhausted pits to store tailings and waste rock. Table 5-1 summarized the proposed volume of tailings and waste rock to be backfilled in the exhausted pits.

**Table 5-1: Proposed Backfill Volume in Exhausted Pits** 

Pit	Waste Type	Waste Rock Backfill (t)	Tailings Backfill (t)	Backfill Volume (m³)
Discovery	Waste Rock	8,485,173	-	4,242,587
F ZONE01	Waste Rock	8,944,336	-	4,472,168
F ZONE02	Waste Rock	1,010,086	-	505,043
F ZONE03	Waste Rock	1,186,095	-	593,048
WN01	Tailings	-	8,863,314	5,371,705
PUMP01	Tailings	-	309,697	187,695
PUMP02	Waste Rock	446,002	-	233,001
PUMP03	Tailings	-	770,571	467,013
PUMP04	Waste Rock	567,019	-	283,510
TIR01	Waste Rock	12,369,689	-	6,184,845
TIR02/04	Waste Rock	5,041,791	-	2,520,895
TIR03	Waste Rock	1,559,697	-	779,849
WES01	Tailings	-	3,861,938	2,340,568
WES02	Waste Rock	9,275,423	-	4,637,712
WES03	Waste Rock	3,232,050	-	1,616,025
WES04	Tailings	-	48,970	29,679
WES05	Tailings	-	3,556,987	2,155,750
	Total	52,137,361	17,411,477	36,621,093

Source Lorax 2022

Table 5-2 provides an updated closure cost considering the Meliadine Extension with the alternatives and compares it against the closure cost estimate for the Meliadine Extension only. In summary:

- > With the backfilling of the open pits, the following closure cost are adjusted:
  - Decrease in the volume of water required to flood the pit. It is estimated that the flooding of the pit will decrease from 7 years to 5 years. The cost associated with pit flooding decreases by \$1 068 361.
  - Reduction of approximately 34% of the surface requiring covering with a soil cover and a rock cover on the TSF since more tailings are backfilled in the open pits. The cost associated with this activity is estimated to be reduced by \$3 669 093.



# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen				
Rev.	Date	Page		
01	2023-01-13	29		

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001



- > Reduction of approximately 43% of the surface requiring grading at WRSF 1 Extension. Reduction of approximately 23% of the surface to cover with a rock cover at WRSF 8. The cost associated with this activity is estimated to be reduced by \$7 173 635.
- > Decrease in overall active closure period from 7 years to 5 years. The cost associated with Interim care and Maintenance is estimated to be reduced by \$2 144 394. The cost associated Active Closure is estimated to be reduced by \$3 099 796.
- > The total for direct closure cost decreased by an estimated amount of \$14 055 474.
- > The total for indirect closure cost decreased by an estimated amount of \$7 456 993.
- > The overall potential reduction in total closure cost if backfilling of waste rock and tailings in the open pits are considered is estimated at \$21 512 467.

**Table 5-2: Comparison Closure Cost Estimated for Meliadine Extension and Alternatives** 

Component Group	A: ICRP 2022 - Cost Estimate (Phase 1 + Meliadine Extension) (\$)	B: ICRP 2022 – Cost Estimate (Phase 1 + Meliadine Extension with alternatives) (\$)	Difference (B-A)	Main Difference Explanations
Open pit	\$ 5 171 737	\$4 103 376	(\$1 068 361)	Reduce the number of years of pit flooding from 7 to 5 years
Underground Mine	\$4 074 194	\$4 074 194	\$0	-
Tailings Storage Facility	\$10 871 451	\$7 202 358	(\$3 669 093)	<ul> <li>Reduced surface area of TSF since material is backfilled in the pits. Cost provided is total cost for closure</li> </ul>
Waste Rock Storage Facilities	\$18 074 636	\$10 901 011	(\$7 173 625)	Reduced surface area of WRSF since material backfilled in the pits. Cost provided is total cost for closure
Buildings and Equipment	\$38 003 287	\$38 003 287	\$0	
Meliadine	\$34 654 270	\$34 654 270	\$0	
Itivia Harbour, AWAR & Bypass Road	\$1 703 339	\$1 703 339	\$0	
Discovery	\$1 645 678	\$1 645 678	\$0	
Chemicals and Contaminated Soil Management	\$3 136 389	\$3 136 389	\$0	
Surface and Groundwater Management	\$11 204 657	\$11 204 657	\$0	
Interim Care and Maintenance	\$ 9 583 408	\$7 439 014	(\$ 2 144 394)	- Change from 7 years to 5 years of active closure.
Subtotal Direct Costs	\$100 119 760	\$86 064 286	(\$14 055 474)	
Mobilization / Demobilization	\$10 803 535	\$10 803 535	\$0	



# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen

Prepared / Updated by : Alain Lebel

682731-2000-4EER-0001

Rev.	Date	Page
01	2023-01-13	30



Component Group	A: ICRP 2022 - Cost Estimate (Phase 1 + Meliadine Extension) (\$)	B: ICRP 2022 – Cost Estimate (Phase 1 + Meliadine Extension with alternatives) (\$)	Difference (B-A)	Main Difference Explanations
Closure and Post-Closure Monitoring and Maintenance	\$19 185 066	\$16 085 270	(\$3 099 796)	- Change from 7 years to 5 years of active closure
Engineering	\$ 5 005 988	\$ 4 303 214	(\$ 702 774)	- Adjusted with direct costs
Project Management	\$ 5 005 988	\$4 303 214	(\$ 702 774)	- Adjusted with direct costs
Health and Safety Plans / Monitoring and QA/QC and Engagement Costs	\$ 2 002 395	\$ 1 721 286	(\$ 281 109)	- Adjusted with direct costs
Bonding / Insurance	\$ 1 001 198	\$ 860 643	(\$ 140 555)	- Adjusted with direct costs
Contingency	\$18 021 557	\$ 15 491 571	(\$2 529 985)	- Adjusted with direct costs
Market Price Factor Adjustment				
Subtotal Indirect Costs	\$61 025 727	\$53 568 734	(\$7 456 993)	
GRAND TOTAL	\$161 145 486	\$139 633 020	(\$21 512 467)	



### Meliadine Extension ICRP Update 2022

Prepared / Updated by : Alain Lebel
Reviewed by : Anh-Long Nguyen
Rev. Date Page

01

2023-01-13

31

682731-2000-4EER-0001



#### 6.0 References

AEM (2015a). Agnico Eagle Mines Limited. Preliminary Closure and Reclamation Plan, Version 1.0, 6513-CRP-01, April 2015.

AEM (2015b). Agnico Eagle Mines Limited. RECLAIM Model, Meliadine Gold Project 2015, excel file 150513 2AM-MEL----AEM Reclaim 7.0\_Meliadine\_sept 15-Rev2-IMLE.xlsm.

AEM (2016). Agnico Eagle Mines Limited. Whale Tail Pit Interim Closure and Reclamation Plan, Version WT, Report No. 1541520, June 2016.

AEM (2019a). Agnico Eagle Mines Limited. Meliadine Gold Project 2018 Annual Report, March 2019.

AEM (2019b). Agnico Eagle Mines Limited. Whale Tail Pit Expansion Project, Interim Closure and Reclamation Plan, Version 3, December 2019.

AEM (2020a). Agnico Eagle Mines Limited. Meliadine Gold Project 2019 Annual Report, April 2020.

AEM (2020b). Agnico Eagle Mines Limited. FEIS Addendum - Treated Groundwater Effluent Discharge into Marine Environment, Rankin Inlet, April 2020, Version 2

AEM (2020c). Agnico Eagle Mines Limited. CAPEX-OPEX DWTP estimated.xlsx. Provided by Agnico Eagle.

AEM (2021) Agnico Eagle Mines Limited. Agnico Eagle Mines email communications, May to October 2021.

AEM (2022a). Agnico Eagle Mines Limited. Meliadine Extension Site Layout, Figure 14 (Dec. 12, 2022) and Figure 15 (Oct. 25, 2022a).

AEM (2022b). Agnico Eagle Mines Limited, Meliadine Division. Mine Waste Management, Version 9, December 2022.

AEM (2022c). Agnico Eagle Mines Limited, Meliadine Division. Water Management Plan, Version 12, December 2022.

AEM (2022d) Agnico Eagle mines Limited, Meliadine Division. Meliadine Mine – Meliadine Extension FEIS Addendum. July 2022.

AEM (2022e). Agnico Eagle Mines Limited, Meliadine Division. Landfill and Waste Management Plan, Version 8, December 2022.

AEM (2022f). Agnico Eagle Mines Limited, Meliadine Division. Landfarm Management Plan, Version 4, December 2022.

AEM (2022g). Agnico Eagle Mines Limited, Meliadine Division. Borrow Pits and Quarries Management Plan, Version 7, December 2022.

AEM (2022h). Agnico Eagle Mines Limited, Meliadine Division. Hazardous Materials Management Plan, Version 6, December 2022.

AEM (2022i). Agnico Eagle Mines Limited, Meliadine Division. Groundwater Management Plan, Version 8, December 2022.

INAC, MLVLWB, GNWT (2017). Indigenous and Northern Affairs Canada, Mackenzie Valley Land and Water Board and the Government of the Northwest Territories, RECLAIM 7.0, User Manual, Revised November 2017.

Nunavut Water Board (2016). Water Licence No: 2AM-MEL1631, issued on April 1st, 2016.



# Meliadine Extension ICRP Update 2022

Reviewed by : Anh-Long Nguyen Rev. Date

682731-2000-4EER-0001



Prepared / Updated by : Alain Lebel



Lorax (2022). Meliadine Extension In-pit Deposition Alternatives WBWQM, December 16, 2022

SLI (2018). SNC-Lavalin. Report No. 654769 (June). Meadowbank Interim Closure and Reclamation Plan Update 2018.

SLI (2020a). SNC-Lavalin. Report 662987-5000-4EER-0001- Version 01. Meadowbank Interim Closure and Reclamation Plan Update 2019.

SLI (2020b). SNC-Lavalin. Report 674942-4000-40ER-0001-00. Reclamation Work and Costs - Waterline for Treated Groundwater Effluent Discharge.

SLI (2020c). SNC-Lavalin. Report 674942-4000-4EER-0002-00. Meliadine – ICRP Update 2020, July 2020.

SLI (2020d). SNC-Lavalin. Report 677925-3000-4EB-0001. Discovery Closure and Reclamation Cost Estimate, November 2020.

SLI (2021). SNC-Lavalin. Report 674942-3000-4EEB-000-02. Meliadine – ICRP Update 2020, January 2021.

Tetra Tech (2017a). Construction Summary (As-Built) Report for Dike D-CP1, Meliadine Gold Project, Nunavut, Revision 0, AEM number 6515-E-132-004-132-REP-012, October 2017.

Tetra Tech (2017b). Construction Summary (As-Built) Report for Operational Landfill (Stage 1), Meliadine Project, Nunavut, Tetra Tech number 28920, AEM number 6515-E-132-007-132-REP-014, December 2017.

Tetra Tech (2020). IFR Prefeasibility Level Design WRSF3&Water Management Infrastructure 07072020, Meliadine Project, July 2020 Water License Amendment, July 03, 2020.

Tetra Tech (2021a). Design Basis for PLOM Water Management Infrastructure Engineering Design for Operation Phase, Meliadine Extension Project, Nunavut, file number ENG.EARC03193-01, July 2021

Tetra Tech (2021b). PLOM MTOs for Meliadine Extension- Discovery- Water Management Infrastructure 07112021.slsx, Provided by Agnico Eagle

Tetra Tech (2021c). Revised PLOM MTOs for Meliadine Extension-FZONE- Water Management Infrastructure 07112021.slsx, Provided by Agnico Eagle

Tetra Tech (2021d). PLOM MTOs for Meliadine Extension-FZONE- Water Management Infrastructure 06252021.slsx, Provided by Agnico Eagle

Tetra Tech (2021e). Revised - PLOM MTOs for Meliadine Extension- PUMP- Water Management Infrastructure 07112021.slsx, Provided by Agnico Eagle

Tetra Tech (2021f). PLOM MTOs for Meliadine Extension- Tiri and Wolf- Water Management Infrastructure 07182021.slsx, Provided by Agnico Eagle



# Appendix A

RECLAIM 7.0

# **SUMMARY OF COSTS**

CAPITAL COSTS	COMPONENT NAME	соѕт	LAND LIABILITY	WATER LIABILITY
OPEN PIT	Tiriganiaq Pit 1	\$493 788	\$246 894	\$246 894
	Tiriganiaq Pit 2	\$102 527	\$51 264	\$51 264
	Tiriganiaq Pit 3	\$108 852	\$54 426	\$54 426
	Tiriganiaq Pit 4	\$554 512	\$277 256	\$277 256
	WES01	\$187 538	\$93 769	\$93 769
	WES02	\$620 107	\$310 053	\$310 053
	WES03	\$187 883	\$93 941	\$93 941
	WES04	\$79 539	\$39 770	\$39 770
	WES05	\$346 470	\$173 235	\$173 235
	WN01	\$547 910	\$273 955	\$273 955
	PUM01	\$99 456	\$49 728	\$49 728
	PUM02	\$139 178	\$69 589	\$69 589
	PUM03	\$125 775	\$62 888	\$62 888
	PUM04	\$77 723	\$38 861	\$38 861
	FZO01	\$498 285	\$249 142	\$249 142
	FZO02	\$101 102	\$50 551	\$50 551
	FZO03	\$116 363	\$58 182	\$58 182
	DIS01	\$784 728	\$392 364	\$392 364
UNDERGROUND MINE	Tiriganiaq UG	\$1 155 400	\$577 700	\$577 700

# **SUMMARY OF COSTS**

CAPITAL COSTS	COMPONENT NAME	COST	LAND LIABILITY	WATER LIABILITY
	Pump UG	\$730 373	\$365 187	\$365 187
	F Zone UG	\$750 373	\$375 187	\$375 187
	Discovery UG	\$687 674	\$343 837	\$343 837
	Tiriganiaq-Wolf UG	\$750 373	\$375 187	\$375 187
TAILINGS FACILITY	TSF Meliadine Extension	\$10 871 451	\$5 435 726	\$5 435 726
ROCK PILE	WRSF 1 Ext.	\$500 722	\$250 361	\$250 361
	WRSF 3 Ext.	\$30 000	\$15 000	\$15 000
	WRSF 5	\$30 000	\$15 000	\$15 000
	WRSF 6	\$30 000	\$15 000	\$15 000
	WRSF 7	\$30 000	\$15 000	\$15 000
	WRSF 8 (Discovery)	\$8 023 765	\$4 011 883	\$4 011 883
	WRSF 9 (Discovery)	\$5 162 649	\$2 581 325	\$2 581 325
	Saline Rock Pile	\$4 267 500	\$2 133 750	\$2 133 750
BUILDINGS AND EQUIPMENT	Meliadine	\$34 654 270	\$17 360 470	\$17 293 801
	ITIVIA + Road	\$1 703 339	\$851 669	\$851 669
	Discovery	\$1 645 678	\$822 839	\$822 839
CHEMICALS AND CONTAMINATED SOIL MANAGEMENT	Meliadine	\$2 882 691	\$1 441 346	\$1 441 346
	Discovery	\$253 698	\$126 849	\$126 849
SURFACE AND GROUNDWATER MANAGEMENT		\$11 204 657	-	\$11 204 657

# **SUMMARY OF COSTS**

CAPITAL COSTS	COMPONENT NAME	соѕт	LAND LIABILITY	WATER LIABILITY
INTERIM CARE AND MAINTENANCE	_	\$9 583 408		\$9 583 408
	SUBTOTAL: Capital Costs	\$100 119 760	\$39 699 182	\$60 420 578
	PERCENT OF SUBTOTAL		40%	60%

INDIRECT COSTS		соѕт	LAND LIABILITY	WATER LIABILITY
MOBILIZATION/DEMOBILIZATION		\$10 803 535	\$4 283 785	\$6 519 750
CLOSURE MONITORING AND MAINTENANCE		\$10 849 286	\$4 301 926	\$6 547 360
POST CLOSURE MONITORING AND MAINTENANCE		\$8 335 780	\$3 305 278	\$5 030 502
ENGINEERING	5%	\$5 005 988	\$1 984 959	\$3 021 029
PROJECT MANAGEMENT	5%	\$5 005 988	\$1 984 959	\$3 021 029
HEALTH AND SAFETY PLANS/MONITORING & QA/QC	2%	\$2 002 395	\$793 984	\$1 208 412
BONDING/INSURANCE	1%	\$1 001 198	396 991.82 \$	\$604 206
CONTINGENCY	18%	\$18 021 557	\$7 145 853	\$10 875 704
MARKET PRICE FACTOR ADJUSTMENT	0%	\$0	\$0	\$0
	SUBTOTAL: Indirect Costs	\$61 025 727	\$24 197 735	\$36 827 992
TOTAL COSTS		\$161 145 487	\$63 896 917	\$97 248 570

# Open Pit Name: Tiriganiaq Pit 1 Pit # <u>1</u>

	<u> </u>							
ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost	Cost I		Land Cost	Water Cost
CONTROL ACCESS								
Fence		m	#N/A	\$0.00	\$0	50%	\$0	\$0
Signs	One sign every 150 m	each	13 SH	\$37.08	\$482	50%	\$241	\$24
Berm at crest	Perimeter = 1930 m x 2.5 m <sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	4825 SB4L	\$5.50	\$26 538	50%	\$13 269	\$13 269
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other			#N/A	\$0.00	\$0	50%	\$0	\$0
STABILITY STUDY								
Conduct stability and setback study		allow	#N/A	\$0.00	\$0	50%	\$0	\$0
STABILIZE SLOPES								
Off-load crest, soil A		m3	#N/A	\$0.00	\$0	50%	\$0	\$
Off-load crest, soil B		m3	#N/A	\$0.00	\$0	50%	\$0	\$
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0	50%	\$0	\$
							\$0	\$1
Drill & blast pit crest		m3	#N/A	\$0.00	\$0	50%		
Buttress slope		m3	#N/A	\$0.00	\$0	50%	\$0	\$
Other			#N/A	\$0.00	\$0	50%	\$0	\$0
COVER/CONTOUR SLOPES								
Place fill, soil A		m3	#N/A	\$0.00	\$0	50%	\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0	50%	\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0	50%	\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0	50%	\$0	\$0
Vegetate pit floor		ha	#N/A	\$0.00	\$0	50%	\$0	\$0
Other			#N/A	\$0.00	\$0	50%	\$0	\$0
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$(
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$(
CONSTRUCT SPILLWAY		IIIJ	#19/75	φυ.υυ	φυ		φυ	φι
		0	#N/A	60.00	\$0		\$0	0.0
Excavate channel		m3		\$0.00			\$0 \$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		* -	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES								
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital								
Remove stationary equipment (sump pumps)	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$(
-Ditch. mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$(
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$(
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$
Supply/install pump station	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$96 000.00	\$96 000	50%	\$48 000	\$48 000
Piping installation	5 km of pipes from freshwater intake to pits	m	5000 PLIL	\$50.00	\$250 000		\$125 000	\$125 000
. •	o kin oi pipes noni neshwater intake to pits					30%		
Supply/install pump		each	#N/A	\$0.00	\$0 ©0		\$0 \$0	\$
Remove pump post-closure		each	#N/A	\$0.00	\$0	=00:	\$0	\$
Remove piping post-closure	Remove and dispose on site after pit flooding	m	5000 PLRL	\$22.00	\$110 000	50%	\$55 000	\$55 00
FLOOD PIT-Annual Cost								
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	0 MBK	\$49.60	\$0	50%	\$0	\$
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	0 MBK	\$120.00	\$0	50%	\$0	\$
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0 MBK	\$4 000.00	\$0	50%	\$0	\$0
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	0 ACCML	\$100.00	\$0	50%	\$0	\$0
		aaayo	3 7.00.WL	ψ.00.00	ΨΟ	00,0	ΨO	Ų.

# Open Pit !	Name:	Tiriganiaq Pit 1			Pit # <u>1</u>				
ACTIVITY/MATERIAL	Notes	u	nits Quan	Cost tity Code	Unit Cost	% Cost L	6 and	Land Cost	Water Cost
Passive/biological additives			\$/ha	#N/A	\$0.00	\$0		\$(	
Passive additives purchase and shippin	g	to	nne	#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	0 m3 / 7 years		m3	0 MBK	\$0.03	\$0	50%	\$0	\$0
				Annual	pumping costs	\$0			
Number of years of pump flooding		yı	ears	7					
,				Total	pumping costs	\$0	50%	\$0	\$0
					Total	\$493 788		\$246 894	\$246 894
					% of Total			50%	50%

Open Pit Name: Tiriganiaq Pit 2 Pit # 2

	inio.	-		· · · · · <u>-</u>				
			Cost				Land	
ACTIVITY/MATERIAL	Notes	Units	Quantity Code	Unit Cost	Cost	Land	Cost	Water Cost
CONTROL ACCESS								
Fence		m	#N/A	\$0.00	\$0	50%	\$0	\$
Signs		each	#N/A	\$37.08	\$0	50%	\$0	\$
Berm at crest		m3	#N/A	\$0.00	\$0	50%	\$0	\$1
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other			#N/A	\$0.00	\$0		\$0	\$1
STABILITY STUDY								
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$(
STABILIZE SLOPES								
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$1
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$(
Other			#N/A	\$0.00	\$0		\$0	\$(
COVER/CONTOUR SLOPES								
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$(
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$(
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$(
Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$(
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$(
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$(
CONSTRUCT SPILLWAY			,	******	**			
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$(
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$(
Other			#N/A	\$0.00	\$0		\$0	\$(
RECLAIM QUARRIES			#1 <b>4</b> /7 C	ψ0.00	ΨΟ		ΨΟ	Ψ
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$(
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$(
FLOOD PIT-Captital		1110	#1 <b>4</b> /7 C	ψ0.00	ΨΟ		ΨΟ	Ψ
	umps) AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline	amps/ALIVI used 10,000 in 2013 Whale Tall Security (Version 3)	m	#N/A	\$0.00	\$10 000	30 /0	\$0	\$5 000
Remove dewatering pipeline Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$(
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$(
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$(
·					\$0		\$0	\$1
-Ditch, mat'l B Construct embankment/dam		m3 m3	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$1 \$1
	ysten From 2019 Whale Tail Security (version 3)	each	#N/A 1 AEM	\$0.00	\$0 \$24 000	50%	\$12 000	ە \$12 00
			500 PLIL	\$24 000.00	\$24 000 \$25 000	50%	\$12 000	\$12 00
Piping installation	500 m additonal (TIR 1 to TIR 2)	m				50%		
Supply/install piping system		each each	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$(
Remove pump post-closure	Pamoya and dispass on site after hit fleeding		#N/A 500 PLRL	\$0.00 \$22.00		50%	\$5 500	ە \$5 500
Remove pipeline post-closure	Remove and dispose on site after pit flooding	m	SUU PLKL	φ∠∠.00	\$11 000	30%	და ესს	\$5 5U
FLOOD PIT-Annual Cost			шк1/к	<b>60.00</b>	60		60	
Operate pumps (power)	O aliillad labarrasa ri 40baa darra 4 araadh (m	each	#N/A	\$0.00	\$0	F00/	\$0 \$4.400	\$
Maintain pump/piping	2 skilled labourers x 12hrs days, 4 month/yr	manhours		\$49.60	\$2 845	50%	\$1 423	\$1 42
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h		\$120.00	\$402	50%	\$201	\$20
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits		\$4 000.00	\$159	50%	\$80	\$80
Accomodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	5.059464 ACCML	\$100.00	\$506	50%	\$253	\$253

Open Pit Name		Tiriganiaq Pit 2				Pit # <u>2</u>				
ACTIVITY/MATERIAL	Notes		Units	Quantity	Cost Code	Unit Cost	Cost		Land Cost	Water Cost
Passive/biological additives	1000		\$/ha	~~~~,	#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping			tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from CP1	1251076.10212766 m3 / 7 years x (3.1/23.5)		m3	23 577	MBK	\$0.03	\$625	50%	\$312	\$312
					Annual p	oumping costs	\$4 537	50%	\$2 269	\$2 269
Number of years of pump flooding			years	7						
					Total p	oumping costs	31 759.40 \$	50%	\$15 880	\$15 880
						Total	\$102 527		\$51 264	\$51 264
						% of Total			50%	50%

Open Pit Name: Tiriganiaq Pit 3 Pit # 3 % Cost Land ACTIVITY/MATERIAL Units Quantity Code **Unit Cost** Cost Land Cost Water Cost Notes CONTROL ACCESS Fence #N/A \$0.00 \$0 \$0 \$0 m Signs One sign every 150 m each 4 SH \$37.08 \$148 50% \$74 \$74 m3 1410 SB4L \$5.50 \$3 878 Berm at crest Perimeter = 564 m x 2.5 m<sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top) \$7 755 50% \$3 878 Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes 320 DRH \$2.40 \$768 50% \$384 \$384 Rock Barricade at ramp m3 Other #N/A \$0.00 \$0 \$0 \$0 STABILITY STUDY Conduct stability and setback study allow #N/A \$0.00 \$0 \$0 \$0 STABILIZE SLOPES m3 #N/A \$0 \$0 \$0 Off-load crest, soil A \$0.00 Off-load crest, soil B m3 #N/A \$0.00 \$0 \$0 \$0 \$0 Doze/trim overburden at crest m3 #N/A \$0.00 \$0 \$0 Drill & blast pit crest m3 #N/A \$0.00 \$0 \$0 \$0 Buttress slope m3 #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 \$0 \$0 Other \$0.00 COVER/CONTOUR SLOPES #N/A \$0 \$0 Place fill, soil A m3 \$0.00 \$0 Place fill, soil B m3 #N/A \$0.00 \$0 \$0 \$0 Rip rap m3 #N/A \$0.00 \$0 \$0 \$0 Vegetate slopes ha #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 \$0 \$0 Vegetate pit floor ha \$0.00 Other #N/A \$0.00 \$0 \$0 \$0 CONSTRUCT DIVERSION DITCHES Excavate ditches -soil m3 #N/A \$0.00 \$0 \$0 \$0 Excavate ditches -rock m3 #N/A \$0.00 \$0 \$0 \$0 Rip rap in channel base m3 #N/A \$0.00 \$0 \$0 \$0 CONSTRUCT SPILLWAY #N/A \$0 \$0 Excavate channel m3 \$0.00 \$0 #N/A \$0.00 \$0 \$0 \$0 Concrete m3 Rip rap m3 #N/A \$0.00 \$0 \$0 \$0 #N/A \$0.00 \$0 \$0 \$0 **RECLAIM QUARRIES** \$0 \$0 Contour slopes m3 #N/A \$0.00 \$0 #N/A \$0 \$0 \$0 Place overburden m3 \$0.00 #N/A \$0 \$0 \$0 Vegetate m3 \$0.00 FLOOD PIT-Captital Remove stationary equipment (sump pumps) AEM used 10,000\$ in 2019 Whale Tail Security (version 3) 1 PRH \$10 000.00 \$10 000 \$5 000 \$5 000 each Remove dewatering pipeline m #N/A \$0.00 \$0 \$0 \$0 Remove power lines each #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 Construct diversion ditches \$0.00 \$0 \$0 m3 #N/A \$0 -Ditch, mat'l A m3 \$0.00 \$0 \$0 -Ditch, mat'l B m3 #N/A \$0.00 \$0 \$0 \$0 Construct embankment/dam #N/A \$0.00 \$0 \$0 \$0 m3 \$12 000 \$12 000 Supply/install pump station and piping system From 2019 Whale Tail Security (version 3) each 1 AEM \$24 000.00 \$24 000 #N/A \$0 \$0 \$0 Piping installation m \$0.00 #N/A \$0 \$0 \$0 Supply/install pump each \$0.00 #N/A \$0 \$0 \$0 Remove pump post-closure each \$0.00 Remove piping post-closure #N/A \$0.00 \$0 \$0 \$0 FLOOD PIT-Annual Cost #N/A \$0.00 \$0 50% \$0 \$0 Operate pumps (power) each \$1 571 63.36 MBK \$49.60 \$1 571 Maintain pump/piping 2 skilled laborers x 12hrs days, 4 month/yr \$3 143 50% manhours 3.696 MBK \$120.00 \$222 \$222 Annual Pump Servicing 2x Manufacturer Consultants x 12 hours day x 7 days/yr \$/h \$444 50% Pump Servicing Travel Allowance Round Trip Fligth/person visits 0.044 MBK \$4 000.00 \$176 50% \$88 \$88 Accommodations 120 days x 2 skilled labourers + 7 days x 2 Consultants 5.588 ACCML \$100.00 \$559 50% \$279 \$279 mandays

Open Pit Name:		Tiriganiaq Pit 3				Pit # <u>3</u>				_
ACTIVITY/MATERIAL	Notes	u	Units	Quantity	Cost Code	Unit Cost	Cost		Land Cost	Water Cost
Passive/biological additives			\$/ha		#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping		to	onne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	1356000 m3 / 7 years		m3	193 714	MBK	\$0.03	\$5 133	50%	\$2 567	\$2 567
					Annua	I pumping costs	\$9 454			
Number of years of pump flooding		у	years	7						
					Tota	I pumping costs	\$66 181	50%	\$33 090	\$33 090
						Total	\$108 852		\$54 426	\$54 426
						% of Total			50%	50%

Pit # 4 Open Pit Name: Tiriganiaq Pit 4 % Cost Land ACTIVITY/MATERIAL Units Quantity **Unit Cost** Cost Land Cost Water Cost Notes Code CONTROL ACCESS Fence #N/A \$0.00 \$0 \$0 \$0 m Signs One sign every 150 m each 15 SH \$37.08 \$556 50% \$278 \$278 m3 \$5.50 \$29 579 \$14 790 \$14 790 Berm at crest Perimeter = 2151 m x 2.5 m<sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top) 5378 SB4L 50% Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes 320 DRH \$2.40 \$768 50% \$384 \$384 Rock Barricade at ramp m3 Other #N/A \$0.00 \$0 \$0 \$0 STABILITY STUDY Conduct stability and setback study allow #N/A \$0.00 \$0 \$0 \$0 STABILIZE SLOPES m3 #N/A \$0 \$0 \$0 Off-load crest, soil A \$0.00 Off-load crest, soil B m3 #N/A \$0.00 \$0 \$0 \$0 \$0 Doze/trim overburden at crest m3 #N/A \$0.00 \$0 \$0 Drill & blast pit crest m3 #N/A \$0.00 \$0 \$0 \$0 Buttress slope m3 #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 \$0 \$0 Other \$0.00 COVER/CONTOUR SLOPES #N/A \$0 \$0 Place fill, soil A m3 \$0.00 \$0 Place fill, soil B m3 #N/A \$0.00 \$0 \$0 \$0 Rip rap m3 #N/A \$0.00 \$0 \$0 \$0 Vegetate slopes ha #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 \$0 \$0 Vegetate pit floor ha \$0.00 Other #N/A \$0.00 \$0 \$0 \$0 CONSTRUCT DIVERSION DITCHES Excavate ditches -soil m3 #N/A \$0.00 \$0 \$0 \$0 Excavate ditches -rock m3 #N/A \$0.00 \$0 \$0 \$0 Rip rap in channel base m3 #N/A \$0.00 \$0 \$0 \$0 CONSTRUCT SPILLWAY #N/A \$0 \$0 Excavate channel m3 \$0.00 \$0 #N/A \$0.00 \$0 \$0 \$0 Concrete m3 Rip rap m3 #N/A \$0.00 \$0 \$0 \$0 #N/A \$0.00 \$0 \$0 \$0 **RECLAIM QUARRIES** \$0 \$0 Contour slopes m3 #N/A \$0.00 \$0 #N/A \$0 \$0 \$0 Place overburden m3 \$0.00 #N/A \$0 \$0 \$0 Vegetate m3 \$0.00 FLOOD PIT-Captital Remove stationary equipment (sump pumps) AEM used 10,000\$ in 2019 Whale Tail Security (version 3) 1 PRH \$10 000.00 \$10 000 \$5 000 \$5 000 each Remove dewatering pipeline m #N/A \$0.00 \$0 \$0 \$0 Remove power lines each #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 Construct diversion ditches \$0.00 \$0 \$0 m3 #N/A \$0 -Ditch, mat'l A m3 \$0.00 \$0 \$0 -Ditch, mat'l B m3 #N/A \$0.00 \$0 \$0 \$0 Construct embankment/dam #N/A \$0 \$0 \$0 m3 \$0.00 1 AEM \$72 000 Supply/install pump station and piping system From 2019 Whale Tail Security (version 3) each \$144 000.00 \$144 000 \$72 000 \$50.00 \$0 \$0 \$0 Piping installation m PLIL #N/A \$0 \$0 \$0 Supply/install pump each \$0.00 \$0 \$0 \$0 Remove pump post-closure each #N/A \$0.00 Remove piping post-closure #N/A \$0.00 \$0 \$0 \$0 FLOOD PIT-Annual Cost #N/A \$0.00 \$0 \$0 \$0 Operate pumps (power) each \$49.60 \$9 362 Maintain pump/piping 2 skilled laborers x 12hrs days, 4 month/yr 377.5129 MBK \$18 725 50% \$9 362 manhours 22.02158 MBK \$120.00 \$1 321 Annual Pump Servicing 2x Manufacturer Consultants x 12 hours day x 7 days/yr \$2 643 50% \$1 321 Pump Servicing Travel Allowance Round Trip Fligth/person 0.262162 MBK \$4 000.00 \$1 049 50% \$524 \$524 Accommodations 120 days x 2 skilled labourers + 7 days x 2 Consultants mandays 33.29454 ACCML \$100.00 \$3 329 50% \$1 665 \$1 665

Open Pit Name:		Tiriganiaq Pit 4				Pit # <u>4</u>				
ACTIVITY/MATERIAL	Notes		Units	Quantity	Cost Code	Unit Cost	Cost		Land Cost	Water Cost
Passive/biological additives			\$/ha		#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping			tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from CP1	8232887.89787234 m3 / 7 years x (20.4/23.1)		m3	1 020 978	MBK	\$0.03	\$27 056	50%	\$13 528	\$13 528
					Annua	al pumping costs	\$52 801			
Number of years of pump flooding			years	7						
			-		Tota	al pumping costs	\$369 609	50%	\$184 804	\$184 804
						Total	\$554 512		\$277 256	\$277 256
						% of Total			50%	50%

 Open Pit Name:
 WES01

ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost	Cost I		Land Cost V	later Cost
CONTROL ACCESS								
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	8 SH	\$37.08	\$297	50%	\$148	\$148
Berm at crest	Perimeter = 1116 m x 2.5 m <sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	2790 SB4L	\$5.50	\$15 345	50%	\$7 673	\$7 673
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other			#N/A	\$0.00	\$0		\$0	\$0
STABILITY STUDY			,	*****	**		•	•
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES			,	*****	**		•	
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Buttress slope		m3	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$0
Other		1113	#N/A	\$0.00	\$0		\$0 \$0	\$0
COVER/CONTOUR SLOPES			#19/75	φυ.υυ	Ψ		Φ0	ψU
		<b>~</b> ?	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil A Place fill, soil B		m3 m3	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
· ·								
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0 \$0	\$0
Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES							_	
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY								
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES								
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital								
Remove stationary equipment (sump pumps)	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump station and piping system	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$48 000.00	\$48 000	50%	\$24 000	\$24 000
Piping installation		m	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure		m	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Annual Cost								
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	106.56 MBK	\$49.60	\$5 285	50%	\$2 643	\$2 643
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	6.216 MBK	\$120.00	\$746	50%	\$373	\$373
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.074 MBK	\$4 000.00	\$296	50%	\$148	\$148
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	9.398 ACCML	\$100.00	\$940	50%	\$470	\$470
, 1000	120 days x 2 simos issocioto i i days x 2 consultanto	ariaays	J.JJJ / NOOIVIL	ψ100.00	Ψ540	5578	ψ-1.0	Ψ-71 Ο

Open Pit Name:		WES01			Pit # <u>5</u>				
A OTIVITY/MATERIAL	Maria	11-5		Cost	Heli Ocea		6		W-4 04
ACTIVITY/MATERIAL	Notes		s Quanti	•	Unit Cost	Cost L	_and	Land Cost V	
Passive/biological additives		\$/h	а	#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping		tonn	е	#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	2349400 m3 / 7 years	m	3 335 6	329 MBK	\$0.03	\$8 894	50%	\$4 447	\$4 447
				Annu	al pumping costs	\$16 161			
Number of years of pump flooding		year	s	7					
, , , ,		•		Tot	al pumping costs	\$113 129	50%	\$56 564	\$56 564
'					Total	\$187 538		\$93 769	\$93 769
					% of Total			50%	50%

 Open Pit Name:
 WES02
 Pit # 6

CONTROL Notes   Control Note	\$0 \$371 \$3' \$20 248 \$20 24
Signe         One signe very 150 m         96 man are read 245 m x 2.5 m	\$371 \$33 \$20 248 \$20 24
Bern af carser	\$20 248 \$20 24
### ### ### ### ### ### ### ### ### ##	
Rock Brinding of a tramp         Assuming 20 m width ramp and barriade length of 5 m (2m tick) and 1.5H±1 V for from those k long.         30         80 Me         30 Me<	
Oher         STABLITY STUDY           Conduct stability and setback study         allow         8NA         \$0.00         \$0.00           STABLIZE SLOPES         TSTABLIZE SLOPES	\$384 \$38
STABLITY STUDY	\$0
Conduct stability and sethock study!         Solution (SIDES)           STABLIZES SLOPES         m3         #NVA         \$5,00         \$5           Off-load crest, soil A         m3         #NVA         \$5,00         \$5           Off-load crest, soil A         m3         #NVA         \$5,00         \$5           Dril A blast pit crest         m3         #NVA         \$5,00         \$5           Dril A blast pit crest         m3         #NVA         \$5,00         \$5           United Study         m3         #NVA         \$5,00         \$5           Place fill, soil A         m3         #NVA         \$5,00         \$5           Rips paragraph         m3         #NVA         \$5,00         \$5           Rips paragraph         m3         #NVA         \$5,00         \$5           Vegetate slopes         m3         #NVA         \$5,00         \$5           Vegetate slopes         m3         #NVA         \$5,00         \$5	<b>V</b>
STABLES SLOPES   STABLES SLOPES SLOPES   STABLES SLOPES SLOPES   STABLES SLOPES SLOPES   STABLES SLOPES SLOPES SLOPES   STABLES SLOPES SLOPE	\$0
Off-bad creat, soil A         m3         RNA         \$0.00         50 Chead creat, soil B         m3	77
Off-load grast, soil B         grill         1870         \$100         \$1	\$0
Dozulita blast pit crests         m3         #NA         \$0.00         \$0.00           Drill & blast pit crests         m3         #NA         \$0.00         \$0.00           Unters slope         m8         #NA         \$0.00         \$0.00           COVER/CONTOUR SLOPES         #NA         \$0.00         \$0.00           Place fill, soil A         m3         #NA         \$0.00         \$0.00           Rip rap         m3         #NA         \$0.00         \$0.00           Vegetate pit floor         m3         #NA         \$0.00         \$0.00           Other         m8         #NA         \$0.00         \$0.00           Vegetate pit floor         m8         #NA         \$0.00         \$0.00           Other         m8         #NA         \$0.00         \$0.00           Excavate diffiches soil         m8         #NA         \$0.00         \$0.00           Rip rap in channel base         m8         #NA         \$0.00         \$0.00           Rip rap in channel base         m8         #NA         \$0.00         \$0.00           Rip rap in channel base         m8         #NA         \$0.00         \$0.00           Construct Or Sellu         m8         #NA <td>\$0</td>	\$0
Drill Salst pit crest         m3         #NA         \$0.00         \$0           Butters slope         m3         #NA         \$0.00         \$0           COVER/CONTOUTS LOPES         TOUR SLOPES         \$0	\$0
Buttles slope	\$0
Other         COVER/CONTOUR SLOPES         #MA         \$0.00         \$0           Place fill, soil A         m3         #NA         \$0.00         \$0           Place fill, soil B         m3         #NA         \$0.00         \$0           Rip fig         m3         #NA         \$0.00         \$0           Vegetate slopes         h8         #NA         \$0.00         \$0           Vegetate pit floor         h8         #NA         \$0.00         \$0           Other         b         #NA         \$0.00         \$0           Contract         m8         #NA         \$0.00         \$0           Excavate differs soil         m3         #NA         \$0.00         \$0           Concrete         m3         #NA         \$0.00         \$0	\$0
Place fill, soil A	\$0
Place fill, soil A   Place fill, soil B   Place f	φυ .
Place fill, soil B   Riy rap   Riy	<b>C</b> O
Right   Fig.	\$0 \$0
Vegetate slopes         İna         #NIA         \$0.00         \$0           Vegetate pit flor         İna         #NIA         \$0.00         \$0           Other         İnxi         \$0.00         \$0           CONSTRUCT DIVERSION DITCHES           Excavate ditches -rock         m3         #NIA         \$0.00         \$0           Excavate ditches -rock         m3         #NIA         \$0.00         \$0           Excavate ditches -rock         m3         #NIA         \$0.00         \$0           Riy rap in channel base         m3         #NIA         \$0.00         \$0         \$0           CONSTRUCT SPILLWAY         Texavate channel         m3         #NIA         \$0.00         \$0         \$0           Concrete         m3         #NIA         \$0.00         \$0	
Vogetate pit floor         Vogetate pit floor         HNA         \$0.00         \$0           Other         2004         \$0.00         \$0           CONSTRUCT DIVERSION DITCHES         \$0.00         \$0           Excavate ditches -rock         m3         #NA         \$0.00         \$0           Exp rap in channel base         m3         #NA         \$0.00         \$0           Exp rap floor         m3         #NA         \$0.00         \$0           Exp rap floor         m3         #NA         \$0.00         \$0           Exp rap floor         m3         #NA         \$0.00         \$0           Rp rap         m3         #NA         \$0.00         \$0           RECLAIN QUARRIES         m3         #NA         \$0.00         \$0           Flagstar         m3         #NA         \$0.00         \$0           Place overburden         m3         #NA         \$0.00         \$0           Vegetate         m3         #NA <td>\$0</td>	\$0
Other         #MA         \$0.00         \$0           CONSTRUCT DIVERSION DITCHES           Excavate ditches -soil         m3         #MA         \$0.00         \$0           Excavate ditches -rock         m3         #MA         \$0.00         \$0           Rip rap in channel base         m3         #MA         \$0.00         \$0           CONSTRUCT SPILLWAY         m3         #MA         \$0.00         \$0           Excavate channel         m3         #MA         \$0.00         \$0           Concrete         m3         #MA         \$0.00         \$0           Rip rap         m3         #MA         \$0.00         \$0           Other         p1         #MA         \$0.00         \$0           Rip rap         m3         #MA         \$0.00         \$0           Rip rap         m3         #MA         \$0.00         \$0           Rip rap         m3         #MA         \$0.00         \$0           RECLAIM QUARRIES         m3         #MA         \$0.00         \$0           Place overburden         m3         #MA         \$0.00         \$0           FLOOD PIT-Capitia         m3         #MA         \$0.00	\$0
CONSTRUCT DIVERSION DITCHES   Excavate diffches -soil   m3   m1/4   \$0.00   \$0   \$0   \$0   \$0   \$0   \$0	\$0
Excavate ditches -soil         m3         #N/A         \$0.00         \$0           Excavate ditches -rock         m3         #N/A         \$0.00         \$0           Excavate clitches -rock         m3         #N/A         \$0.00         \$0           CONSTRUCT SPILLWAY         TSPILLWAY         TSPILLWAY         TSPILLWAY         \$0.00         \$0           Concrete         m3         #N/A         \$0.00         \$0           Concrete         m3         #N/A         \$0.00         \$0           Concrete         m3         #N/A         \$0.00         \$0           Other         m3         #N/A         \$0.00         \$0           RECLAIM QUARRIES         m3         #N/A         \$0.00         \$0           Recover burden         m3         #N/A         \$0.00         \$0           Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PT-Capitial         m3         #N/A         \$0.00         \$0           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         #N/A         \$0.00         \$0 </td <td>\$0</td>	\$0
Riprapin channel base   m3   #NA   \$0.00   \$0   \$0   \$0   \$0   \$0   \$0	
Rip rap in channel base         m3         #N/A         \$0.00         \$0           COSTRUCT SPILLWAY           Excavate channel         m3         #N/A         \$0.00         \$0           Concrete         m3         #N/A         \$0.00         \$0           Concrete         m3         #N/A         \$0.00         \$0           Rip rap         m3         #N/A         \$0.00         \$0           Other         m3         #N/A         \$0.00         \$0           Contour slopes         m3         #N/A         \$0.00         \$0           Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Capitial         FLOOD PIT-Capitial         \$0         \$1         PR         \$100.00         \$10.00         \$0           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$10 00.00         \$0           Remove dewatering pipeline         m         #N/A         \$0.00         \$0           Construct diversion ditches         each         #N/A         \$0.00         \$0	\$0
CONSTRUCT SPILLWAY           Excavate channel         m3         #N/A         \$0.00         \$0           Concrete         m3         #N/A         \$0.00         \$0           Rip rap         m3         #N/A         \$0.00         \$0           Other         #N/A         \$0.00         \$0           RECLAIM QUARRIES         m3         #N/A         \$0.00         \$0           Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Capitial         FLOOD PIT-Capitial         m3         #N/A         \$10.00.00         \$0           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$10.000.00         \$0           Remove power lines         each         #N/A         \$0.00         \$0           Construct diversion ditches         each         #N/A         \$0.00         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0	\$0
Excavate channel         m3         #N/A         \$0.00         \$0           Concrete         m3         #N/A         \$0.00         \$0           Rip rap         m3         #N/A         \$0.00         \$0           Other         #N/A         \$0.00         \$0           Cothour slopes         m3         #N/A         \$0.00         \$0           Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Captital         m3         #N/A         \$0.00         \$0           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$10 000.00         \$0           Remove power lines         m3         #N/A         \$0.00         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0           -Ditch, mat'l A         m3         #N/A         \$0.00         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0	\$0
Concrete         m3         #N/A         \$0.00         \$0           Rip rap         m3         #N/A         \$0.00         \$0           Other         m8/A         \$0.00         \$0           RECLAIM QUARRIES           Contour slopes         W1A         \$0.00         \$0           Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Captital         W1         \$1 PRH         \$10 00.00         \$1000         \$0           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         #N/A         \$0.00         \$0         \$0           Remove power lines         each         #N/A         \$0.00         \$0 <td< td=""><td></td></td<>	
Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap   Rip rap rap rap rap rap rap rap rap rap ra	\$0
Other         #N/A         \$0.00         \$0           RECLAIM QUARRIES           Contour slopes         m3         #N/A         \$0.00         \$0           Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Captital         T         PRM veg daylingment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$10 000.00         \$10 000         50           Remove dewatering pipeline         m         #N/A         \$0.00         \$0         \$0           Remove power lines         each         #N/A         \$0.00         \$0         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0         \$0           -Ditch, mat'l A         m3         #N/A         \$0.00         \$0         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0	\$0
RECLAIM QUARRIES           Contour slopes         m3         #N/A         \$0.00         \$0           Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Captital         Teach to specify (version 3)         Each 1 PRH \$10 000.00         \$10 000         \$0           Remove dewatering pipeline         m         #N/A         \$0.00         \$0           Remove power lines         each #N/A         \$0.00         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0           -Ditch, mat'l A         m3         #N/A         \$0.00         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0	\$0
Contour slopes         m3         #N/A         \$0.00         \$0           Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Captital         Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$10 000.00         \$10 000         50           Remove dewatering pipeline         m         #N/A         \$0.00         \$0           Construct diversion ditches         each         #N/A         \$0.00         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0           -Ditch, mat'l A         m3         #N/A         \$0.00         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0	\$0
Place overburden         m3         #N/A         \$0.00         \$0           Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Capitial           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$10 000.00         \$10 000         50           Remove dewatering pipeline         m         #N/A         \$0.00         \$0           Construct diversion ditches         each         #N/A         \$0.00         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0           -Ditch, mat'l A         m3         #N/A         \$0.00         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0	
Vegetate         m3         #N/A         \$0.00         \$0           FLOOD PIT-Capitial           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$10 00.00         \$0         50           Remove dewatering pipeline         m         #N/A         \$0.00         \$0         \$0           Remove power lines         each         #N/A         \$0.00         \$0         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0         \$0           - Ditch, mat'l A         m3         #N/A         \$0.00         \$0 <td>\$0</td>	\$0
FLOOD PIT-Capitial   Remove stationary equipment (sump pumps)   AEM used 10,000\$ in 2019 Whale Tail Security (version 3)   each   1 PRH   \$10 000.00   \$10 000   50%   Remove dewatering pipeline   m   #N/A   \$0.00   \$0   \$0   \$0   \$0   \$0   \$0	\$0
Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$10 00.00         \$10 000         50           Remove dewatering pipeline         m         #N/A         \$0.00         \$0         \$0           Remove power lines         each         #N/A         \$0.00         \$0         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0         \$0           -Ditch, mat'l A         m3         #N/A         \$0.00         \$0         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0         \$0	\$0
Remove dewatering pipeline         m         #N/A         \$0.00         \$0           Remove power lines         each         #N/A         \$0.00         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0           -Ditch, mat'l A         m3         #N/A         \$0.00         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0	
Remove power lines         each         #N/A         \$0.00         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0           -Ditch, mat'l A         m3         #N/A         \$0.00         \$0           -Ditch, mat'l B         m3         #N/A         \$0.00         \$0	\$5 000 \$5 00
Construct diversion ditches       m3       #N/A       \$0.00       \$0         -Ditch, mat'l A       m3       #N/A       \$0.00       \$0         -Ditch, mat'l B       m3       #N/A       \$0.00       \$0	\$0
-Ditch, mat'l A \$0.00 \$0 -Ditch, mat'l B m3 #N/A \$0.00 \$0	\$0
-Ditch, mat'l B m3 #N/A \$0.00 \$0	\$0
	\$0
Construct embankment/dam	\$0
- 20110 στην	\$0
Supply/install pump station and piping system From 2019 Whale Tail Security (version 3) each 1 AEM \$88 000.00 \$88 000 50%	\$44 000 \$44 00
Piping installation 500 m additional (TIR2 to WES02) m 500 PLIL \$50.00 \$25 000 50%	\$12 500 \$12 50
Supply/install pump each #N/A \$0.00 \$0	\$0
Remove pump post-closure each #N/A \$0.00 \$0	\$0
Remove piping post-closure Remove and dispose on site after pit flooding m 500 PLRL \$22.00 \$11 000 50%	\$5 500 \$5 50
FLOOD PT-Annual Cost	, , , , , , , , , , , , , , , , , , ,
Derate pumps (power) each #N/A \$0.00 \$0	\$0
Maintain pump/piping 2 skilled laborers x 12hrs days, 4 month/yr manhours 420.48 MBK \$49.60 \$20.856 50%	\$10 428 \$10 42
Annual Pump Servicing 2x Manufacturer Consultants x 12 hours day x 7 days/yr \$/h 24.528 MBK \$120.00 \$2 943 50%	\$1 472 \$1 47
Pump Servicing Travel Allowance Round Trip Fligth/person visits 0.292 MBK \$4 000.00 \$1 168 50%	\$584 \$5
Accommodations 120 days x 2 skilled labourers + 7 days x 2 Consultants mandays 37.084 ACCML \$100.00 \$1 108 50% 50% 50% 50% 50% 50% 50% 50% 50% 50%	\$1 854 \$1 85
Table 120 uays A2 skilled labouriers ± 7 uays A2 Obrisultaritis Hildituays 37.004 AOUNIL \$100.00 \$3.706 50%	φιου⊶ φΙδ

Open Pit Name:		WES02			Pit # <u>6</u>				
ACTIVITY/MATERIAL	Notes	Uni	ts Quantit	Cost Code	Unit Cost		% Land	Land Cost V	Vater Cost
Passive/biological additives		\$/		#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping		toni	ne	#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	9183846 m3 / 7 years	n	n3 1 311 97	8 MBK	\$0.03	\$34 767	50%	\$17 384	\$17 384
				Annua	I pumping costs	\$63 443			
Number of years of pump flooding		yea	rs	7					
				Tota	I pumping costs	\$444 101	50%	\$222 050	\$222 050
	_				Total	\$620 107		\$310 053	\$310 053
					% of Total			50%	50%

 Open Pit Name:
 WES03

ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost	Cost		Land Cost V	Vater Cost
CONTROL ACCESS								
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	11 SH	\$37.08	\$408	50%	\$204	\$204
Berm at crest	Perimeter = 1570 m x 2.5 m <sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	3925 SB4L	\$5.50	\$21 588	50%	\$10 794	\$10 794
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other			#N/A	\$0.00	\$0		\$0	\$0
STABILITY STUDY								
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES								
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
COVER/CONTOUR SLOPES								
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY		1110	πιν/Λ	ψ0.00	ΨΟ		ΨΟ	ΨΟ
		0	#N/A	\$0.00	\$0		\$0	<b>C</b> O
Excavate channel		m3 m3					\$0 \$0	\$0 \$0
Concrete			#N/A	\$0.00	\$0		•	
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES								
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital								
Remove stationary equipment (sump pumps)	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump station and piping system	From 2010 Whale Tail Security (version 3)	each	1 AEM	\$24 000.00	\$24 000	50%		\$12 000
	1 110111 2013 Windle Tall Security (Version 3)					JU70		
Piping installation		m	#N/A	\$0.00	\$0 \$0		\$0 ©0	\$0
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure		m	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Annual Cost								
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	123.84 MBK	\$49.60	\$6 142	50%	\$3 071	\$3 071
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	7.224 MBK	\$120.00	\$867	50%	\$433	\$433
7 tillidai i dilip ociviolig								
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.086 MBK	\$4 000.00	\$344	50%	\$172	\$172

Open Pit Name:		WES03				Pit # <u>7</u>				
ACTIVITY/MATERIAL	Notes		Unite	Quantity	Cost Code	Unit Cost	Cost I		Land Cost	Water Cost
Passive/biological additives	Notes		\$/ha	Quantity	#N/A	\$0.00	\$0	Lanu	\$0	\$0
Passive additives purchase and shipping			tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	2717000 m3 / 7 years		m3	388 143	MBK	\$0.03	\$10 286	50%	\$5 143	\$5 143
					Annua	al pumping costs	\$18 731			
Number of years of pump flooding			years	7						
					Tota	al pumping costs	\$131 119	50%	\$65 560	\$65 560
•						Total	\$187 883		\$93 941	\$93 941
						% of Total			50%	50%

 Open Pit Name:
 WES04

ACTIVITY/MATERIAL	Notes	Unite (	Cost Quantity Code	Unit Cost		% La ∟and Co	and ost W	Vater Cost
CONTROL ACCESS	Notes	Units	auantity Code	Offic Cost	Cost L	and Co	JSL VI	rater Cost
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	5 SH	\$37.08	\$185	50%	\$93	\$93
Berm at crest	Perimeter = 740 m x 2.5 m² (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	1850 SB4L	\$5.50	\$10 175	50%	\$5 088	\$5 088
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$38
Other	Assuming 20 m would ramp and barricade length of 5 m (2m thick) and 1.5m. TV for noneback slopes	1113	#N/A	\$0.00	\$0	3070	\$0	\$30
STABILITY STUDY			#1N//N	φυ.υυ	φυ		φυ	φ
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$
STABILIZE SLOPES		allow	71477	ψ0.00	ΨΟ		ΨΟ	Ψ
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0 \$0	\$
Buttress slope		m3	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$
Other		1113	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$
COVER/CONTOUR SLOPES			#19/73	φυ.υυ	ΨU		Ψυ	φ
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$
Place IIII, soil A Place fill, soil B		m3	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$ \$
Rip rap		m3	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$
• •		ha	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$
Vegetate slopes Vegetate pit floor		ha	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	φ \$
•		na						
Other			#N/A	\$0.00	\$0		\$0	\$
CONSTRUCT DIVERSION DITCHES		0	// 1/ 4	<b>#0.00</b>	00		•••	
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0 \$0	\$
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0 ***	
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$
CONSTRUCT SPILLWAY					•		•	
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$
Other			#N/A	\$0.00	\$0		\$0	\$
RECLAIM QUARRIES					-		•	
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$
FLOOD PIT-Captital	AFM 140 0000 ' 0040 MI -1- T-'' O ' (		4 DDU	<b>#</b> 40.000.00	040.000	F00/	<b>AF 000</b>	<b>#</b> F 00
	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 00
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0 ***	\$
Remove power lines		each	#N/A	\$0.00	\$0		<b>\$</b> 0	\$
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$
	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$8 000.00	\$8 000	50%	\$4 000	\$4 00
Piping installation	500 m additonal (WES02 to WES04)	m	500 PLIL	\$50.00	\$25 000	50%	\$12 500	\$12 50
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$
Remove piping post-closure	Remove and dispose on site after pit flooding	m	500 PLRL	\$22.00	\$11 000	50%	\$5 500	\$5 50
FLOOD PIT-Annual Cost								
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	14.4 MBK	\$49.60	\$714		\$0	\$71
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	0.84 MBK	\$120.00	\$101		\$0	\$10
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.01 MBK	\$4 000.00	\$40		\$0	\$40
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	1.27 ACCML	\$100.00	\$127		\$0	\$127

Open Pit Name:		WES04				Pit # <u>8</u>				
ACTIVITY/MATERIAL	Notes	Uni	ts Qua		Cost Code	Unit Cost	Cost		Land Cost	Water Cost
Passive/biological additives		\$/h	na		#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping		tonr	ne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	284400 m3 / 7 years	m	n3 4	0 629 MI	3K	\$0.03	\$1 077	50%	\$538	\$538
					Annua	I pumping costs	\$2 059			
Number of years of pump flooding		yea	rs	7						
					Tota	I pumping costs	\$14 411	50%	\$7 205	\$7 205
						Total	\$79 539		\$39 770	\$39 770
						% of Total			50%	50%

Open Pit Name: WES05 Pit # 9

				<del>-</del>				
ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost		% Land L	_and Cost V	later Cost
CONTROL ACCESS								
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	10 SH	\$37.08	\$371	50%	\$185	\$185
Berm at crest	Perimeter = 1460 m x 2.5 m <sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	3650 SB4L	\$5.50	\$20 075	50%	\$10 038	\$10 038
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other	3		#N/A	\$0.00	\$0		\$0	\$0
STABILITY STUDY				*****	•		•	•
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES		4	,,,,,,	ψ0.00	•		•	•
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0 \$0	\$0
							• -	
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
COVER/CONTOUR SLOPES								
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY								
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other		1110	#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES			πιν//	Ψ0.00	ΨΟ		ΨΟ	ΨΟ
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
•		m3	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Place overburden					\$0 \$0			\$0 \$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital	4514		4 8811			=00/		•
,	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump station and piping system	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$40 000.00	\$40 000	50%	\$20 000	\$20 000
Piping installation	1000 m additonal (WES04 to WES05)	m	1000 PLIL	\$50.00	\$50 000	50%	\$25 000	\$25 000
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure	Remove and dispose on site after pit flooding	m	1000 PLRL	\$22.00	\$22 000	50%	\$11 000	\$11 000
FLOOD PIT-Annual Cost	· · · · · · · · · · · · · · · · · · ·							
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	192.96 MBK	\$49.60	\$9 571	50%	\$4 785	\$4 785
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	11.256 MBK	\$120.00	\$1 351	50%	\$675	\$675
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.134 MBK	\$4 000.00	\$536	50%	\$268	\$268
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	17.018 ACCML	\$100.00	\$1 702	50%	\$851	\$851

Open Pit Name:		WES05				Pit # <u>9</u>				
					Cost			%		
ACTIVITY/MATERIAL	Notes		Units	Quantity	Code	Unit Cost	Cost I	Land	Land Cost	Water Cost
Passive/biological additives			\$/ha		#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping			tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	4194000 m3 / 7 years		m3	599 143	MBK	\$0.03	\$15 877	50%	\$7 939	\$7 939
					Annı	al pumping costs	\$29 037			
Number of years of pump flooding			years	7						
			•		To	tal pumping costs	\$203 256	50%	\$101 628	\$101 628
·						Total	\$346 470		\$173 235	\$173 235
						% of Total			50%	50%

Open Pit Name: WN01 Pit # 10

ACTIVITY/MATERIAL	Nation	l luite	Cost	lleit Coot		% 	C4 M	/ C+
ACTIVITY/MATERIAL CONTROL ACCESS	Notes	Units	Quantity Code	Unit Cost	Cost I	_and i	Land Cost W	ater Cost
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	13 SH	\$37.08	\$482	50%	\$241	\$241
Berm at crest	Perimeter = 1825 m x 2.5 m² (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	4563 SB4L	\$5.50	\$25 097	50%	\$12 548	\$12 548
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other	Assuming 20 m width famp and barricade length of 3 m (2m thick) and 1.3m. TV for nontroack slopes	1113	#N/A	\$0.00	\$0	30 /6	\$0	\$304
STABILITY STUDY			#11/7	φυ.υυ	ΨU		ψU	ΨU
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES		allow	#1 <b>4</b> /7	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$0
Other		1110	#N/A	\$0.00	\$0		\$0	\$0
COVER/CONTOUR SLOPES			#IV/A	Ψ0.00	ΨΟ		ΨΟ	ΨΟ
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other		na na	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES			#IV/A	Ψ0.00	ΨΟ		ΨΟ	ΨΟ
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY		1110	#1 <b>4</b> /7	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other		1110	#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES			#IV/A	Ψ0.00	ΨΟ		ΨΟ	ΨΟ
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital		1110	#IV/A	Ψ0.00	ΨΟ		ΨΟ	ΨΟ
•	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline	The word 10,000 in 2010 Whate Tall Occurry (Volumbia)	m	#N/A	\$0.00	\$0	0070	\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump station and piping system	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$88 000.00	\$88 000	50%	\$44 000	\$44 000
Piping installation	Troni 2010 Whate Tail Oceanty (Version o)	m	#N/A	\$0.00	\$0	0070	\$0	\$0
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure		m	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Annual Cost			#1 <b>%</b> /A	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	400.32 MBK	\$49.60	\$19 856	50%	\$9 928	\$9 928
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	23.352 MBK	\$120.00	\$2 802	50%	\$1 401	\$1 401
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.278 MBK	\$4 000.00	\$2 002 \$1 112	50%	\$556	\$556
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	35.306 ACCML	\$100.00	\$3 531	50%	\$1 765	\$1 765
Accommodations	120 days A 2 shired laboutets + 1 days A 2 Cottsuitatits	manuays	JJ.JUU ACCIVIL	φ100.00	φυ υυ ι	JU /0	φ1703	φ1 / 65

Open Pit Name:					Pit # <u>1</u>	<u>o</u>			
A CTIVITY/MATERIAL	Nesse	l luite	- O	Cost	Heit Coot		%	Land Cast	Matan Cant
ACTIVITY/MATERIAL	Notes		s Quantity		Unit Cost		Land	Land Cost	
Passive/biological additives		\$/ha	a	#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping		tonne	9	#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	8772000 m3 / 7 years	m:	3 1 253 14	3 MBK	\$0.03	\$33 208	50%	\$16 604	\$16 604
				Annu	al pumping costs	\$60 509			
Number of years of pump flooding		year	S	7					
, , , , ,		•		Tot	al pumping costs	\$423 563	50%	\$211 781	\$211 781
					Total	\$547 910		\$273 955	\$273 955
					% of Total			50%	50%

Reclaim 7.0 Project: Meliadine

Open Pit Name: PUM02 Pit # <u>11</u>

ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost		% Land L	and Cost W	Vater Cost
CONTROL ACCESS								
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	6 SH	\$37.08	\$222	50%	\$111	\$111
Berm at crest	Perimeter = 850 m x 2.5 m <sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	2125 SB4L	\$5.50	\$11 688	50%	\$5 844	\$5 844
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other	5		#N/A	\$0.00	\$0		\$0	\$0
STABILITY STUDY				,			•	
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES								
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$(
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$(
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$(
Other			#N/A	\$0.00	\$0		\$0	\$0
COVER/CONTOUR SLOPES			771471	ψ0.00	ΨΟ		ΨΟ	Ψ
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other		Πα	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES			#11/71	φυ.υυ	ΨΟ		Φ0	φυ
		m2	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -soil Excavate ditches -rock		m3 m3	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY		0	//5.1/6	<b>#</b> 0.00			00	
Excavate channel		m3	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Concrete		m3		\$0.00				
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES				***			•	•
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital				4				
	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$8 000.00	\$8 000	50%	\$4 000	\$4 000
Piping installation	1000 m additonal (WES03 to PUM02)	m	1000 PLIL	\$50.00	\$50 000	50%	\$25 000	\$25 000
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure	Remove and dispose on site after pit flooding	m	1000 PLRL	\$22.00	\$22 000	50%	\$11 000	\$11 000
FLOOD PIT-Annual Cost								
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	34.56 MBK	\$49.60	\$1 714	50%	\$857	\$857
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	2.016 MBK	\$120.00	\$242	50%	\$121	\$121
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.024 MBK	\$4 000.00	\$96	50%	\$48	\$48

Open Pit Name:						Pit # <u>1</u>	<u>1</u>			
					Cost			6		
ACTIVITY/MATERIAL	Notes		Units	Quantity	Code	Unit Cost	Cost L	and	Land Cost	Water Cost
Passive/biological additives			\$/ha		#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping			tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	754800 m3 / 7 years		m3	107 829	MBK	\$0.03	\$2 857	50%	\$1 429	\$1 429
					Annu	al pumping costs	\$5 214			
Number of years of pump flooding			years	7						
			•		Tot	al pumping costs	\$36 500	50%	\$18 250	\$18 250
						Total	\$139 178		\$69 589	\$69 589
						% of Total			50%	50%

Reclaim 7.0 Project: Meliadine

 Open Pit Name:
 PUM03
 Pit # 12

ACTIVITY/MATERIAL	Notes	Units	Quantity Co			% Land	Land Cost \	Vater Cost
CONTROL ACCESS		00			0001			
Fence		m	#N	I/A \$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	7 SH	\$37.08	\$260	50%	\$130	\$130
Berm at crest	Perimeter = 1012m x 2.5 m² (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	2530 SB4L	\$5.50	\$13 915	50%	\$6 958	\$6 958
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other .			#N	I/A \$0.00	\$0		\$0	\$0
STABILITY STUDY							•	•
Conduct stability and setback study		allow	#N	I/A \$0.00	\$0		\$0	\$0
STABILIZE SLOPES								
Off-load crest, soil A		m3	#N	I/A \$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N		\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N		\$0		\$0	\$0
Drill & blast pit crest		m3	#N		\$0		\$0	\$0
Buttress slope		m3	#N		\$0		\$0	\$0
Other		1110	#N		\$0		\$0	\$0
COVER/CONTOUR SLOPES			πι	η/A ψ0.00	ΨΟ		ΨΟ	ΨΟ
Place fill, soil A		m3	#N	I/A \$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N		\$0 \$0		\$0 \$0	\$0 \$0
•		m3	#N		\$0 \$0		\$0 \$0	
Rip rap								\$0
Vegetate slopes		ha	#N		\$0		\$0	\$0
Vegetate pit floor		ha	#N		\$0		\$0	\$0
Other			#N	I/A \$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N		\$0		\$0	\$0
Excavate ditches -rock		m3	#N		\$0		\$0	\$0
Rip rap in channel base		m3	#N	I/A \$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY								
Excavate channel		m3	#N		\$0		\$0	\$0
Concrete		m3	#N		\$0		\$0	\$0
Rip rap		m3	#N		\$0		\$0	\$0
Other			#N	I/A \$0.00	\$0		\$0	\$0
RECLAIM QUARRIES								
Contour slopes		m3	#N	I/A \$0.00	\$0		\$0	\$0
Place overburden		m3	#N	I/A \$0.00	\$0		\$0	\$0
Vegetate		m3	#N	I/A \$0.00	\$0		\$0	\$0
FLOOD PIT-Captital								
Remove stationary equipment (sump pumps)	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N	I/A \$0.00	\$0		\$0	\$0
Remove power lines		each	#N	I/A \$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N	I/A \$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N	I/A \$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N	I/A \$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N	I/A \$0.00	\$0		\$0	\$0
Supply/install pump station and piping system	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$16 000.00	\$16 000	50%	\$8 000	\$8 000
Piping installation	250 m additonal (PUM02 to PUM03)	m	250 PLIL	\$50.00	\$12 500	50%	\$6 250	\$6 250
Supply/install pump	,	each	#N	I/A \$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N		\$0		\$0	\$0
Remove piping post-closure	Remove and dispose on site after pit flooding	m	250 PLRI		\$5 500	50%	\$2 750	\$2 750
FLOOD PIT-Annual Cost	1			<del></del>	72.230			, 50
Operate pumps (power)		each	#N	I/A \$0.00	\$0		\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	63.36 MBK		\$3 143	50%	\$1 571	\$1 571
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	3.696 MBK		\$444	50%	\$222	\$222
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.044 MBK	\$4 000.00	\$176	50%	\$88	\$88
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	5.588 ACC		\$559	50%	\$279	\$00 \$279
Accommodations	120 days x 2 shilled laboutets + 1 days x 2 Cottsullatits	manuays	3.300 ACC	wi∟ ⊅100.00	<b>Ф</b> 259	30%	<b>⊅</b> ∠19	<b>⊅</b> 2/9

Open Pit Name:		PUM03				Pit # <u>12</u>				
ACTIVITY/MATERIAL	Notes		Units	Quantity	Cost Code	Unit Cost	% Cost L		Land Cost	Water Cost
Passive/biological additives			\$/ha		#N/A	\$0.00	\$0		\$0	) \$0
Passive additives purchase and shipping			tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	1380600 m3 / 7 years		m3	197 229	MBK	\$0.03	\$5 227		\$0	\$5 227
					Annua	I pumping costs	\$9 548			
Number of years of pump flooding			years	7						
					Tota	I pumping costs	\$66 833	50%	\$33 416	\$33 416
						Total	\$125 775		\$62 888	3 \$62 888
						% of Total			50%	6 50%

 Open Pit Name:
 PUM04
 Pit # 13

ACTIVITY/MATERIAL	Notes	Hnit-	Cost	Unit Cost			Land	Notor Cost
ACTIVITY/MATERIAL CONTROL ACCESS	Notes	Units	Quantity Code	Unit Cost	Cost L	and	Cost V	Vater Cost
Fence			#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	m each	7 SH	\$37.08	\$260	50%	\$130	\$130
Berm at crest	Perimeter = 1020 m x 2.5 m <sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	2550 SB4L	\$5.50	\$14 025	50%	\$7 013	\$7 013
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other	Assuming 20 m width famp and barricade length of 5 m (2m thick) and 1.5m. I vitor horizodek slopes	IIIS	#N/A	\$0.00	\$0	30 /6	\$304	\$304
STABILITY STUDY			#11/71	φυ.υυ	Ψ		φυ	ψU
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES		allow	771477	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
COVER/CONTOUR SLOPES								
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY								
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES								
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital								
Remove stationary equipment (sump pumps	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
	m From 2019 Whale Tail Security (version 3)	each	1 AEM	\$16 000.00	\$16 000	50%	\$8 000	\$8 000
Piping installation		m	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure		m	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Annual Cost				00.0-				
Operate pumps (power)		each	#N/A	\$0.00	\$0	=00/	\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	34.56 MBK	\$49.60	\$1 714	50%	\$857	\$857
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	2.016 MBK	\$120.00	\$242	50%	\$121	\$121
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.024 MBK	\$4 000.00	\$96	50%	\$48	\$48
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	3.048 ACCML	\$100.00	\$305	50%	\$152	\$152

Open Pit Name:		PUM04	Pit # <u>13</u>							
ACTIVITY/MATERIAL	Notes	Units	Quanti	Cost y Code	Unit Cost	% Cost L		Land Cost	Water Cost	
Passive/biological additives		\$/ha	1	#N/A	\$0.00	\$0		\$0	\$0	
Passive additives purchase and shipping		tonne	•	#N/A	\$0.00	\$0		\$0	\$0	
Water from Meliadine Lake	761200 m3 / 7 years	m3	108 7	43 MBK	\$0.03	\$2 882	50%	\$1 441	\$1 441	
				Annual	pumping costs	\$5 239				
Number of years of pump flooding		years	;	7						
				Total	pumping costs	\$36 670	50%	\$18 335	\$18 335	
<u> </u>		_		-	Total	\$77 723		\$38 861	\$38 861	
					% of Total			50%	50%	

 Open Pit Name:
 FZ001

Personal	ACTIVITY/MATERIAL	Notes	Unito	Cost Cuantity Code	Unit Cost	Coot I		Coot M	latar Cast
FROM         Cheen         Control         Same         Amount         Same		Notes	Units	Quantity Code	Unit Cost	Cost L	and Land	Cost W	ater Cost
Signs         One agreewey 150 m         one agreewed 150 m         geal         10 self         350 m         351 m         350 m         351 m         350 m			m	#N/A	\$0.00	\$0		\$0	\$0
Pem stock   Pem stock   Pem stock   Twinting beam with 154111 woos and in width not not by the Stock Baricase tears per   Assaming 20 m with ramp and barricase tength of sn (2nt hisch) and 15411 for furthinks also   200 m lbm)   320 m lbm   320		One sign every 150 m				• •	50%	* -	\$185
Rock Increase arrange         description of the product standing of a (in which part plant pl		•							\$9 625
TABLE IT STABLE									\$384
STABLITSTULYY	•	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5m. (V for front/back slopes	IIIS				30%		\$364 \$0
Conduct Satisfiery on selectation of STABLEZ SUCCES         edits of STABLEZ SUCCESS         edits of STA				#IN/A	\$0.00	\$0		\$0	\$0
Changement   Cha			-II	#N1/A	<b>CO.00</b>	<b>C</b> O		ΦO	¢ο
Minimary   Minimary			allow	#IN/A	\$0.00	\$0		<b>\$</b> 0	\$0
Mile Description whether start			0	// <b>&gt;</b> 1/A	<b>#</b> 0.00	00		•••	Φ0
Death   Substitution   Substitutio	· ·								\$0
Dist Blotters done         and         and         500	· ·								\$0
Butness stope									\$0
Ober         COVERCONTURUS LOGES           COVERCONTURUS LOGES         30         50	•								\$0
Procession   Pro	•		m3						\$0
Pince				#N/A	\$0.00	\$0		\$0	\$0
Pace	COVER/CONTOUR SLOPES								
Page	Place fill, soil A								\$0
Vogestate plots         file         int/lea         500         50         50           Object plot filtor         18         200         50 <td>Place fill, soil B</td> <td></td> <td>m3</td> <td>#N/A</td> <td>\$0.00</td> <td>\$0</td> <td></td> <td>\$0</td> <td>\$0</td>	Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Vgentary         file         #MA         S0.00         50         50           Cher         Cher         Edit         50         50         50           CONSTRUCT DIVERSION DITCHES           Excavate ditches-soil         67         8 PM         50         50         50           Reprair to channel base         67         8 PM         50         50         50         50           CONSTRUCT DIVERSION         80         80         50	Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
One         1900         1900         30         9	Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
CANSTRUCT DIVERSION DITCHES	Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches-col	Other			#N/A	\$0.00	\$0		\$0	\$0
Excavale dilches - rock         m3         #NA         \$0,00         \$0 <t< td=""><td>CONSTRUCT DIVERSION DITCHES</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	CONSTRUCT DIVERSION DITCHES								
Rip in channel base	Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY    Excavate channel	Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate channel         IR coavate	Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
Exacate channel         Exacate channel         #WA         \$0.00         \$0.0	CONSTRUCT SPILLWAY								
Concrete         m3         #N/A         \$0.00         \$0         \$0           Rip rap         m3         #N/A         \$0.00         \$0         \$0           Contert         m8         #N/A         \$0.00         \$0         \$0         \$0           RECLAN CUARRIES           Controur slopes         m3         #N/A         \$0.00         \$0 <th< td=""><td></td><td></td><td>m3</td><td>#N/A</td><td>\$0.00</td><td>\$0</td><td></td><td>\$0</td><td>\$0</td></th<>			m3	#N/A	\$0.00	\$0		\$0	\$0
Rig rap         Rig rap         #MA         \$0.00									\$0
Other         #MA         \$0.00         \$0         \$0           RECLAM QUARRIES         \$0<									\$0
RECLAIM QUARRIES	•								\$0
Contour slopes         m3         #NA         \$0.00         \$0         \$0           Place overburden         m3         #NA         \$0.00         \$0         \$0           Vegetate overburden         m3         #NA         \$0.00         \$0         \$0           Vegetate overburden         m3         #NA         \$0.00         \$0         \$0           FLOOD PIT-Capittal         w8         1 PRH         \$10.000.00         \$10.00         \$0         \$50.00           Remove dewatering pipeline         m8         #NA         \$0.00         \$0         \$50.00           Remove power lines         each         #NIMA         \$0.00         \$0         \$0           Construct diversion ditches         m3         #NA         \$0.00         \$0         \$0           - Ditch, mat'l A         m3         #NA         \$0.00         \$0         \$0         \$0           Construct embankment/dam         m3         #NA         \$0.00         \$0				71177	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Place overburden			m3	#N/Δ	\$0.00	\$0		90	\$0
Vegetate FLOOD PT-Capital         RM         \$0.00         \$0.0	•								\$0
FLOOD PIT-Capital   Remove stationary equipment (sump pumps)   AEM used 10,000\$ in 2019 Whale Tail Security (version 3)   each   1 PRH   \$10 00.00   \$10 000   \$50   \$50 000     Remove dewatering pipeline   m   #N/A   \$0.00   \$0   \$0   \$0   \$0     Remove power lines   each   #N/A   \$0.00   \$0   \$0   \$0   \$0     Construct diversion ditches   m   #N/A   \$0.00   \$0   \$0   \$0   \$0     Construct diversion ditches   m   #N/A   \$0.00   \$0   \$0   \$0   \$0     Construct diversion ditches   m   #N/A   \$0.00   \$0   \$0   \$0   \$0     Construct embankment/dam   m   m   m   m   m   m   m   m   m									\$0
Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each         1 PRH         \$1000.00         \$10 000         50%         \$5 000           Remove dewatering pipeline         m         #N/A         \$0.00         \$0         \$0         \$0           Remove power lines         each         #N/A         \$0.00         \$0         \$0         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0         \$0         \$0           - Ditch, mat'l A         m3         #N/A         \$0.00         \$0	•		IIIO	#11//1	φυ.υυ	φυ		ψU	φυ
Remove dewatering pipeline         m         #N/A         \$0.00         \$0         \$0           Remove power lines         each         #N/A         \$0.00         \$0         \$0           Construct diversion ditches         m3         #N/A         \$0.00         \$0         \$0           - Ditch, mat'l A         m3         #N/A         \$0.00         \$0         \$0           - Ditch, mat'l B         m3         #N/A         \$0.00         \$0         \$0           Construct embankment/dam         m3         #N/A         \$0.00         \$0         \$0           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each         1 AEM         \$48 00.00         \$0         \$24 000           Piping installation         1.9 km additional (to the lake)         m         1900 PLR         \$50.00         \$50         \$47 500           Supply/install pump         each         #N/A         \$0.00         \$0         \$0         \$0           Remove pump post-closure         Remove pimp post-closure         Remove pimp post-closure         #N/A         \$0.00         \$0         \$0         \$0           FLODD PIT-Annual Cost         8         8         #N/A         \$0.00         \$0		AEM upod 40 000\$ in 2040 Whole Tail Security (version 2)	oooh	4 DDU	£10,000,00	\$10,000	E00/	ΦE 000	\$5 000
Remove power lines         each         #N/A         \$0.00         \$0		AEW used 10,000\$ in 2019 whale fall Security (version 3)					30%		\$5 000 \$0
Construct diversion ditches         m3         #N/A         \$0.00         \$0         \$0           - Ditch, mat'l A         m3         #N/A         \$0.00         \$0         \$0           - Ditch, mat'l B         m3         #N/A         \$0.00         \$0         \$0           Construct embankment/dam         m3         #N/A         \$0.00         \$0         \$0           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each         1 AEM         \$48 000.00         \$48 000         \$0         \$24 000           Piping installation         1.9 km additional (to the lake)         m         1900 PLIL         \$50.00         \$50         \$24 000           Supply/install pump         each         #N/A         \$0.00         \$95 000         \$0         \$47 00           Remove pump post-closure         each         #N/A         \$0.00         \$0         \$0         \$0           Remove piping post-closure         Remove piping post-closure         Remove piping post-closure         \$0         \$1.00         \$1.00         \$0         \$0         \$0         \$0         \$0         \$0         \$0         \$0         \$0         \$0         \$0         \$0         \$0         \$0         \$0									
-Ditch, mat'l A \$0.00 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$0 \$	•								\$0
-Ditch, mat'l B         m3         #N/A         \$0.00         \$0         \$0           Construct embankment/dam         m3         #N/A         \$0.00         \$0         \$0           Supply/install pump station and piping system piping system         From 2019 Whale Tail Security (version 3)         each         1 AEM         \$48 000.00         \$48 000         50         \$24 000           Piping installation         1.9 km additional (to the lake)         m         1900 PLIL         \$50.00         \$95 000         50%         \$47 500           Supply/install pump         each         #N/A         \$0.00         \$95 000         50%         \$47 500           Remove pump post-closure         each         #N/A         \$0.00         \$0         \$0         \$0           Remove piping post-closure         Remove and dispose on site after pit flooding         m         1900 PLI         \$0.00         \$18 00         \$0						• •		* -	\$0
Construct embankment/dam         m3         #N/A         \$0.00         \$0         \$0           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each         1 AEM         \$48 000.00         \$48 000         50%         \$24 000           Piping installation         1.9 km additional (to the lake)         m         1900 PLIL         \$50.00         \$95 000         50%         \$47 500           Supply/install pump         each         #N/A         \$0.00         \$0         \$0         \$0           Remove pump post-closure         each         #N/A         \$0.00         \$0         \$0         \$0           Remove piping post-closure         Remove and dispose on site after pit flooding         m         1900 PLT         \$0.00         \$18 00         \$0	·								\$0
Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each         1 AEM         \$48 000.00         \$48 000         50%         \$24 000           Piping installation         1.9 km additional (to the lake)         m         1900 PLIL         \$50.00         \$95 000         50%         \$47 500           Supply/install pump         each         #N/A         \$0.00         \$0         \$0         \$0           Remove pump post-closure         Remove and dispose on site after pit flooding         m         1900 PLT         \$2.00         \$18 00         50%         \$20 900           FLOOD PIT-Annual Cost         FLOOD PIT-Annual Cost         FLOOD PIT-Annual Cost         FLOOD PIT-Annual Cost         \$0	•								\$0
Piping installation         1.9 km additional (to the lake)         m         1900 PLIL         \$50.00         \$95.000         50%         \$47.500           Supply/install pump         each         #N/A         \$0.00         \$0         \$0         \$0           Remove pump post-closure         each         #N/A         \$0.00         \$0         \$0         \$0           Remove piping post-closure         Remove and dispose on site after pit flooding         m         1900 PLR         \$2.00         \$41.800         50%         \$20.900           FLOOD PIT-Annual Cost         FLOOD PIT-Annual Cost           Operate pumps (power)         each         #N/A         \$0.00         \$0         \$0         \$0           Maintain pump/piping         2 skilled laborers x 12hrs days, 4 month/yr         manhours         267.84 MBK         \$49.60         \$13.285         50%         \$66.42           Annual Pump Servicing         2x Manufacturer Consultants x 12 hours day x 7 days/yr         \$h         15.624 MBK         \$12.00         \$1.875         50%         \$9.37									\$0
Supply/install pump         each         #N/A         \$0.00         \$0         \$0           Remove pump post-closure         each         #N/A         \$0.00         \$0         \$0           Remove piping post-closure         Remove and dispose on site after pit flooding         m         1900 PLR         \$22.00         \$41 800         50         \$20 900           FLOOD PIT-Annual Cost         Coperate pumps (power)         Each         #N/A         \$0.00         \$0         \$0         \$0           Maintain pump/piping         2 skilled laborers x 12hrs days, 4 month/yr         manhours         267.84 MBK         \$49.60         \$13 285         50%         \$6 642           Annual Pump Servicing         2x Manufacturer Consultants x 12 hours day x 7 days/yr         \$/h         15.624 MBK         \$12.00         \$1 875         50%         \$937									\$24 000
Remove pump post-closure         each         #N/A         \$0.00         \$0         \$0           Remove piping post-closure         Remove and dispose on site after pit flooding         m         1900 PLR         \$22.00         \$41 800         50         \$20 90           FLOOD PIT-Annual Cost         Use and properly           Operate pumps (power)         each         #N/A         \$0.00         \$0         \$0           Maintain pump/piping         2 skilled laborers x 12hrs days, 4 month/yr         manhours         267.84 MBK         \$49.60         \$13 285         50%         \$6 642           Annual Pump Servicing         2x Manufacturer Consultants x 12 hours day x 7 days/yr         \$h         15.624 MBK         \$12.00         \$1875         50%         \$937	. •	1.9 km additional (to the lake)					50% \$		\$47 500
Remove piping post-closure         Remove and dispose on site after pit flooding         m         1900 PLRL         \$22.00         \$41 800         50%         \$20 900           FLOOD PIT-Annual Cost           Operate pumps (power)         each         #N/A         \$0.00         \$0         \$0         \$0           Maintain pump/piping         2 skilled laborers x 12hrs days, 4 month/yr         manhours         267.84 MBK         \$49.60         \$13 285         50%         \$6642           Annual Pump Servicing         2x Manufacturer Consultants x 12 hours day x 7 days/yr         \$/h         15.624 MBK         \$120.00         \$1 875         50%         \$937	Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Annual Cost           Operate pumps (power)         each         #N/A         \$0.00         \$0         \$0           Maintain pump/piping         2 skilled laborers x 12hrs days, 4 month/yr         manhours         267.84 MBK         \$49.60         \$13 285         50%         \$6 642           Annual Pump Servicing         2x Manufacturer Consultants x 12 hours day x 7 days/yr         \$/h         15.624 MBK         \$12.00         \$1 875         50%         \$937			each						\$0
Operate pumps (power)         each manhours         #N/A will all abovers x 12hrs days, 4 month/yr         \$0.00         \$0         \$0           Maintain pump/piping         2 skilled laborers x 12hrs days, 4 month/yr         manhours         267.84 MBK         \$49.60         \$13 285         50%         \$6 642           Annual Pump Servicing         2x Manufacturer Consultants x 12 hours day x 7 days/yr         \$/h         15.624 MBK         \$12.00         \$1 875         50%         \$937		Remove and dispose on site after pit flooding	m	1900 PLRL	\$22.00	\$41 800	50% \$	20 900	\$20 900
Maintain pump/piping         2 skilled laborers x 12hrs days, 4 month/yr         manhours         267.84 MBK         \$49.60         \$13.285         50%         \$6.642           Annual Pump Servicing         2x Manufacturer Consultants x 12 hours day x 7 days/yr         \$/h         15.624 MBK         \$120.00         \$1.875         50%         \$937	FLOOD PIT-Annual Cost								
Annual Pump Servicing 2x Manufacturer Consultants x 12 hours day x 7 days/yr \$/h 15.624 MBK \$120.00 \$1.875 50% \$937	Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
* * * * * * * * * * * * * * * * * * * *	Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	267.84 MBK	\$49.60	\$13 285	50%	\$6 642	\$6 642
	Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	15.624 MBK	\$120.00	\$1 875	50%	\$937	\$937
	Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.186 MBK	\$4 000.00	\$744	50%	\$372	\$372
Accommodations 120 days x 2 skilled labourers + 7 days x 2 Consultants mandays 23.622 ACCML \$100.00 \$2 362 50% \$1 181									\$1 181

Open Pit Name:						Pit # <u>14</u>				
ACTIVITY/MATERIAL	Notes		Unite	Quantity	Cost Code	Unit Cost		%	Land Cost	Water Cost
Passive/biological additives	Notes		\$/ha	Quantity	#N/A	\$0.00	\$0	Lanu	\$0	\$0
-										* -
Passive additives purchase and shipping			tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	5857908 m3 / 7 years		m3	836 844	MBK	\$0.03	\$22 176	50%	\$11 088	\$11 088
					Annua	I pumping costs	\$40 442			
Number of years of pump flooding			years	7						
, , , , ,			,		Tota	I pumping costs	\$283 096	50%	\$141 548	\$141 548
						Total	\$498 285		\$249 142	\$249 142
						% of Total			50%	50%

Open Pit Name: FZ002 Pit # <u>15</u>

Rock Barriade at ramp         Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1/V for front/back slopes         3         3         3         3         3         3         10 moders         3 <t< th=""><th>Cost tity Code</th><th>Unit Cost</th><th></th><th>% L Land C</th><th>Land Cost V</th><th>Nater Cost</th></t<>	Cost tity Code	Unit Cost		% L Land C	Land Cost V	Nater Cost
Fance Signs	tity Code	Unit Cost	Cost	Land C	2051 V	valer Cost
Signs	#N/A	\$0.00	\$0		\$0	\$0
Berm at crest	9 SH	\$37.08	\$334	50%	\$167	\$167
Rock Barriade at ramp         Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1/V for front/back slopes         3	3 SH 3075 SB4L	\$5.50	\$16 913	50%	\$8 456	\$8 456
STABLITY STUDY         allow           STABLITE SLOPES         300           STABLITE SLOPES         300           Orl-load crest, soil A         m3           Oll-load crest, soil B         m3           Dozentifin overburden at crest         m3           Dill & Data pit crest         m3           Dill & Data pit crest         m3           United Scope         m3           Other         CCCVERCONTOUR SLOPES           Place fill, soil B         m3           Vegetate pit floor         ha           Other         Na           CONSTRUCT DIVERSION DITCHES         T           Excavate diches -soil         m3           Excavate diches rock         m3           RO rap in channel base         m3           CONSTRUCT SPILLWAY         T           Excavate diches rock         m3           Riy rap         m3           Other         RECLAIM QUARRIES           Contour alopse         m3           Pice overburden         m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
STABILITY STUDY         allow           Conduct stability and seback abuty         allow           STABILIZE SLOPES         IIII           Off-load creats, soll B         IIII           Docarbirm overburden at crest         IIII           District Stable         IIII           District Stable         IIII           Dibit III stable III         IIII           Other         IIII           COVER/CONTROUR SLOPES         IIII           Place IIII, soll B         IIII           Place IIII, soll B         IIII           Place III, soll B <td></td> <td></td> <td></td> <td>50%</td> <td></td> <td></td>				50%		
Conduct stability and selback study         allow           STABILIZE SLOPES         m3           Off-load crest, soil A         m3           Off-load crest, soil B         m3           DozeAtimi overburden at crest         m3           Diff & Stabis pit crest         m3           Butterss slope         m3           Other         CCVERICONTOUR SLOPES           Place III, soil B         m3           Rip rap         m3           Vegetate pit floor         ha           Other         CCVERICONTOUR SLOPES           Place III, soil B         m3           Rip rap         m3           Vegetate pit floor         ha           Other         CCVERICONTENCE SLOPES           CONSTRUCT DIVERSION DITCHES         T           Excavate ditches -soil         m3           Excavate ditches -soil         m3           Excavate ditches -soil         m3           CONSTRUCT SPILLIAVY         m3           Excavate ditches -soil         m3           Ex	#N/A	\$0.00	\$0		\$0	\$0
STABLEZ SLOPES         "3           Off-load crest, soil A         "3           Off-load crest, soil B         "3           Dozeltrin overburden at crest         "3           Ill & Bists pit crest         "3           Büttress slope         "3           Other         "7           COVER/CONTOUR SLOPES           Place fill, soil B         "3           Place fill, soil B         "3           Place fill, soil B         "3           Rp rap         "6           Vegetate slopes         ha           Vegetate pit floor         ha           Other         "7           Excavate disches-soil         "3           Excavate disches soil         "3           Foot partitude         "3           Fig rap         "3           Construct or sippes         "3           FECAVARD CARRIES         "3           Contiour slopes						•
Off-load crest, soil A         m3           Off-load crest, soil B         m3           Doze/brim overburden at crest         m3           Dill & blast pit crest         m3           Butterss slope         m3           Other         CCVER/CONTOUR SLOPES           Place fill, soil B         m3           Place fill, soil B         m3           Ry ap         m3           Vegetate slopes         ha           Vegetate pit floor         ha           Other         CCONSTRUCT DIVERSION DITCHES           Excavate ditches -soil         m3           Excavate ditches -rock         m3           Ry rap in channel base         m3           CONSTRUCT SPILLWAY         m3           Excavate ditches -rock         m3           Ry rap in channel base         m3           Concrete         m3           Ry rap in channel base         m3           Construct SPILLWAY         m3           Excavate channel         m3           Contract         m3           Ry rap in channel base         m3           Contract (see a)         m3           Ry rap in channel base         m3           Contract (see a)         m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crost, soil B         m3           DozeArtim overburden at crest         m3           Drill & blast pit crest         m3           Buttress slope         m3           Other         T           COVERCONTOUR SLOPES         m8           Place fill, soil B         m3           Place fill, soil B         m3           Rip tap         m6           Vegetate slopes         m6           Vegetate pt fitor         ha           Other         m6           CONSTRUCT DIVERSION DITCHES         m8           Excavate diches soil         m8           Excavate diches soil         m8           Excavate diches soil         m8           Excavate driches soil         m8 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>						
Dozentinoverburden at crest Dills a blast pit crest Silve Sil	#N/A	\$0.00	\$0		\$0	\$0
Dill & blats pit crest         m3           Buttess slope         m3           Other         COVER/CONTOUR SLOPES           Place fill, soil B         m3           Place fill, soil B         m3           Kip rap         m3           Vegetate slopes         m6           Vegetate pit flor         ha           Other         m5           CONSTRUCT DIVERSION DITCHES         m3           Excavate ditches -soil         m3           Other         m	#N/A	\$0.00	\$0		\$0	\$1
Butress slope         m3           Other         m3           Place fill, soil B         m3           Rip rap         m3           Vegetate slopes         ha           Vegetate pit floor         ha           Other         CONSTRUCT DIVERSION DITCHES           Excavate difiches -soil         m3           Excavate difiches -soil         m3           Rip rap in channel base         m3           CONSTRUCT SPILLVAY         m3           Excavate difiches -soil         m3           Excavate difiches -soil         m3           Rip rap in channel base         m3           CONSTRUCT SPILLVAY         m3           Excavate Channel         m3           Concrete         m3           Rip rap         m3           Other         m3           Ploac vederude         m3           Vegetate         m3           Ploac verburden         m3           Vegetate         m3           FLOOD PIT-Capital         m3           Remove stationary equipment (sump pumps) AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove devalering pipeline         m3           -Ditch, mat'l A         m3 <td>#N/A</td> <td>\$0.00</td> <td>\$0</td> <td></td> <td>\$0</td> <td>\$0</td>	#N/A	\$0.00	\$0		\$0	\$0
Other         COVER/CONTOUR SLOPES           COVER/CONTOUR SLOPES         m3           Place fill, soil B         m3           Place fill, soil B         m3           Vegetate slopes         ha           Vegetate pit floor         ha           Other         TORISTRUCT DIVERSION DITCHES           Excavate directes -soil         m3           Excavate directes -soil         m3           Excavate directes -soil         m3           CONSTRUCT DIVERSION DITCHES         m3           Excavate directes -soil         m3           Excavate directes -soil         m3           CONSTRUCT SPILLWAY         m3           CONSTRUCT SPILLWAY         m3           Excavate channel base         m3           Concrete         m3           Rip rap         m3           Other         m3           RECLAM OUARRIES         m3           Contour slopes         m3           Vegetate         m3           Vegetate         m4           Remove studienty equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove devatering pipeline         m3           Remove pumpa quipment (sump pumpa) <t< td=""><td>#N/A</td><td>\$0.00</td><td>\$0</td><td></td><td>\$0</td><td>\$0</td></t<>	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil A	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil A         m3           Place fill, soil B         m3           Vegetate slopes         ha           Vegetate pit floor         ha           Other         TORISTRUCT DIVERSION DITCHES           Execuate ditches -soil         m3           Execuate ditches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPLUKAY         m3           Execuate channel         m3           CONSTRUCT SPLUKAY         m3           Execuate channel         m3           Concrete         m3           Rip rap         m3           Other         m3           Place overburden         m3           Vegetate         m3           Place overburden         m3           FLOOD PTC-Apitial         m3           Excover stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove power lines         each           Construct diversion ditches         m3           - Ditch, mar'l B         m3           - Ditch, mar'l B         m3           Construct embankment/dam         m3           Supplyfinstall pump station and piping system	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B         m3           Rip rap         m3           Vegetate slopes         ha           Vegetate pit floro         ha           Other         TONSTRUCT DIVERSION DITCHES           Excavate ditches -soil         m3           Excavate ditches -soil         m3           Rip rap in channel base         m3           CONSTRUCT SPILLUNY         m3           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         m3           Concrete         m3           Rip rap         m3           Other         m3           Piccontractions response         m3           Place overburden         m3           Place overburden         m3           Place overburden         m3           PloOD PT-Capitia         m6           Remove dewatering ippeline         m6           Remove dewatering ippeline         m6           Remove dewatering ippeline         m7           Construct diversion ditches         m6           Ditch, mat'l A         m3           Ditch, mat'l A         m6           Construct embankment/dam						
Rip rap         m3           Vegetate slopes         ha           Vegetate pit floor         ha           Other         TONSTRUCT DIVERSION DITCHES           Excavate ditches -soil         m3           Excavate ditches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPILLWAY         m3           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         m3           PECAJAM QUARRIES         m3           Contour slopes         m3           Place overburden         m3           Vegetate         m3           FLOOD PIT-Capitial         m3           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove power lines         each           Construct diversion ditches         m3           - Ditch, mart la         m4           - Ditch, mart la         m5           - Ditch, mart la <td>#N/A</td> <td>\$0.00</td> <td>\$0</td> <td></td> <td>\$0</td> <td>\$0</td>	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes         ha           Vegetate pit floor         ha           Other         ha           CONSTRUCT DIVERSION DITCHES         m3           Excavate difches -soil         m3           Excavated stiches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPILLUMY         TEXESTRUCT SPILLUMY           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         m3           RECLAIM QUARRIES         m3           Contour slopes         m3           PLOCO PIT-Capital         m3           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove dewatering pipeline         m         m3           Flooth, mat'l A         m3         m3           - Ditch, mat'l A         m3         m3           - Ditch, mat'l B         m3         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m         each           Remove pump post-closure         each           Remove piping post-cl	#N/A	\$0.00	\$0		\$0	\$0
Object         ha           Other         CONSTRUCT DIVERSION DITCHES           Excavate ditches -soil         m3           Excavate ditches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPILLWAY         m3           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         m3           Contract         m3           Other         m3           Place overburde         m3           Place overburden         m3           Vegetate         m3           FLOOD PIT-Capitial         m           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove devatering pipeline         m         m3           -Ditch, mat I A         m3         -Ditch, mat I B         m3           -Ditch, mat I B         m3         -Ditch, mat I B         m3           Construct embankment/dam         m m3         -Ditch, mat I B         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Remove pump post-closure         each         <	#N/A	\$0.00	\$0		\$0	\$0
OUTHER         CONSTRUCT DIVERSION DITCHES           Excavate ditches -soil         m3           Excavate ditches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPILLWAY         m3           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         TECLAIM QUARRIES           Contour slopes         m3           Place overburden         m3           Vegetate         m3           FLOOD PIT-Capital         m3           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove dewatering pipeline         m         m           Remove power lines         each         each           Construct diversion ditches         m3         -Ditch, mat'l A         m3           -Ditch, mat'l A         m3         -Ditch, mat'l B         m3           -Ditch, mat'l B         m3         -Ditch, mat'l B         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Remove pump post-closure         each           Remove piping post-closure         each	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES           Excavate ditches -soil         m3           Excavate ditches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPILLWAY         Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         m3           RECLAIM QUARRIES         EXCONIOUR Slopes         m3           Place overburden         m3           Vegetate         m3           PLOOD PIT-Capitial         ERemove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove dewatering pipeline         m           Remove primes         each           Construct diversion ditches         m3           -Ditch, mat'l A         m3           -Ditch, mat'l A         m3           -Ditch, mat'l B         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m         each           Remove pump post-closure         each         each           Remove	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock         m3           Excavate ditches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPILLWAY         m3           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         m3           Contour slopes         m3           PRECLAIM QUARRIES         m3           Contour slopes         m3           Place overburden         m3           Vegetate         m3           FLOOD PIT-Capital         m3           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove power lines         each           Construct diversion ditches         m3           -Ditch, mat'l A         m3           -Ditch, mat'l B         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m6           Remove pump post-closure         each           Remove pump post-closure         each           Remove piping post-closure         each	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPILLWAY         TEXEAVER CHANNEL           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         TEXELAIM QUARRIES           Contour slopes         m3           Place overburden         m3           Vegetate         m3           FLOOD PT-Capital         m3           Remove dewatering pipeline         m           Remove dewatering pipeline         m           Remove power lines         each           Construct diversion ditches         m3           - Ditch, mat'l A         m3           - Ditch, mat'l B         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m           Supply/install pump         each           Remove pump post-closure         each           Remove piping post-closure         each           Remove piping post-closure         each           FloCOD PTT-Annual Cost         each						
Excavate ditches -rock         m3           Rip rap in channel base         m3           CONSTRUCT SPILLWAY         TEXEAVER CHANNEL           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         TEXELAIM QUARRIES           Contour slopes         m3           Place overburden         m3           Vegetate         m3           FLOOD PT-Capital         m3           Remove dewatering pipeline         m           Remove dewatering pipeline         m           Remove power lines         each           Construct diversion ditches         m3           - Ditch, mat'l A         m3           - Ditch, mat'l B         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m           Supply/install pump         each           Remove pump post-closure         each           Remove piping post-closure         each           Remove piping post-closure         each           FloCOD PTT-Annual Cost         each	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base         m3           CONSTRUCT SPILLWAY         m3           Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         m3           ERCLAIM QUARRIES         m3           Contour slopes         m3           Place overburden         m3           Place overburden         m3           Pleco DPT-Capital         m3           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove dewatering pipeline         m           Remove power lines         each           Construct diversion ditiches         m3           -Ditch, mat'l A         m3           -Ditch, mat'l B         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m           Supply/install pump         each           Remove pump post-closure         each           Remove piping post-closure         each           Remove piping post-closure         each           Remove piping post-closure <td>#N/A</td> <td>\$0.00</td> <td>\$0</td> <td></td> <td>\$0</td> <td>\$0</td>	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY   Excavate channel	#N/A	\$0.00	\$0		\$0	\$0
Excavate channel         m3           Concrete         m3           Rip rap         m3           Other         TOTAL CONTROL TO THE CONTROL		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Concrete         m3           Rip rap         m3           Other         m3           RECLAIM QUARRIES         m3           Contour slopes         m3           Place overburden         m3           Vegetate         m3           FLOOD PIT-Capitial         m6           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove dewatering pipeline         m           Remove power lines         each           Construct diversion ditches         m3           - Ditch, mat'l A         m3           - Ditch, mat'l B         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m           Supply/install pump         each           Remove pump post-closure         each           Remove piping post-closure         each           Remove piping post-closure         each           Remove piping post-closure         each           Poprate pumps (power)         each	#N/A	\$0.00	\$0		\$0	\$0
Rip rap         m3           Other         RECLAIM QUARRIES           Contour slopes         m3           Place overburden         m3           Vegetate         m3           FLOOD PIT-Capitial         Each           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove dewatering pipeline         m         m           Remove power lines         each         each           Construct diversion ditches         m3         -           - Ditch, mat'l A         m3         -           - Ditch, mat'l B         m3         -           Construct embankment/dam         m3         -           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m         m           Supply/install pump         each           Remove pump post-closure         each           Remove piping post-closure         each           Remove piping post-closure         m           Operate pumps (power)         each	#N/A	\$0.00	\$0		\$0	\$0
Other  RECLAIM QUARRIES  Contour slopes Place overburden	#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES  Contour slopes Place overburden Repeace overburden Remove stationary equipment (sump pumps) Remove stationary equipment (sump pumps) Remove dewatering pipeline Remove dewatering pipeline Remove power lines Remove power line	#N/A	\$0.00	\$0		\$0	\$(
Contour slopes         m3           Place overburden         m3           Vegetate         m3           FLOOD PIT-Captital         TELODD PIT-Captital           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove power lines         each           Construct diversion ditches         m3           - Ditch, mat'l A         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m           Supply/install pump         each           Remove pump post-closure         each           Remove piping post-closure         m           FLOOD PIT-Annual Cost         each           Operate pumps (power)         each	TIV/A	ψ0.00	ΨΟ		ΨU	Ψ
Place overburden m3 Vegetate m3 FLOOD PIT-Captital Remove stationary equipment (sump pumps) AEM used 10,000\$ in 2019 Whale Tail Security (version 3) each Remove power lines each Construct diversion ditches m3 - Ditch, mat'l A - Ditch, mat'l B Construct embankment/dam m3 Supply/install pump station and piping system From 2019 Whale Tail Security (version 3) each m6 Supply/install pump station and piping system From 2019 Whale Tail Security (version 3) each m7 Supply/install pump post-closure each each each each each each each eac	#N/A	\$0.00	\$0		\$0	\$0
Vegetate         m3           FLOOD PIT-Captital           Remove stationary equipment (sump pumps)         AEM used 10,000\$ in 2019 Whale Tail Security (version 3)         each           Remove dewatering pipeline         m           Remove power lines         each           Construct diversion ditches         m3           - Ditch, mat'l A         m3           - Ditch, mat'l B         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m           Supply/install pump         each           Remove pump post-closure         each           Remove piping post-closure         each           FLOOD PIT-Annual Cost         m           Operate pumps (power)         each	#N/A	\$0.00	\$0		\$0 \$0	\$0
FLOOD PIT-Captital  Remove stationary equipment (sump pumps)  AEM used 10,000\$ in 2019 Whale Tail Security (version 3) each Remove dewatering pipeline m Remove power lines each Construct diversion ditches m3 - Ditch, mat'l A - Ditch, mat'l B Construct embankment/dam m3 Supply/install pump station and piping system from 2019 Whale Tail Security (version 3) each Piping installation m Supply/install pump post-closure each Remove pump post-closure memove pump post-closure m6 Remove piping post-closure m6 Remove piping post-closure each Remove piping post-closure each Remove piping post-closure each Remove pumps (power) each	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	
Remove stationary equipment (sump pumps) Remove dewatering pipeline Remove dewatering pipeline Remove power lines Construct diversion ditches - Ditch, mat'l A - Ditch, mat'l B - Ditch, mat'l B Construct embankment/dam Supply/install pump station and piping system Piping installation Supply/install pump Remove pump post-closure Remove poiping post-closure Remove piping post-closure FLOOD PIT-Annual Cost  Seach Remove geath Remove geath Remove pumps (power) Remove pumps (power) Remove pumps (power) Remove pumps (power) Remove pumps (power) Remove pumps (power) Remove geath Remove geath Remove geath Remove geath Remove geath Remove geath Remove pumps (power) Remove geath Remo	#IN/A	\$0.00	\$0		\$0	\$0
Remove dewatering pipeline         m           Remove power lines         each           Construct diversion ditches         m3           -Ditch, mat'l A         m3           -Ditch, mat'l B         m3           Construct embankment/dam         m3           Supply/install pump station and piping system         From 2019 Whale Tail Security (version 3)         each           Piping installation         m           Supply/install pump         each           Remove pump post-closure         each           Remove piping post-closure         m           FLOOD PIT-Annual Cost         each           Operate pumps (power)         each	4 DDII	¢40,000,00	£40,000	F00/	<b>CF 000</b>	<b>©E</b> 000
Remove power lines  Construct diversion ditches - Ditch, mat'l A - Ditch, mat'l B Construct embankment/dam  Supply/install pump station and piping system From 2019 Whale Tail Security (version 3)  supply/install pump Remove pump post-closure Remove piping post-closure Remove piping post-closure  FLOOD PIT-Annual Cost  Operate pumps (power)  each each each each each each each eac	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Construct diversion ditches m3 - Ditch, mat'l A m3 - Ditch, mat'l B m3 Construct embankment/dam m3 Supply/install pump station and piping system From 2019 Whale Tail Security (version 3) each Piping installation m6 Supply/install pump post-closure each each Remove piping post-closure m6 Remove piping post-closure m6 FLOOD PIT-Annual Cost Operate pumps (power) each	#N/A	\$0.00	\$0		\$0	\$(
-Ditch, mat'l A -Ditch, mat'l B Construct embankment/dam Supply/install pump station and piping system Piping installation Supply/install pump Supply/install pump Supply/install pump each Remove pump post-closure Remove piping post-closure Remove piping post-closure Remove piping post-closure Remove piping post-closure Supply Pir-Annual Cost Operate pumps (power)  a  m  sach each each each each each each each	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B Construct embankment/dam Supply/install pump station and piping system From 2019 Whale Tail Security (version 3) each Piping installation supply/install pump each Remove pump post-closure Remove piping post-closure Remove piping post-closure TLOOD PIT-Annual Cost Operate pumps (power) each	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam Supply/install pump station and piping system Piping installation Supply/install pump Supply/install pump Supply/install pump Emove pump post-closure Remove piping post-closure Remove piping post-closure TLOOD PIT-Annual Cost Operate pumps (power)  m3 each each each each each each each each	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump station and piping system From 2019 Whale Tail Security (version 3) each Piping installation m Supply/install pump each Remove pump post-closure each Remove piping post-closure m FLOOD PIT-Annual Cost Operate pumps (power) each	#N/A	\$0.00	\$0		\$0	\$0
Piping installation m Supply/install pump each Remove pump post-closure each Remove piping post-closure m FLOOD PIT-Annual Cost Operate pumps (power) each	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump each Remove pump post-closure each Remove piping post-closure m FLOOD PIT-Annual Cost Operate pumps (power) each	1 AEM	\$16 000.00	\$16 000	50%	\$8 000	\$8 000
Remove pump post-closure each Remove piping post-closure m FLOOD PIT-Annual Cost Operate pumps (power) each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure m  FLOOD PIT-Annual Cost  Operate pumps (power) each	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Annual Cost Operate pumps (power) each	#N/A	\$0.00	\$0		\$0	\$0
Operate pumps (power) each	#N/A	\$0.00	\$0		\$0	\$0
Operate pumps (power) each						
	#N/A	\$0.00	\$0		\$0	\$0
Maintain pump/piping 2 skilled laborers x 12hrs days, 4 month/yr manhours 54."	4.72 MBK	\$49.60	\$2 714	50%	\$1 357	\$1 357
	.192 MBK	\$120.00	\$383	50%	\$192	\$192
	.038 MBK	\$4 000.00	\$152	50%	\$76	\$76
	.826 ACCML	\$100.00	\$483	50%	\$241	\$241

Open Pit Name:		FZO02				Pit # <u>15</u>				
ACTIVITY/MATERIAL	Notes	,	Units	Quantity	Cost Code	Unit Cost	Cost I	% _and	Land Cost	Water Cost
Passive/biological additives			\$/ha		#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping		t	tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	1168517 m3 / 7 years		m3	166 931	MBK	\$0.03	\$4 424	50%	\$2 212	\$2 212
					Annual	oumping costs	\$8 155			
Number of years of pump flooding		)	years	7						
					Total	oumping costs	\$57 088	50%	\$28 544	\$28 544
						Total	\$101 102		\$50 551	\$50 551
						% of Total			50%	50%

Open Pit Name: FZ003 Pit # <u>16</u>

A OTIVITY/MATERIAL	Market		Cost	Heli Occid	9			
ACTIVITY/MATERIAL CONTROL ACCESS	Notes	Units	Quantity Code	Unit Cost	Cost L	and La	and Cost W	ater Cost
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	9 SH	\$37.08	\$334	50%	\$167	\$167
			3175 SB4L	\$5.50	\$17 463	50%	\$8 731	\$8 731
Berm at crest	Perimeter = 1270 m x 2.5 m <sup>2</sup> (1m high berm with 1,5H:1V slope and 1 m width on top)	m3						
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other			#N/A	\$0.00	\$0		\$0	\$0
STABILITY STUDY					•		•	•
Conduct stability and setback study		allow	#N/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES		_		4	4			
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
COVER/CONTOUR SLOPES								
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY				ψ0.00	40		Ψ.	<b>Q</b> U
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other		1113	#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES			#11/7	φυ.υυ	ΨΟ		Ψυ	ψU
		0	#N/A	\$0.00	\$0		\$0	\$0
Contour slopes		m3			\$0 \$0			
Place overburden		m3	#N/A	\$0.00			\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital	4514 140 0000 1 0040 WH 1 7 HO 11 ( 1 1 0)		4 5511	***		=00/		
	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump station and piping system	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$24 000.00	\$24 000	50%	\$12 000	\$12 000
Piping installation		m	PLIL	\$50.00	\$0		\$0	\$0
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure		m	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Annual Cost								
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	60.48 MBK	\$49.60	\$3 000	50%	\$1 500	\$1 500
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	3.528 MBK	\$120.00	\$423	50%	\$212	\$212
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	0.042 MBK	\$4 000.00	\$168	50%	\$84	\$84
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	5.334 ACCML	\$100.00	\$533	50%	\$267	\$267
	,			Ţ.00.00	Ψ000	/0	Ţ_0.	<b>4</b> 207

Open Pit Name:			Pit # <u>16</u>								
ACTIVITY/MATERIAL	Notes	Unit	s Quant	Cost	Unit Cost	Cost I:		Land Cost	Water Cost		
Passive/biological additives	Notes	\$/ha		#N/A	\$0.00	\$0	anu	\$0	\$0		
Passive additives purchase and shipping		tonne		#N/A	\$0.00	\$0		\$0	\$0		
Water from Meliadine Lake	1318000 m3 / 7 years	m:	3 188	286 MBK	\$0.03	\$4 990	50%	\$2 495	\$2 495		
				Annua	I pumping costs	\$9 114					
Number of years of pump flooding		year	s	7 Tota	I pumping costs	\$63 799	50%	\$31 899	\$31 899		
\ <u></u>					Total	\$116 363		\$58 182	\$58 182		
					% of Total			50%	50%		

Open Pit Name: DIS01 Pit # <u>17</u>

A CTIVITY/MATERIAL	Maria	Haita	Cost	Unit Coot		% 		/ C+
ACTIVITY/MATERIAL CONTROL ACCESS	Notes	Units	Quantity Code	Unit Cost	Cost	Land La	and Cost W	vater Cost
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign every 150 m	each	15 SH	\$37.08	\$556	50%	\$278	\$278
Berm at crest	Perimeter = 2170 m x 2.5 m² (1m high berm with 1,5H:1V slope and 1 m width on top)	m3	5425 SB4L	\$5.50	\$29 838	50%	\$14 919	\$14 919
Rock Barricade at ramp	Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m3	320 DRH	\$2.40	\$768	50%	\$384	\$384
Other	Assuming 20 m width famp and barricade length of 3 m (2m thick) and 1.3m. IV for nontroack slopes	1113	#N/A	\$0.00	\$0	30 /6	\$304	\$304
Other STABILITY STUDY			#IV/A	\$0.00	\$0		\$0	20
		allow	#N/A	\$0.00	\$0		\$0	<b>*</b> 0
Conduct stability and setback study		allow	#IV/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES		0	//51/5	<b>#</b> 0.00	•••		•	•
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
COVER/CONTOUR SLOPES								
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY								
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES				Ψ0.00	<b>Q</b> U		<b>Q</b>	•
Contour slopes		m3	#N/A	\$0.00	\$0		\$0	\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital		1110	πιν/Λ	ψ0.00	ΨΟ		ΨΟ	ΨΟ
•	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline	ALIVI used 10,000\$ III 2019 Whale Tall Security (Version 3)	m	#N/A	\$0.00	\$10 000	30 /6	\$3 000	\$5 000
Remove dewatering pipeline Remove power lines		each	#N/A	\$0.00	\$0		\$0 \$0	\$0
•			#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Construct diversion ditches		m3						
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump station and piping system		each	1 MEL20	\$120 000.00	\$120 000	50%	\$60 000	\$60 000
Piping installation	260 m of pipes from pit to freshwater intake (lake CH6)	m	260 PLIL	\$50.00	\$13 000	50%	\$6 500	\$6 500
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
Remove piping post-closure	Remove and dispose on site after pit flooding	m	260 PLRL	\$22.00	\$5 720	50%	\$2 860	\$2 860
FLOOD PIT-Annual Cost								
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr	manhours	573.12 MBK	\$49.60	\$28 427	50%	\$14 213	\$14 213
								<b>#</b> 0.000
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	33.432 MBK	\$120.00	\$4 012	50%	\$2 006	\$2 006
	2x Manufacturer Consultants x 12 hours day x 7 days/yr Round Trip Fligth/person	\$/h visits	33.432 MBK 0.398 MBK	\$120.00 \$4 000.00	\$4 012 \$1 592	50% 50%	\$2 006 \$796	\$2 006 \$796

Open Pit Name:						Pit # <u>17</u>	<u>7</u>			
					Cost			%		
ACTIVITY/MATERIAL	Notes		Units	Quantity	Code	Unit Cost	Cost I	and	Land Cost	Water Cost
Passive/biological additives			\$/ha		#N/A	\$0.00	\$0		\$0	\$0
Passive additives purchase and shipping			tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	12500000 m3 / 7 years		m3	1 785 714	MBK	\$0.03	\$47 321	50%	\$23 661	\$23 661
					Annu	al pumping costs	\$86 407			
Number of years of pump flooding			years	7						
			•		Tot	al pumping costs	\$604 846	50%	\$302 423	\$302 423
						Total	\$784 728		\$392 364	\$392 364
						% of Total			50%	50%

Open Pit Name: PUM01 Pit # 18

CONTROL ACCESS Fence Signs Berm at crest	One sign every 150 m  Perimeter = 1012m x 2.5 m² (1m high berm with 1,5H:1V slope and 1 m width on top)  Assuming 20 m width ramp and barricade length of 5 m (2m thick) and 1.5H:1V for front/back slopes	m each m3	Quantity Code #N/A 7 SH	\$0.00 \$37.08	\$0	and C	\$0	Vater Cost
Fence Signs Berm at crest Rock Barricade at ramp Other STABILITY STUDY	Perimeter = 1012m x 2.5 m² (1m high berm with 1,5H:1V slope and 1 m width on top)	each m3	7 SH		\$0		\$0	
Signs Berm at crest Rock Barricade at ramp Other STABILITY STUDY	Perimeter = 1012m x 2.5 m² (1m high berm with 1,5H:1V slope and 1 m width on top)	each m3	7 SH		ΨΟ			\$0
Berm at crest Rock Barricade at ramp Other STABILITY STUDY	Perimeter = 1012m x 2.5 m² (1m high berm with 1,5H:1V slope and 1 m width on top)	m3			\$260	50%	\$130	\$130
Rock Barricade at ramp Other STABILITY STUDY			2530 SB4L	\$5.50	\$13 915	50%	\$6 958	\$6 958
Other STABILITY STUDY	Assuming 20 m width ramp and barricade length of 5 m (2m tillick) and 1.5h. IV for includeck slopes		320 DRH	\$2.40	\$768	50%	\$384	\$384
STABILITY STUDY		m3				50%		
			#N/A	\$0.00	\$0		\$0	\$0
Conduct stability and setback study		- 11	//5.1/6	<b>#</b> 0.00			00	0.0
07.5" ITE 01.0550		allow	#N/A	\$0.00	\$0		\$0	\$0
STABILIZE SLOPES				***			•	
Off-load crest, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Off-load crest, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze/trim overburden at crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill & blast pit crest		m3	#N/A	\$0.00	\$0		\$0	\$0
Buttress slope		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
COVER/CONTOUR SLOPES								
Place fill, soil A		m3	#N/A	\$0.00	\$0		\$0	\$0
Place fill, soil B		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate slopes		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate pit floor		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SPILLWAY			,,,,,,	ψ0.00	•		•	Ψ.
Excavate channel		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap		m3	#N/A	\$0.00	\$0		\$0	\$0
Other		1113	#N/A	\$0.00	\$0		\$0	\$0
RECLAIM QUARRIES			#IN/A	φυ.υυ	ΦU		φU	ΦU
			#N1/A	<b>#0.00</b>	<b>C</b> O		\$0	0.0
Contour slopes		m3	#N/A	\$0.00	\$0			\$0
Place overburden		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		m3	#N/A	\$0.00	\$0		\$0	\$0
FLOOD PIT-Captital								
	AEM used 10,000\$ in 2019 Whale Tail Security (version 3)	each	1 PRH	\$10 000.00	\$10 000	50%	\$5 000	\$5 000
Remove dewatering pipeline		m	#N/A	\$0.00	\$0		\$0	\$0
Remove power lines		each	#N/A	\$0.00	\$0		\$0	\$0
Construct diversion ditches		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
-Ditch, mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Construct embankment/dam		m3	#N/A	\$0.00	\$0		\$0	\$0
Supply/install pump station and piping system	From 2019 Whale Tail Security (version 3)	each	1 AEM	\$16 000.00	\$16 000	50%	\$8 000	\$8 000
Piping installation	250 m additonal (PUM02 to PUM03)	m	250 PLIL	\$50.00	\$12 500	50%	\$6 250	\$6 250
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Remove pump post-closure		each	#N/A	\$0.00	\$0		\$0	\$0
	Remove and dispose on site after pit flooding	m	250 PLRL	\$22.00	\$5 500	50%	\$2 750	\$2 750
FLOOD PIT-Annual Cost	·							
Operate pumps (power)		each	#N/A	\$0.00	\$0		\$0	\$0
	2 skilled laborers x 12hrs days, 4 month/yr	manhours	38.304 MBK	\$49.60	\$1 900	50%	\$950	\$950
	2x Manufacturer Consultants x 12 hours day x 7 days/yr	\$/h	2.2344 MBK	\$120.00	\$268	50%	\$134	\$134
	Round Trip Fligth/person	visits	0.0266 MBK	\$4 000.00	\$106	50%	\$53	\$53
			3.3782 ACCML	\$100.00	\$338	50%	\$169	ъзз \$169
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consultants	mandays	3.3702 ACCIVIL	\$100.00	φ338	30%	фтов	φ10:

Open Pit Name:		PUM01								
ACTIVITY/MATERIAL	Notes		l Inite	Quantity	Cost Code	Unit Cost	Cost L		Land Cost	Water Cost
Passive/biological additives	Notes	<u>'</u>	\$/ha	Quantity	#N/A	\$0.00	\$0	anu	\$0	\$0
Passive additives purchase and shipping		t	tonne		#N/A	\$0.00	\$0		\$0	\$0
Water from Meliadine Lake	838800 m3 / 7 years		m3	119 829	MBK	\$0.03	\$3 175	50%	\$1 588	\$1 588
					Annua	al pumping costs	\$5 788			
Number of years of pump flooding		1	years	7						
					Tota	al pumping costs	\$40 514	50%	\$20 257	\$20 257
						Total	\$99 456		\$49 728	\$49 728
						% of Total			50%	50%

Underground Mine Na	ime Tiriganiaq U	3		UG Mine # <u>1</u>	<u>1</u>			
ACTIVITY/MATERIAL	Notes	Unit	Qty Code	Unit Cost	Cost % L	and.	Land Cost \	Water Cost
CONTROL ACCESS								
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Bigns	one sign per portal	each	2 SH	\$37.08	\$74	50%	6 \$37	\$37
Block roads		m3	#N/A	\$0.00	\$0		\$0	\$0
Berm		m3	#N/A	\$0.00	\$0		\$0	\$0
Remove the portal (TTOG STEEL)	cut, remove and dispose in landfill	m2	1980 BRS1L	\$45.00	\$89 100	50%	6 \$44 550	\$44 550
Remove the portal (concrete)	break, remove and dispose in landfill	m2	3300 BRCH	\$65.00	\$214 500	50%	6 \$107 250	\$107 250
ackfill portal #1 + Contour portal area	105m length with slope x 8m deep x 30m wide	m3	12 600 SB1H	\$5.90	\$74 340	50%	6 \$37 170	\$37 170
Backfill portal #2 + Contour portal area	116m length with slope x 15m deep x 30m wide (mean)	m3	26 100 SB1H	\$5.90	\$153 990	50%	6 \$76 995	\$76 995
ap bulkhead , pit portal		each	#N/A	\$0.00	\$0		\$0	\$0
lug portal #2		m3	#N/A	\$0.00	\$0		\$0	\$0
aises (Capping)	4 raises total - Concrete	m2	4 SNC	\$20 000.00	\$80 000	50%	6    \$40 000	\$40 000 s
Cap shaft #2		m3	#N/A	\$0.00	\$0		\$0	\$0
ackfill adits		m3	#N/A	\$0.00	\$0		\$0	\$0
Backfill open stope		m3	#N/A	\$0.00	\$0		\$0	\$0
Concrete cap over open stope		m3	#N/A	\$0.00	\$0		\$0	\$0
Contour portal area		m3	#N/A	\$0.00	\$0		\$0	\$0
EMOVE HAZARDOUS MATERIALS								
emove hazardous materials, U/G labor	Crew estimation from AEM.	hour	2 016 scoopl	\$170.00	\$342 720	50%	6 \$171 360	\$171 360
temove/decontam. stationary & elect. equip	Crew estimation from AEM.	hour	2 688 mechl	\$49.00	\$131 712	50%	\$65 856	\$65 856
emove/decontam. mobile equipment	Crew estimation from AEM.	hour	336 mechl	\$49.00	\$16 464	50%	\$8 232	\$8 232
emove misc. haz. mat & explosives	Assuming 250kg of remaining hazardous material at closure.	kg	250 SNC	\$10.00	\$2 500	50%	6 \$1 250	\$1 250
Other		total	#N/A	\$0.00	\$0	50%	6 \$0	\$0
NSTALL BULKHEADS								
ulkheads to control water flow		each	#N/A	\$0.00	\$0		\$0	\$0
rout bulkhead		m3	#N/A	\$0.00	\$0		\$0	\$0
LOOD MINE								
upply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
upply/install piping system		each	#N/A	\$0.00	\$0		\$0	\$0
Operate pumps to flood workings		m3	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
NSTALL GROUNDWATER COLLECTION SYS	TEM							
xcavate/install sumps		m2	#N/A	\$0.00	\$0		\$0	\$0
nstall pumping wells		m3	#N/A	\$0.00	\$0		\$0	\$0
nstall pumps/pipelines/power supply		LS	#N/A	\$0.00	\$0		\$0	\$0
PECIALIZED ITEMS								
nstall water quality monitoring pipes		each	#N/A	\$0.00	\$0		\$0	\$0
nstall permanent pumping system		each	#N/A	\$0.00	\$0		\$0	\$0
nstall permanent instrumentation	5 permanent instrumentations	each	5 MBK	\$10 000.00	\$50 000	50%		\$25 000
				Total	\$1 155 400		\$577 700	\$577 700
				% of Total			50%	50%

<sup>\*</sup> Cost for barge

Underground Mine Na	me Pump UC	3		UG Mine # 2	2		
ACTIVITY/MATERIAL	Notes	Unit	Qty Code	Unit Cost	Cost % Land	Land Cost	Water Cost
CONTROL ACCESS							
Fence		m	#N/A	\$0.00	\$0	\$0	\$0
Signs	One sign per portal	each	1 SH	\$37.08	\$37	50% \$19	\$19
Block roads		m3	#N/A	\$0.00	\$0	\$0	\$0
Berm		m3	#N/A	\$0.00	\$0	\$0	\$0
Remove the portal (TTOG STEEL)	cut, remove and dispose in landfill	m2	1979 BRS1L	\$45.00	\$89 064	50% \$44 532	\$44 532
Remove the portal (concrete)		m2	#N/A	\$0.00	\$0	\$0	\$0
Backfill portal + Contour portal area	105m long with slope x 8m deep x 30m wide (assumption based on Approved Project)	m3	12 600 SB1H	\$5.90	\$74 340	50% \$37 170	\$37 170
		m3	#N/A	\$0.00	\$0	\$0	\$0
Cap bulkhead , pit portal		each	#N/A	\$0.00	\$0	\$0	\$0
Plug portal #2		m3	#N/A	\$0.00	\$0	\$0	\$0
Raises (Capping)	2 raises total - Concrete	m2	2 SNC	\$20 000.00	\$40 000	50% \$20 000	\$20 000
Cap shaft #2		m3	#N/A	\$0.00	\$0	\$0	\$0
Backfill adits		m3	#N/A	\$0.00	\$0	\$0	\$0
Backfill open stope		m3	#N/A	\$0.00	\$0	\$0	\$0
Concrete cap over open stope		m3	#N/A	\$0.00	\$0	\$0	\$0
Contour portal area		m3	#N/A	\$0.00	\$0	\$0	\$0
REMOVE HAZARDOUS MATERIALS							
Remove hazardous materials, U/G labor	Crew estimation from AEM.	hour	2 016 scoopl	\$170.00	\$342 720	50% \$171 360	\$171 360
Remove/decontam. stationary & elect. equip	Crew estimation from AEM.	hour	2 688 mechl	\$49.00	\$131 712	50% \$65 856	\$65 856
Remove/decontam. mobile equipment		hour	#N/A	\$0.00	\$0	\$0	\$0
Remove misc. haz. mat & explosives	Assuming 250kg of remaining hazardous material at closure.	kg	250 SNC	\$10.00	\$2 500	50% \$1 250	\$1 250
Other	3 · · 3 · · · · · · · · · · · · · · · ·	total	#N/A	\$0.00	\$0	\$0	\$0
INSTALL BULKHEADS					• •		
Bulkheads to control water flow		each	#N/A	\$0.00	\$0	\$0	\$0
Grout bulkhead		m3	#N/A	\$0.00	\$0	\$0	\$0
FLOOD MINE			,,,,,,	ψ0.00	<b>4</b> 0	Ψ.	<del>-</del>
Supply/install pump		each	#N/A	\$0.00	\$0	\$0	\$0
Supply/install piping system		each	#N/A	\$0.00	\$0	\$0	\$0
Operate pumps to flood workings		m3	#N/A	\$0.00	\$0	\$0	\$0
Other			#N/A	\$0.00	\$0	\$0	\$0
INSTALL GROUNDWATER COLLECTION SYST	TFM			******	**	**	**
Excavate/install sumps	· <del>-</del>	m2	#N/A	\$0.00	\$0	\$0	\$0
Install pumping wells		m3	#N/A	\$0.00	\$0	\$0	\$0
Install pumps/pipelines/power supply		LS	#N/A	\$0.00	\$0	\$0	\$0
SPECIALIZED ITEMS			111111	ψ0.00	ΨΟ	ΨΟ	ΨΟ
Install water quality monitoring pipes		each	#N/A	\$0.00	\$0	\$0	\$0
Install permanent pumping system		each	#N/A	\$0.00	\$0	\$0	\$0
Install permanent instrumentation	5 permanent instrumentations	each	5 MBK	\$10 000.00		50% \$25 000	\$25 000
	-1			Total	\$730 373	\$365 187	\$365 187
				% of Total	ψ. 30 0/ O	50%	50%

Underground Mine Na	me F Zone UG			UG Mine #	<u>3</u>		
ACTIVITY/MATERIAL	Notes	Unit	Qty Code	Unit Cost	Cost % Land	Land Cost	Water Cost
CONTROL ACCESS							
Fence		m	#N/A	\$0.00	\$0	\$0	\$0
Signs	One sign per portal	each	1 SH	\$37.08	\$37	50% \$19	\$19
Block roads		m3	#N/A	\$0.00	\$0	\$0	\$0
Berm		m3	#N/A	\$0.00	\$0	\$0	\$0
Remove the portal (TTOG STEEL)	cut, remove and dispose in landfill	m2	1979 BRS1L	\$45.00	\$89 064	50% \$44 532	\$44 532
Remove the portal (concrete)		m2	#N/A	\$0.00	\$0	\$0	\$0
Backfill portal + Contour portal area	105m length with slope x 8m deep x 30m wide (assumption from Approved Project)	m3	12 600 SB1H	\$5.90	\$74 340	50% \$37 170	\$37 170
		m3	#N/A	\$0.00	\$0	\$0	\$0
Cap bulkhead , pit portal		each	#N/A	\$0.00	\$0	\$0	\$0
Plug portal #2		m3	#N/A	\$0.00	\$0	\$0	\$0
Raises (Capping)	3 raises total - Concrete	m2	3 SNC	\$20 000.00	\$60 000	50% \$30 000	\$30 000
Cap shaft #2		m3	#N/A	\$0.00	\$0	\$0	\$0
Backfill adits		m3	#N/A	\$0.00	\$0	\$0	\$0
Backfill open stope		m3	#N/A	\$0.00	\$0	\$0	\$0
Concrete cap over open stope		m3	#N/A	\$0.00	\$0	\$0	\$0
Contour portal area		m3	#N/A	\$0.00	\$0	\$0	\$0
REMOVE HAZARDOUS MATERIALS							
Remove hazardous materials, U/G labor	Crew estimation from AEM.	hour	2 016 scoopl	\$170.00	\$342 720	50% \$171 360	\$171 360
Remove/decontam. stationary & elect. equip	Crew estimation from AEM.	hour	2 688 mechl	\$49.00	\$131 712	50% \$65 856	\$65 856
Remove/decontam. mobile equipment		hour	#N/A	\$0.00	\$0	\$0	\$0
Remove misc. haz. mat & explosives	Assuming 250kg of remaining hazardous material at closure.	kg	250 SNC	\$10.00	\$2 500	50% \$1 250	\$1 250
Other		total	#N/A	\$0.00	\$0	\$0	\$0
INSTALL BULKHEADS							
Bulkheads to control water flow		each	#N/A	\$0.00	\$0	\$0	\$0
Grout bulkhead		m3	#N/A	\$0.00	\$0	\$0	\$0
FLOOD MINE							
Supply/install pump		each	#N/A	\$0.00	\$0	\$0	\$0
Supply/install piping system		each	#N/A	\$0.00	\$0	\$0	\$0
Operate pumps to flood workings		m3	#N/A	\$0.00	\$0	\$0	\$0
Other			#N/A	\$0.00	\$0	\$0	\$0
INSTALL GROUNDWATER COLLECTION SYST	TEM .			****	• •	• •	•
Excavate/install sumps		m2	#N/A	\$0.00	\$0	\$0	\$0
Install pumping wells		m3	#N/A	\$0.00	\$0	\$0	\$0
Install pumps/pipelines/power supply		LS	#N/A	\$0.00	\$0	\$0	\$0
SPECIALIZED ITEMS				ψ3.00	<b>\$</b> 0	ΨΟ	ΨΟ
Install water quality monitoring pipes		each	#N/A	\$0.00	\$0	\$0	\$0
Install permanent pumping system		each	#N/A	\$0.00	\$0	\$0	\$0
Install permanent instrumentation	5 permanent instrumentations	each	5 MBK	\$10 000.00		50% \$25 000	\$25 000
1.			* ···=··	Total	\$750 373	\$375 187	\$375 187
				% of Total	ψ. 30 0/ O	50%	50%

Underground Mine	Name Discovery UG	3		UG Mine #	<u>4</u>			
ACTIVITY/MATERIAL	Notes	Unit	Qty Code	Unit Cost	Cost % La	nd	Land Cost	Water Cost
CONTROL ACCESS			•					
Fence		m	#N/A	\$0.00	\$0		\$0	\$0
Signs	One sign for the portal	each	1 SH	\$37.08	\$37	50%	\$19	\$19
Block roads		m3	#N/A	\$0.00	\$0		\$0	\$0
Berm		m3	#N/A	\$0.00	\$0		\$0	\$0
Remove portal (TTOG steel)	Amaruq concept - Opening size (5.5 m x 5.2 m) - Length of 12,5m (Assumption AEM)	m2	202.5 BRS1L	\$45.00	\$9 113	50%	\$4 556	\$4 556
Backfill portal #1	Amaruq concept - Assumed the same rock cut volume to fill	m3	18 914 SB1H	\$5.90	\$111 593	50%	\$55 796	\$55 796
Backfill portal #2		m3	#N/A	\$0.00	\$0		\$0	\$0
Cap raises	2 raises - Cap with concrete	each	2 SNC	\$20 000.00	\$40 000	50%	\$20 000	\$20 000
Cap raise #2		m3	#N/A	\$0.00	\$0		\$0	\$0
Cap shaft #1		m3	#N/A	\$0.00	\$0		\$0	\$0
Cap shaft #2		m3	#N/A	\$0.00	\$0		\$0	\$0
Backfill adits		m3	#N/A	\$0.00	\$0		\$0	\$0
Backfill open stope		m3	#N/A	\$0.00	\$0		\$0	
Concrete cap over open stope		m3	#N/A	\$0.00	\$0		\$0	
Other			#N/A	\$0.00	\$0		\$0	\$0
REMOVE HAZARDOUS MATERIALS				*****	•		**	•
Remove hazardous materials, U/G labor	Crew estimation from AEM.	nhour	2 016 scoopl	\$170.00	\$342 720	50%	\$171 360	\$171 360
Remove/decontam. UG equipment	Crew estimation from AEM.	nhour	2 688 mechl	\$49.00	\$131 712	50%		\$65 856
Remove misc. haz. mat & explosives	Assuming 250kg of remaining hazardous material at closure.	kg	250 SNC	\$10.00	\$2 500	50%		
Other	7 Joseph May 2001 g of 10 main may hazardodo matonar at olocaro.	9	#N/A	\$0.00	\$0		\$0	
INSTALL BULKHEADS				ψ0.00	40		Ψ	Ψ0
Bulkheads to control water flow		each	#N/A	\$0.00	\$0		\$0	\$0
Grout bulkhead		m3	#N/A	\$0.00	\$0		\$0	
FLOOD MINE			,,,,,,	ψ0.00	<b>~</b>		<b>Q</b>	Ψ.
Supply/install pump		each	#N/A	\$0.00	\$0		\$0	\$0
Supply/install piping system		each	#N/A	\$0.00	\$0		\$0	
Operate pumps to flood workings		m3	#N/A	\$0.00	\$0		\$0	
Other			#N/A	\$0.00	\$0		\$0	
INSTALL GROUNDWATER COLLECTION SY	YSTEM		771477	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Excavate/install sumps	TOTAL MILES	m2	#N/A	\$0.00	\$0		\$0	\$0
Install pumping wells		m3	#N/A	\$0.00	<b>\$</b> 0		\$0	
Install pumps/pipelines/power supply		LS	#N/A	\$0.00	\$0		\$0	
SPECIALIZED ITEMS		LO	#11//	ψ0.00	φυ		ΨΟ	ΨΟ
Install water quality monitoring pipes		each	#N/A	\$0.00	\$0		\$0	\$0
Install permanent pumping system		each	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Install permanent instrumentation	5 permanent instrumentations	each	5 MEL20	\$10,000.00	\$50 000	50%		\$25 000
motes permanent instrumentation	o pormanona morramonationo	Gaori	J WILLZU	Total	\$687 674		\$343 837	\$343 837
				% of Total	ψυσ1 014		\$343 637 50%	

<sup>\*</sup> Cost for barge

Underground Mine N	ame Tiriganiaq-Wolf UG			UG Mine # 5	5		
ACTIVITY/MATERIAL	Notes	Unit	Qty Code	Unit Cost	Cost % Land	Land Cost	Water Cost
CONTROL ACCESS							
Fence		m	#N/A	\$0.00	\$0	\$0	\$0
Signs	One sign per portal	each	1 SH	\$37.08	\$37	50% \$19	\$19
Block roads		m3	#N/A	\$0.00	\$0	\$0	\$0
Berm		m3	#N/A	\$0.00	\$0	\$0	\$0
Remove the portal (TTOG STEEL)	cut, remove and dispose in landfill	m2	1979 BRS1L	\$45.00	\$89 064	50% \$44 532	\$44 532
Remove the portal (concrete)		m2	BRCH	\$65.00	\$0	\$0	\$0
Backfill portal #1 + Contour portal area	105m length with slope x 8m deep x 30m wide (assumption from Approved Project)	m3	12 600 SB1H	\$5.90	\$74 340	50% \$37 170	\$37 170
		m3	#N/A	\$0.00	\$0	\$0	\$0
Cap bulkhead , pit portal		each	#N/A	\$0.00	\$0	\$0	\$0
Plug portal #2		m3	#N/A	\$0.00	\$0	\$0	\$0
Raises (Capping)	3 raises total - Concrete	m2	3 SNC	\$20 000.00	\$60 000	50% \$30 000	\$30 000
Cap shaft #2		m3	#N/A	\$0.00	\$0	\$0	\$0
Backfill adits		m3	#N/A	\$0.00	\$0	\$0	\$0
Backfill open stope		m3	#N/A	\$0.00	\$0	\$0	\$0
Concrete cap over open stope		m3	#N/A	\$0.00	\$0	\$0	\$0
Contour portal area		m3	#N/A	\$0.00	\$0	\$0	\$0
REMOVE HAZARDOUS MATERIALS							
Remove hazardous materials, U/G labor	Crew estimation from AEM.	hour	2 016 scoopl	\$170.00	\$342 720	50% \$171 360	\$171 360
Remove/decontam. stationary & elect. equip	Crew estimation from AEM.	hour	2 688 mechl	\$49.00	\$131 712	50% \$65 856	\$65 856
Remove/decontam. mobile equipment		hour	#N/A	\$0.00	\$0	\$0	\$0
Remove misc. haz. mat & explosives	Assuming 250kg of remaining hazardous material at closure.	kg	250 SNC	\$10.00	\$2 500	50% \$1 250	\$1 250
Other		total	#N/A	\$0.00	\$0	\$0	\$0
INSTALL BULKHEADS							
Bulkheads to control water flow		each	#N/A	\$0.00	\$0	\$0	\$0
Grout bulkhead		m3	#N/A	\$0.00	\$0	\$0	\$0
FLOOD MINE							
Supply/install pump		each	#N/A	\$0.00	\$0	\$0	\$(
Supply/install piping system		each	#N/A	\$0.00	\$0	\$0	\$0
Operate pumps to flood workings		m3	#N/A	\$0.00	\$0	\$0	\$(
Other			#N/A	\$0.00	\$0	\$0	\$(
INSTALL GROUNDWATER COLLECTION SYS	STEM			****	•	•	
Excavate/install sumps		m2	#N/A	\$0.00	\$0	\$0	\$0
Install pumping wells		m3	#N/A	\$0.00	\$0	\$0	\$(
Install pumps/pipelines/power supply		LS	#N/A	\$0.00	\$0	\$0	\$(
SPECIALIZED ITEMS				ψ3.00	Ψ.	ΨΟ	Ψ
Install water quality monitoring pipes		each	#N/A	\$0.00	\$0	\$0	\$0
Install permanent pumping system		each	#N/A	\$0.00	\$0	\$0	\$(
Install permanent instrumentation	5 permanent instrumentations	each	5 MBK	\$10 000.00	\$50 000	50% \$25 000	\$25 000
	-1		¥=	Total	\$750 373	\$375 187	\$375 187
				% of Total	ψ. 30 07 0	φ373 107 50%	50%

Pond # <u>1</u>

2 Tailings Impoundment Name: TSF Meliadine Extension

			Cost		%		
ACTIVITY/MATERIAL	Notes Un	its (	Quantity Code	Unit Cost	Cost Lar	d Land Cost	Water Cost
CONTROL ACCESS							
Fence		m	#N/A	\$0.00	\$0	\$0	\$0
Signs	ea	ıch	#N/A	\$0.00	\$0	\$0	
Berm	r	m3	#N/A	\$0.00	\$0	\$0	\$0
Block roads	r	m3	#N/A	\$0.00	\$0	\$0	\$0
Other			#N/A	\$0.00	\$0	\$0	\$0
STABILIZE EMBANKMENT(S)							
Toe buttress, drainage layer	r	m3	#N/A	\$0.00	\$0	\$(	\$0
Toe buttress, bulk fill	r	m3	#N/A	\$0.00	\$0	\$0	\$0
Rip rap	r	m3	#N/A	\$0.00	\$0	\$0	\$0
Vegetate		ha	#N/A	\$0.00	\$0	\$0	\$0
Raise crest	r	m3	#N/A	\$0.00	\$0	\$0	\$0
Flatten slopes	r	m3	#N/A	\$0.00	\$0	\$0	\$0
Other			#N/A	\$0.00	\$0	\$0	\$0
COVER TAILINGS							
Grade/shape tailings surface	r	m3	#N/A	\$0.00	\$0	\$(	) \$0
Liner bedding	r	m3	#N/A	\$0.00	\$0	\$(	
Subgrade preparation - compact	r	m2	#N/A	\$0.00	\$0	\$(	
Supply geotextile/geosynthetic		m2	#N/A	\$0.00	\$0	\$(	
Install geotextile/geosynthetic		m2	#N/A	\$0.00	\$0	\$(	
Soil cover	20% of area top of TSF = 267822 m <sup>2</sup> x 0.5 m thick r	m3	24691 SB3L	\$5.10	\$125 924 5	0% \$62 962	2 \$62 962
Rock cover	20% of area top of TSF = 267822 m <sup>2</sup> x 2.5 m thick r	m3	885106 RB3L	\$12.05	\$10 665 527 5	0% \$5 332 76	\$5 332 764
Vegetate	•	m2	#N/A	\$0.00	\$0	\$(	
Other			#N/A	\$0.00	\$0	\$(	
BURY PAG ROCK				,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	• •	•	•
Relocate PAG rock	r	m3	#N/A	\$0.00	\$0	\$(	\$0
Place cover over PAG rock		m3	#N/A	\$0.00	\$0	\$(	
Raise crest of dam		m3	#N/A	\$0.00	\$0	\$(	
Other			#N/A	\$0.00	\$0	\$(	
STABILIZE DECANT SYSTEM				*****		•	1.
Excavate and replace	r	m3	#N/A	\$0.00	\$0	\$(	\$0
Plug/backfill with concrete or clay		m3	#N/A	\$0.00	\$0	\$(	
Other			#N/A	\$0.00	\$0	\$(	
REMOVE TAILINGS DISCHARGE				<b>,</b>		•	•
Cyclones	r	m3	#N/A	\$0.00	\$0	\$(	\$0
Pipe		m3	#N/A	\$0.00	\$0	\$(	
Remove reclaim barge	allı		#N/A	\$0.00	\$0	\$(	
CONSTRUCT DIVERSION DITCHES	City		971	<b>\$5.00</b>	<b>~</b>	Ψ'	Ψ.
Excavate ditches -soil	ŗ	m3	#N/A	\$0.00	\$0	\$0	) \$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0	\$(	
Rip rap in channel base		m3	#N/A	\$0.00	\$0	\$(	
Tup rap in charillor bacc			#1 <b>\</b> //A	Ψ0.00	ΨΟ	Ψ	, ψ

2 Tailings Impoundment Name: TSF Meliadine Extension

Pond # <u>1</u>

				Cost		9	6	
ACTIVITY/MATERIAL	Notes	Units	Quantity	Code	Unit Cost	Cost L	and Land Cost	Water Cost
Doze tailings to final contour		m3		#N/A	\$0.00	\$0	\$0	\$0
Raise crest of dam		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
UPGRADE SPILLWAY								
Excavate channel, rock		m3		#N/A	\$0.00	\$0	\$0	\$0
Excavate channel, soil		m3		#N/A	\$0.00	\$0	\$0	\$0
Concrete		m3		#N/A	\$0.00	\$0	\$0	\$0
Rip rap		m3		#N/A	\$0.00	\$0	\$0	\$0
Other				#N/A	\$0.00	\$0	\$0	\$0
CONSTRUCT SEEPAGE COLLECTION POND								
Excavate seepage collection pond		m3		#N/A	\$0.00	\$0	\$0	\$0
Doze & spread excavated material		m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate spread material		ha		#N/A	\$0.00	\$0	\$0	\$0
Bedding layer		m3		#N/A	\$0.00	\$0	\$0	\$0
Supply geomembrane		m2		#N/A	\$0.00	\$0	\$0	\$0
Install geomembrane		m2		#N/A	\$0.00	\$0	\$0	\$0
Erosion protection layer		m3		#N/A	\$0.00	\$0	\$0	\$0
INSTALL GROUNDWATER COLLECTION SYSTEM								
Excavate/install sumps		m3		#N/A	\$0.00	\$0	\$0	\$0
Install pumping wells		m3		#N/A	\$0.00	\$0	\$0	
Install pumps/pipelines/power supply		LS		#N/A	\$0.00	\$0	\$0	\$0
SPECIALIZED ITEMS								
Install permanent instrumentation, supply & technican & drilling	8 permanent instrumentations	each	8	MBK	\$10 000.00	\$80 000	50% \$40 000	\$40 000
Install permanent instrumentation, drilling		each		#N/A	\$0.00	\$0		\$0
TREAT SEEPAGE - see "Water Management" and "Water Treatm	ent"							
TREAT SUPERNATANT								
Pump water		m3		#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow		#N/A	\$0.00	\$0	\$0	\$0
Supply reagents		tonne		#N/A	\$0.00	\$0	\$0	\$0
					Annual treatment costs	\$0		
Number of years of treatment		years						
		<u> </u>			Total treatment costs	\$0		\$0
		•			Total	\$10 871 451	\$5 435 726	\$5 435 726
					% of Total		50%	50%

<sup>\*</sup> for construction of passive treatment system refer to "Water Management"

# Rock Pile Name: WRSF 1 Ext.

ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost		% Land	Land Cost	Water Cost
STABILIZE SLOPES		•	quantity cour	<u> </u>				
Flatten slopes with dozer		m3	#N/A	\$0.00	\$0		\$0	\$0
Flatten "bubble dump" areas		m3	#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, drain mat'l		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Grade WRSF 1	1.0 m over 50 % of WRSF 1 footprint (672096m2)	m3	336048 DRL	\$1.05	\$352 850	50%	\$176 425	\$176 425
Grade WRSF 1 ext	1.0 m over 50 % of WRSF 1 footprint 224517(m2)	m3	112258.5 DRL	\$1.05	\$117 871	50%	\$58 936	\$58 936
COVER ROCK PILE				*	******		******	******
Subgrade preparation - doze surface		m3	#N/A	\$0.00	\$0		\$0	\$0
Soil cover - excavate,haul,spread&compact		m3	#N/A	\$0.00	\$0		\$0	\$0
Rock cover - excavate, haul & spread		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate downslope drainage channel & chute		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap drainage channel and chute		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha	#N/A	\$0.00	\$0		\$0	\$0
Other		IIa	#N/A	\$0.00	\$0 \$0		\$0	\$0
VERY LOW PERMEABILITY COVER (in addition to above	5)		#18/7	ψ0.00	φυ		ΨΟ	ΨΟ
Liner subgrade preparation - compact	<del>7</del> )	m2	#N/A	\$0.00	\$0		\$0	\$0
		m2	#N/A	\$0.00	\$0 \$0		\$0	\$0
Supply geomembrane		m2	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Install geomembrane			#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Protective cover - excavate,haul,spread&compact		m3						
Vegetate		ha	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Install infiltration/seepage instrumentation CONSTRUCT DIVERSION DITCHES		allow	#N/A	\$0.00	\$0		\$0	\$0
		0	#N1/A	<b>#0.00</b>	ФО.		r <sub>O</sub>	ΦO
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SEEPAGE COLLECTION POND		_						
Excavate seepage collection pond		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze & spread excavated material		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate spread material		ha	#N/A	\$0.00	\$0		\$0	\$0
Bedding layer		m3	#N/A	\$0.00	\$0		\$0	\$0
Supply geomembrane		m2	#N/A	\$0.00	\$0		\$0	\$0
Install geomembrane		m2	#N/A	\$0.00	\$0		\$0	\$0
Erosion protection layer		m3	#N/A	\$0.00	\$0		\$0	\$0
INSTALL GROUNDWATER COLLECTION SYSTEM								
Excavate/install sumps		m3	#N/A	\$0.00	\$0		\$0	\$0
Install pumping wells		m3	#N/A	\$0.00	\$0		\$0	\$0
Install pumps/pipelines/power supply		allow	#N/A	\$0.00	\$0		\$0	\$0
RELOCATE DUMPS					_			
Load, haul, dump or doze		m3	#N/A	\$0.00	\$0		\$0	\$0
Add lime		tonne	#N/A	\$0.00	\$0		\$0	\$0
Contour reclaimed area		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
SPECIALIZED ITEMS								
Install permanent instrumentation	3 permanent instrumentations	each	3 MBK	\$10 000.00	\$30 000	50%	\$15 000	\$15 000
Install permanent instrumentation, drilling		each	#N/A	\$0.00	\$0		\$0	\$0
TREAT ROCK PILE SEEPAGE - see "Water Treatment"								

#	ROCK PILE Name:	WRSF 1 Ext.					
ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost	% Cost Land	Land Cost	Water Cost
HEAP LEACH SEEPAGE TREATMEN	NT - Cyanide Detox		•				
Cyanide destruction water treatment p	oumping	m3	#N/A	\$0.00	\$0	\$0	\$0
Reagents		tonnes	#N/A	\$0.00	\$0	\$0	\$0
Electrician/mechanic to maintain treati	ment plant	allow	#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow	#N/A	\$0.00	\$0	\$0	\$0
			Annual tre	eatment costs	\$0		
Number of years of treatment		years					
			Total tre	eatment costs	\$0		\$0
HEAP LEACH SEEPAGE TREATMENT	NT - ARD/ML**						
Upgrade/modify pumping system - rep	Notes         Units         Quantity         Code         Unit Cost         Cost Land         Land Cost         W           INT - Cyanide Detox           pumping         m3         #N/A         \$0.00         \$0 </td <td>\$0</td>	\$0					
					\$500 722		\$250 361 50%

<sup>\*</sup> For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

<sup>\*\*</sup>Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

Rock Pile Na	me:	WRSF 3 Ext.				<u>2</u>				
ACTIVITY/MATERIAL	Notes		Units	Quantity	Cost Code	Unit Cost	% Cost La			Water Cost
STABILIZE SLOPES										
Flatten slopes with dozer			m3		#N/A	\$0.00	\$0		\$0	\$0
Flatten "bubble dump" areas			m3		#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l A			m3		#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l B			m3		#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, drain mat'l			m3		#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l A			m3		#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l B			m3		#N/A	\$0.00	\$0		\$0	\$0
Other					#N/A	\$0.00	\$0		\$0	\$0
COVER ROCK PILE										
Subgrade preparation - doze surface			m3		#N/A	\$0.00	\$0		\$0	\$0
Soil cover - excavate,haul,spread&compact			m3		#N/A	\$0.00	\$0		\$0	\$0
Rock cover - excavate,haul & spread			m3		#N/A	\$0.00	\$0		\$0	\$0
Excavate downslope drainage channel & chute			m3		#N/A	\$0.00	\$0		\$0	\$0
Rip rap drainage channel and chute			m3		#N/A	\$0.00	\$0		\$0	\$0
Vegetate			ha		#N/A	\$0.00	\$0		\$0	\$0
Other			IIa		#N/A	\$0.00	\$0 \$0		\$0	\$0
VERY LOW PERMEABILITY COVER (in addition to a	bove)				#IN/A	φ0.00	φυ		φυ	ΦΟ
Liner subgrade preparation - compact			m2		#N/A	\$0.00	\$0		\$0	\$0
Supply geomembrame			m2		#N/A	\$0.00	\$0		\$0	\$0
Install geomembrane			m2		#N/A	\$0.00	\$0		\$0	\$0
Protective cover - excavate,haul,spread&compact			m3		#N/A	\$0.00	\$0		\$0	\$0
Vegetate			ha		#N/A	\$0.00	\$0		\$0	\$0
Install infiltration/seepage instrumentation			allow		#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES			anow		#1 <b>3</b> //3	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Excavate ditches -soil			m3		#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock			m3		#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base			m3		#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SEEPAGE COLLECTION POND			0			ψ0.00	Ţ,		•	Ψ
Excavate seepage collection pond			m3		#N/A	\$0.00	\$0		\$0	\$0
Doze & spread excavated material			m3		#N/A	\$0.00	\$0		\$0	\$0
Vegetate spread material			ha		#N/A	\$0.00	\$0		\$0	\$0
Bedding layer			m3		#N/A	\$0.00	\$0		\$0	\$0
Supply geomembrane			m2		#N/A	\$0.00	\$0		\$0	\$0
Install geomembrane			m2		#N/A	\$0.00	\$0		\$0	\$0
Erosion protection layer			m3		#N/A	\$0.00	\$0		\$0	\$0
INSTALL GROUNDWATER COLLECTION SYSTEM						ψο.σσ	Ψ		Ψ0	<b>Q</b>
Excavate/install sumps			m3		#N/A	\$0.00	\$0		\$0	\$0
Install pumping wells			m3		#N/A	\$0.00	\$0 \$0		\$0	\$0
Install pumps/pipelines/power supply			allow		#N/A	\$0.00	\$0		\$0	\$0
RELOCATE DUMPS			allOw		#IN/A	φυ.υυ	ΨΟ		Φυ	φυ
Load, haul, dump or doze			m3		#N/A	\$0.00	\$0		\$0	\$0
Add lime			tonne		#N/A	\$0.00	\$0 \$0		\$0	\$0
Contour reclaimed area			ha		#N/A	\$0.00	\$0 \$0		\$0 \$0	\$0
Other			IId		#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
SPECIALIZED ITEMS					#IN/A	φυ.υυ	Φυ		ΦU	ΦU
	3 permanent instrumentations		oach		3 MBK	\$10 000.00	\$30 000	50% \$	\$15 000	\$15 000
Install permanent instrumentation Install permanent instrumentation, drilling	5 permanent instrumentations		each each		#N/A	\$0.00	\$30 000	JU% \$	\$0	\$15 000
TREAT ROCK PILE SEEPAGE - see "Water Treatme	ent"		cauli		#IN/ <i>P</i> N	φυ.υυ	Ψ		φυ	φυ

	Rock Pile Name:	WRSF 3 Ext.		<u>2</u>			
ACTIVITY/MATERIAL	Notes	Units Quanti	Cost ty Code	Unit Cost	% Cost Land	Land Cost	Water Cost
HEAP LEACH SEEPAGE TREATMENT	- Cyanide Detox						
Cyanide destruction water treatment pur	mping	m3	#N/A	\$0.00	\$0	\$0	\$0
Reagents		tonnes	#N/A	\$0.00	\$0	\$0	\$0
Electrician/mechanic to maintain treatme	ent plant	allow	#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow	#N/A	\$0.00	\$0	\$0	\$0
			Annual tre	eatment costs	\$0		
Number of years of treatment		years					
			Total tre	eatment costs	\$0		\$0
HEAP LEACH SEEPAGE TREATMENT	- ARD/ML**						
Upgrade/modify pumping system - repo	rt to WTP	allow	#N/A	\$0.00	\$0		\$0
		_		Total	\$30 000	\$15 000	\$15 000
				% of Total		50%	50%

<sup>\*</sup> For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

<sup>\*\*</sup>Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

	Rock Pile Name:	WRSF 5				<u>3</u>			
ACTIVITY/MATERIAL	Notes	Un	its	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost	Water Cost
STABILIZE SLOPES									
Flatten slopes with dozer		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Flatten "bubble dump" areas		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Divert runon, ditch mat'l A		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Divert runon, ditch mat'l B		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Toe buttress, drain mat'l		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Toe buttress, fill mat'l A		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Toe buttress, fill mat'l B		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Other					#N/A	\$0.00	\$0	\$0	\$0
COVER ROCK PILE									
Subgrade preparation - doze surface		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Soil cover - excavate,haul,spread&co	ompact	r	m3		#N/A	\$0.00	\$0	\$0	\$0
Rock cover - excavate, haul & spread	l	r	m3		#N/A	\$0.00	\$0	\$0	\$0
Excavate downslope drainage channel	el & chute	r	m3		#N/A	\$0.00	\$0	\$0	\$0
Rip rap drainage channel and chute		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Vegetate			ha		#N/A	\$0.00	\$0	\$0	\$0
Other					#N/A	\$0.00	\$0	\$0	\$0
VERY LOW PERMEABILITY COVER	R (in addition to above)								
Liner subgrade preparation - compac	t	r	m2		#N/A	\$0.00	\$0	\$0	\$0
Supply geomembrame		r	m2		#N/A	\$0.00	\$0	\$0	\$0
Install geomembrane		r	m2		#N/A	\$0.00	\$0	\$0	\$0
Protective cover - excavate,haul,spre	ead&compact		m3		#N/A	\$0.00	\$0	\$0	
Vegetate	,		ha		#N/A	\$0.00	\$0	\$0	
Install infiltration/seepage instrumenta	ation		ow		#N/A	\$0.00	\$0	\$0	
CONSTRUCT DIVERSION DITCHES		<b>u</b>	• • •			ψ0.00	<b>4</b> 0	<b>Q</b> U	Ψ
Excavate ditches -soil		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Excavate ditches -rock			m3		#N/A	\$0.00	\$0	\$0	
Rip rap in channel base			m3		#N/A	\$0.00	\$0	\$0	
CONSTRUCT SEEPAGE COLLECT	ION POND				<i>,,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ψο.σσ	ΨΟ	Ψ	φο
Excavate seepage collection pond		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Doze & spread excavated material			m3		#N/A	\$0.00	\$0	\$0	
Vegetate spread material			ha		#N/A	\$0.00	\$0	\$0	
Bedding layer			m3		#N/A	\$0.00	\$0	\$0	
Supply geomembrane			m2		#N/A	\$0.00	\$0	\$0	
Install geomembrane			m2		#N/A	\$0.00	\$0	\$0	
Erosion protection layer			m3		#N/A	\$0.00	\$0	\$0	
INSTALL GROUNDWATER COLLEC	CTION SYSTEM				,,,,,,,	Ψ0.00	ΨΟ	ΨΟ	ΨΟ
Excavate/install sumps		r	m3		#N/A	\$0.00	\$0	\$0	\$0
Install pumping wells		r	m3		#N/A	\$0.00	\$0	\$0	
Install pumps/pipelines/power supply			ow		#N/A	\$0.00	\$0	\$0	
RELOCATE DUMPS									
Load, haul, dump or doze		r	m3		#N/A	\$0.00	\$0	\$0	\$0
AllPar			-						4-

tonne

ha

each

each

#N/A

#N/A

#N/A

#N/A

3 MBK

\$0.00

\$0.00

\$0.00

\$0.00

\$10 000.00

\$0

\$0

\$0

\$0

\$30 000

\$0

\$0

\$0

50% \$15 000 \$15 000

\$0

\$0

\$0

\$0

\$0

3 permanent instrumentations

Add lime

Other

Contour reclaimed area

SPECIALIZED ITEMS
Install permanent instrumentation

Install permanent instrumentation, drilling

TREAT ROCK PILE SEEPAGE - see "Water Treatment"

Ro	ck Pile Name:	WRSF 5			<u>3</u>			
ACTIVITY/MATERIAL	Notes	Units		Cost Code	Unit Cost	% Cost Land		Water Cost
HEAP LEACH SEEPAGE TREATMENT -	Cyanide Detox							
Cyanide destruction water treatment pump	ping	m3		#N/A	\$0.00	\$0	\$0	\$0
Reagents		tonnes		#N/A	\$0.00	\$0	\$0	\$0
Electrician/mechanic to maintain treatment	t plant	allow		#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow		#N/A	\$0.00	\$0	\$0	\$0
			P	nnual trea	atment costs	\$0		
Number of years of treatment		years						
				Total trea	atment costs	\$0		\$0
HEAP LEACH SEEPAGE TREATMENT -	ARD/ML**							
Upgrade/modify pumping system - report to	to WTP	allow		#N/A	\$0.00	\$0		\$0
					Total	\$30 000	\$15 000	\$15 000
					% of Total		50%	50%

<sup>\*</sup> For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

<sup>\*\*</sup>Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

Rock Pile Na	me:	WRSF 6		<u>-</u>	<u>4</u>			
ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost	% Cost La			Water Cost
STABILIZE SLOPES								
Flatten slopes with dozer		m3	#N/A	\$0.00	\$0		\$0	\$0
Flatten "bubble dump" areas		m3	#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, drain mat'l		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
As Grade WRSF 1		m3	#N/A	\$0.00	\$0		\$0	\$0
COVER ROCK PILE								
Subgrade preparation - doze surface		m3	#N/A	\$0.00	\$0		\$0	\$0
Soil cover - excavate,haul,spread&compact		m3	#N/A	\$0.00	\$0		\$0	\$0
Rock cover - excavate,haul & spread		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate downslope drainage channel & chute		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap drainage channel and chute		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
VERY LOW PERMEABILITY COVER (in addition to a	bove)			• • • • • • • • • • • • • • • • • • • •	• •			•
Liner subgrade preparation - compact	· · · · ,	m2	#N/A	\$0.00	\$0		\$0	\$0
Supply geomembrame		m2	#N/A	\$0.00	\$0		\$0	\$0
Install geomembrane		m2	#N/A	\$0.00	\$0		\$0	\$0
Protective cover - excavate, haul, spread&compact		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha	#N/A	\$0.00	\$0		\$0	\$0
Install infiltration/seepage instrumentation		allow	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES		anon		ψ0.00	Ψ0		ΨÜ	Ψ
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SEEPAGE COLLECTION POND				ψ0.00	Ψ0		ΨÜ	Ψ
Excavate seepage collection pond		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze & spread excavated material		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate spread material		ha	#N/A	\$0.00	\$0		\$0	\$0
Bedding layer		m3	#N/A	\$0.00	\$0 \$0		\$0	\$0
Supply geomembrane		m2	#N/A	\$0.00	\$0		\$0	\$0
Install geomembrane		m2	#N/A	\$0.00	\$0 \$0		\$0	\$0
Erosion protection layer		m3	#N/A	\$0.00	\$0 \$0		\$0	\$0
INSTALL GROUNDWATER COLLECTION SYSTEM		IIIO	πιν/r	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Excavate/install sumps		m3	#N/A	\$0.00	\$0		\$0	\$0
Install pumping wells		m3	#N/A	\$0.00	\$0 \$0		\$0	\$0
Install pumps/pipelines/power supply		allow	#N/A	\$0.00	\$0		\$0	\$0
RELOCATE DUMPS		allow	#IN/A	ψ0.00	ΨΟ		ΨΟ	ΨΟ
Load, haul, dump or doze		m3	#N/A	\$0.00	\$0		\$0	\$0
Add lime		tonne	#N/A	\$0.00	\$0 \$0		\$0	\$0
Contour reclaimed area		ha	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$0
Other		na	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
SPECIALIZED ITEMS			#IN/A	φυ.υυ	Ψ		Ψυ	ψ
Install permanent instrumentation	3 permanent instrumentations	each	3 MBK	\$10 000.00	\$30 000	50% \$1	5 000	\$15 000
Install permanent instrumentation drilling	5 permanent mottumentations	each	#N/A	\$0.00	\$30 000 \$0	JU /0 \$1	\$0	\$15 000
TREAT ROCK PILE SEEPAGE - see "Water Treatme	ent"	eacii	#IN/A	ψ0.00	ΨΟ		ΨΟ	ΨΟ

	Rock Pile Name:	WRSF 6		<u>4</u>			
ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost	% Cost Land	Land Cost	Water Cost
HEAP LEACH SEEPAGE TREATMENT	****	Office	Quantity Code	Onit Gost	OOST LANG	0031	Water Gost
Cyanide destruction water treatment pur	mping	m3	#N/A	\$0.00	\$0	\$0	\$0
Reagents		tonnes	#N/A	\$0.00	\$0	\$0	\$0
Electrician/mechanic to maintain treatme	ent plant	allow	#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow	#N/A	\$0.00	\$0	\$0	\$0
			Annual tre	eatment costs	\$0		<u>.</u>
Number of years of treatment		years					
			Total tre	eatment costs	\$0		\$0
HEAP LEACH SEEPAGE TREATMENT	- ARD/ML**						
Upgrade/modify pumping system - repo	rt to WTP	allow	#N/A	\$0.00	\$0		\$0
				Total % of Total	\$30 000	\$15 000 50%	\$15 000 50%

<sup>\*</sup> For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

<sup>\*\*</sup>Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

Rock Pile Name	e:	WRSF 7			<u>5</u>				
				Cost		9/		Land	
ACTIVITY/MATERIAL	Notes	Units	Quantity	Code	Unit Cost	Cost L	and	Cost	Water Cost
STABILIZE SLOPES				// <b>&gt;.</b> 1 / A	<b>#</b> 0.00	Φ0			•••
Flatten slopes with dozer		m3		#N/A	\$0.00	\$0		\$0	\$0
Flatten "bubble dump" areas		m3		#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l A		m3		#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l B		m3		#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, drain mat'l		m3		#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l A		m3		#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l B		m3		#N/A	\$0.00	\$0		\$0	\$0
Grade WRSF 1		m3		#N/A	\$0.00	\$0		\$0	\$0
COVER ROCK PILE									
Subgrade preparation - doze surface		m3		#N/A	\$0.00	\$0		\$0	\$0
Soil cover - excavate,haul,spread&compact		m3		#N/A	\$0.00	\$0		\$0	\$0
Rock cover - excavate,haul & spread		m3		#N/A	\$0.00	\$0		\$0	\$0
Excavate downslope drainage channel & chute		m3		#N/A	\$0.00	\$0		\$0	\$0
Rip rap drainage channel and chute		m3		#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha		#N/A	\$0.00	\$0		\$0	\$0
Other				#N/A	\$0.00	\$0		\$0	\$0
VERY LOW PERMEABILITY COVER (in addition to about	ve)								
Liner subgrade preparation - compact		m2		#N/A	\$0.00	\$0		\$0	\$0
Supply geomembrame		m2		#N/A	\$0.00	\$0		\$0	\$0
Install geomembrane		m2		#N/A	\$0.00	\$0		\$0	\$0
Protective cover - excavate,haul,spread&compact		m3		#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha		#N/A	\$0.00	\$0		\$0	\$0
Install infiltration/seepage instrumentation		allow		#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT DIVERSION DITCHES									
Excavate ditches -soil		m3		#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3		#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3		#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SEEPAGE COLLECTION POND									
Excavate seepage collection pond		m3		#N/A	\$0.00	\$0		\$0	\$0
Doze & spread excavated material		m3		#N/A	\$0.00	\$0		\$0	\$0
Vegetate spread material		ha		#N/A	\$0.00	\$0		\$0	\$0
Bedding layer		m3		#N/A	\$0.00	\$0		\$0	\$0
Supply geomembrane		m2		#N/A	\$0.00	\$0		\$0	\$0
Install geomembrane		m2		#N/A	\$0.00	\$0		\$0	\$0
Erosion protection layer		m3		#N/A	\$0.00	\$0		\$0	\$0
INSTALL GROUNDWATER COLLECTION SYSTEM									
Excavate/install sumps		m3		#N/A	\$0.00	\$0		\$0	\$0
Install pumping wells		m3		#N/A	\$0.00	\$0		\$0	\$0
Install pumps/pipelines/power supply		allow		#N/A	\$0.00	\$0		\$0	\$0
RELOCATE DUMPS									
Load, haul, dump or doze		m3		#N/A	\$0.00	\$0		\$0	\$0
Add lime		tonne		#N/A	\$0.00	\$0		\$0	\$0
Contour reclaimed area		ha		#N/A	\$0.00	\$0		\$0	\$0
Other				#N/A	\$0.00	\$0		\$0	\$0
SPECIALIZED ITEMS								+ -	70
Install permanent instrumentation	3 permanent instrumentations	each	3 1	MBK	\$10 000.00	\$30 000	50%	\$15 000	\$15 000
Install permanent instrumentation, drilling	- F	each	0.	#N/A	\$0.00	\$0	50,0	\$0	\$0
TREAT ROCK PILE SEEPAGE - see "Water Treatment	"	23011				**		+ -	70

	Rock Pile Name:	WRSF 7		<u>5</u>	<u>ī</u>		
ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost	% Cost Land	Land Cost	Water Cost
HEAP LEACH SEEPAGE TREATMEN	T - Cyanide Detox						
Cyanide destruction water treatment pu	ımping	m3	#N/A	\$0.00	\$0	\$0	\$0
Reagents		tonnes	#N/A	\$0.00	\$0	\$0	\$0
Electrician/mechanic to maintain treatm	nent plant	allow	#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow	#N/A	\$0.00	\$0	\$0	\$0
			Annual tr	eatment costs	\$0		
Number of years of treatment		years	i				
			Total to	eatment costs	\$0		\$0
HEAP LEACH SEEPAGE TREATMEN	T - ARD/ML**						
Upgrade/modify pumping system - repo	ort to WTP	allow	#N/A	\$0.00	\$0		\$0
				Total % of Total	\$30 000	\$15 000 50%	\$15 000 50%

<sup>\*</sup> For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

<sup>\*\*</sup>Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

**Rock Pile Name:** WRSF 9 (Discovery) <u>6</u> % Cost ACTIVITY/MATERIAL Notes Units Quantity Code **Unit Cost** Cost Land Land Cost Water Cost STABILIZE SLOPES #N/A Flatten slopes with dozer m3 \$0.00 \$0 \$0 \$0 #N/A \$0 \$0 \$0 Flatten "bubble dump" areas m3 \$0.00 Divert runon, ditch mat'l A m3 #N/A \$0.00 \$0 \$0 \$0 \$0 Divert runon, ditch mat'l B m3 #N/A \$0.00 \$0 \$0 Toe buttress, drain mat'l m3 #N/A \$0.00 \$0 \$0 \$0 Toe buttress, fill mat'l A #N/A \$0.00 \$0 \$0 \$0 m3 Toe buttress, fill mat'l B m3 #N/A \$0.00 \$0 \$0 \$0 Grade WRSF 1 m3 #N/A \$0.00 \$0 \$0 \$0 COVER ROCK PILE Subgrade preparation - doze surface m3 #N/A \$0.00 \$0 \$0 \$0 #N/A \$0.00 \$0 \$0 \$0 Soil cover - excavate, haul, spread&compact m3 425946 RB3L \$2 566 325 Rock cover - excavate, haul & spread 20% of footprint of 328 194 m<sup>2</sup> x 6 m thick m3 \$12.05 \$5 132 649 50% \$2 566 325 Excavate downslope drainage channel & chute #N/A \$0.00 \$0 \$0 \$0 m3 \$0 \$0 \$0 Rip rap drainage channel and chute m3 #N/A \$0.00 #N/A \$0 \$0 \$0 Vegetate ha \$0.00 #N/A \$0 \$0 \$0 Other \$0.00 VERY LOW PERMEABILITY COVER (in addition to above) #N/A \$0.00 \$0 \$0 \$0 Liner subgrade preparation - compact m2 \$0 Supply geomembrame m2 #N/A \$0.00 \$0 \$0 #N/A \$0.00 \$0 \$0 \$0 Install geomembrane m2 \$0 \$0 \$0 Protective cover - excavate, haul, spread&compact m3 #N/A \$0.00 Vegetate #N/A \$0.00 \$0 \$0 \$0 ha Install infiltration/seepage instrumentation allow #N/A \$0.00 \$0 \$0 \$0 CONSTRUCT DIVERSION DITCHES Excavate ditches -soil m3 #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 \$0 \$0 Excavate ditches -rock m3 \$0.00 Rip rap in channel base m3 #N/A \$0.00 \$0 \$0 \$0 CONSTRUCT SEEPAGE COLLECTION POND \$0 \$0 \$0 Excavate seepage collection pond m3 #N/A \$0.00 \$0 Doze & spread excavated material #N/A \$0.00 \$0 \$0 m3 #N/A \$0 \$0 \$0 Vegetate spread material ha \$0.00 Bedding layer m3 #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 \$0 \$0 Supply geomembrane m2 \$0.00 \$0 \$0 Install geomembrane m2 #N/A \$0.00 \$0 \$0 \$0 \$0 Erosion protection layer m3 #N/A \$0.00 INSTALL GROUNDWATER COLLECTION SYSTEM Excavate/install sumps m3 #N/A \$0.00 \$0 \$0 \$0 Install pumping wells m3 #N/A \$0.00 \$0 \$0 \$0 allow #N/A \$0.00 \$0 \$0 \$0 Install pumps/pipelines/power supply RELOCATE DUMPS Load, haul, dump or doze m3 #N/A \$0.00 \$0 \$0 \$0 Add lime tonne #N/A \$0.00 \$0 \$0 \$0 Contour reclaimed area #N/A \$0.00 \$0 \$0 \$0 ha Other #N/A \$0.00 \$0 \$0 \$0 SPECIALIZED ITEMS \$30 000 \$15 000 \$15 000 Install permanent instrumentation 3 permanent instrumentations 3 MBK \$10 000.00 50% each Install permanent instrumentation, drilling each #N/A \$0.00 \$0 \$0 \$0

TREAT ROCK PILE SEEPAGE - see "Water Treatment"

	Rock Pile Name:	WRSF 9 (Discovery)			<u>6</u>			
A OTIVITY/MATERIAL	Note		0	Cost	11-24 0	%	1 10 1	W-4 O4
ACTIVITY/MATERIAL	Note	es Units	Quantity	Code	Unit Cost	Cost Land	Land Cost \	Vater Cost
HEAP LEACH SEEPAGE TREATME	ENT - Cyanide Detox							
Cyanide destruction water treatment	pumping	m3		#N/A	\$0.00	\$0	\$0	\$0
Reagents		tonnes		#N/A	\$0.00	\$0	\$0	\$0
Electrician/mechanic to maintain trea	atment plant	allow		#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow		#N/A	\$0.00	\$0	\$0	\$0
			,	Annual tre	atment costs	\$0		
Number of years of treatment		years						
				Total tre	atment costs	\$0		\$0
HEAP LEACH SEEPAGE TREATME	ENT - ARD/ML**							
Upgrade/modify pumping system - re	eport to WTP	allow		#N/A	\$0.00	\$0		\$0
		_			Total	\$5 162 649	\$2 581 325	\$2 581 325
					% of Total		50%	50%

<sup>\*</sup> For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

<sup>\*\*</sup>Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

**Rock Pile Name:** Saline Rock Pile <u>7</u> % Cost ACTIVITY/MATERIAL Notes Units Quantity Code **Unit Cost** Cost Land Land Cost Water Cost STABILIZE SLOPES #N/A \$0 Flatten slopes with dozer m3 \$0.00 \$0 \$0 #N/A \$0 \$0 Flatten "bubble dump" areas m3 \$0.00 \$0 Divert runon, ditch mat'l A m3 #N/A \$0.00 \$0 \$0 \$0 Divert runon, ditch mat'l B m3 #N/A \$0.00 \$0 \$0 \$0 Toe buttress, drain mat'l m3 #N/A \$0.00 \$0 \$0 \$0 Toe buttress, fill mat'l A m3 #N/A \$0.00 \$0 \$0 \$0 Toe buttress, fill mat'l B m3 #N/A \$0.00 \$0 \$0 \$0 Grade WRSF 1 m3 #N/A \$0.00 \$0 \$0 \$0 COVER ROCK PILE Subgrade preparation - doze surface m3 #N/A \$0.00 \$0 \$0 \$0 m3 #N/A \$0.00 \$0 \$0 \$0 Soil cover - excavate, haul, spread&compact 150000 RB1L \$11.40 \$855 000 Rock transportation - Saline waste rock pile 1 (PUMP) 300,000 ton, 2.82 t/m3 density, swell factor 1.41 m3 \$1 710 000 50% \$855 000 Rock transportation - Placement in TIR UG 300,000 ton, 2.82 t/m3 density, swell factor 1.41 150000 RB1H \$17.05 \$2 557 500 50% \$1 278 750 \$1 278 750 m3 \$0 \$0 m3 0 RB3L \$12.05 50% \$0 \$0 \$0 \$0 Rock cover - excavate, haul & spread m3 #N/A \$0.00 #N/A \$0 Excavate downslope drainage channel & chute m3 \$0.00 \$0 \$0 Rip rap drainage channel and chute m3 #N/A \$0.00 \$0 \$0 \$0 \$0 \$0 Vegetate ha #N/A \$0.00 \$0 Other #N/A \$0.00 \$0 \$0 \$0 VERY LOW PERMEABILITY COVER (in addition to above) #N/A \$0.00 \$0 \$0 Liner subgrade preparation - compact m2 \$0 Supply geomembrame m2 #N/A \$0.00 \$0 \$0 \$0 Install geomembrane m2 #N/A \$0.00 \$0 \$0 \$0 m3 #N/A \$0.00 \$0 \$0 Protective cover - excavate, haul, spread&compact \$0 ha #N/A \$0.00 \$0 \$0 \$0 Vegetate allow #N/A \$0 \$0 \$0 Install infiltration/seepage instrumentation \$0.00 CONSTRUCT DIVERSION DITCHES Excavate ditches -soil m3 #N/A \$0.00 \$0 \$0 \$0 #N/A \$0.00 \$0 \$0 \$0 Excavate ditches -rock m3 \$0 Rip rap in channel base m3 #N/A \$0.00 \$0 \$0 CONSTRUCT SEEPAGE COLLECTION POND Excavate seepage collection pond m3 #N/A \$0.00 \$0 \$0 \$0 \$0 \$0 Doze & spread excavated material m3 #N/A \$0.00 \$0 Vegetate spread material ha #N/A \$0.00 \$0 \$0 \$0 #N/A \$0 \$0 Bedding layer m3 \$0.00 \$0 #N/A \$0.00 \$0 \$0 Supply geomembrane m2 \$0 Install geomembrane m2 #N/A \$0.00 \$0 \$0 \$0 Erosion protection layer m3 #N/A \$0.00 \$0 \$0 \$0 INSTALL GROUNDWATER COLLECTION SYSTEM Excavate/install sumps m3 #N/A \$0.00 \$0 \$0 \$0 Install pumping wells m3 #N/A \$0.00 \$0 \$0 \$0 Install pumps/pipelines/power supply allow #N/A \$0.00 \$0 \$0 \$0 RELOCATE DUMPS m3 #N/A \$0.00 \$0 \$0 \$0 Load, haul, dump or doze Add lime tonne #N/A \$0.00 \$0 \$0 \$0 \$0 \$0 Contour reclaimed area ha #N/A \$0.00 \$0 #N/A Other \$0.00 \$0 \$0 \$0 SPECIALIZED ITEMS

Rock Pile	Name:	Saline Rock Pile			<u>7</u>		
ACTIVITY/MATERIAL	Notes	Units	Cos Quantity Cod			/ <sub>6</sub> Land Land Cost	Water Cost
Install permanent instrumentation		each	#N/	A \$10 000.0	0 \$0	\$0	\$0
Install permanent instrumentation, drilling		each	#N/	A \$0.0	0 \$0	\$0	\$0
TREAT ROCK PILE SEEPAGE - see "Water T	reatment"						
HEAP LEACH SEEPAGE TREATMENT - Cyar	nide Detox						
Cyanide destruction water treatment pumping		m3	#N/	A \$0.0	0 \$0	\$0	\$0
Reagents		tonnes	#N/	A \$0.0	0 \$0	\$0	\$0
Electrician/mechanic to maintain treatment plan	t	allow	#N/	A \$0.0	0 \$0	\$0	\$0
Equipment maintenance and parts		allow	#N/	A \$0.0	0 \$0	\$0	\$0
			Annua	I treatment cost	s \$0		
Number of years of treatment		years					
			Tota	I treatment cost	s \$0		\$0
HEAP LEACH SEEPAGE TREATMENT - ARD	/ML**						
Upgrade/modify pumping system - report to W	ГР	allow	#N/	A \$0.0	0 \$0		\$0
				Tota % of Tota		\$2 133 750 50%	\$2 133 750 50%

Rock Pile Name:	WRSF 8 (Discovery)	<u>.</u>

ACTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost		% Land Land	Cost	Water Cost
STABILIZE SLOPES			,					
Flatten slopes with dozer		m3	#N/A	\$0.00	\$0		\$0	\$0
Flatten "bubble dump" areas		m3	#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
Divert runon, ditch mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, drain mat'l		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l A		m3	#N/A	\$0.00	\$0		\$0	\$0
Toe buttress, fill mat'l B		m3	#N/A	\$0.00	\$0		\$0	\$0
Grade WRSF 1		m3	#N/A		\$0		\$0	
COVER ROCK PILE								
Subgrade preparation - doze surface		m3	#N/A	\$0.00	\$0		\$0	\$0
Soil cover - excavate,haul,spread&compact		m3	#N/A	\$0.00	\$0		\$0	\$0
Rock cover - excavate,haul & spread	20% of footprint of 511140m2 x 6 m thick	m3	663383 RB3L	\$12.05	\$7 993 765	50% \$3	996 883	\$3 996 883
Excavate downslope drainage channel & chute		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap drainage channel and chute		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
VERY LOW PERMEABILITY COVER (in addition to ab	pove)							
Liner subgrade preparation - compact	·	m2	#N/A	\$0.00	\$0		\$0	\$0
Supply geomembrame		m2	#N/A	\$0.00	\$0		\$0	\$0
Install geomembrane		m2	#N/A	\$0.00	\$0		\$0	\$0
Protective cover - excavate,haul,spread&compact		m3	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha	#N/A	\$0.00	\$0		\$0	\$0
Install infiltration/seepage instrumentation		allow	#N/A	\$0.00	\$0		\$0	
CONSTRUCT DIVERSION DITCHES								
Excavate ditches -soil		m3	#N/A	\$0.00	\$0		\$0	\$0
Excavate ditches -rock		m3	#N/A	\$0.00	\$0		\$0	\$0
Rip rap in channel base		m3	#N/A	\$0.00	\$0		\$0	\$0
CONSTRUCT SEEPAGE COLLECTION POND								
Excavate seepage collection pond		m3	#N/A	\$0.00	\$0		\$0	\$0
Doze & spread excavated material		m3	#N/A	\$0.00	\$0		\$0	
Vegetate spread material		ha	#N/A	\$0.00	\$0		\$0	\$0
Bedding layer		m3	#N/A	\$0.00	\$0		\$0	
Supply geomembrane		m2	#N/A	\$0.00	\$0		\$0	
Install geomembrane		m2	#N/A	\$0.00	\$0		\$0	
Erosion protection layer		m3	#N/A	\$0.00	\$0		\$0	
INSTALL GROUNDWATER COLLECTION SYSTEM			,,,,,,	ψ0.00	Ψ0		Ų.	Ψ.
Excavate/install sumps		m3	#N/A	\$0.00	\$0		\$0	\$0
Install pumping wells		m3	#N/A		\$0		\$0	
Install pumps/pipelines/power supply		allow	#N/A	\$0.00	\$0		\$0	
RELOCATE DUMPS		allow	#1 <b>4</b> /73	ψ0.00	ΨΟ		Ψ	ΨΟ
Load, haul, dump or doze		m3	#N/A	\$0.00	\$0		\$0	\$0
Add lime		tonne	#N/A #N/A	\$0.00	\$0 \$0		\$0	
Contour reclaimed area		ha	#N/A #N/A	\$0.00	\$0 \$0		\$0	
Other		na	#N/A #N/A	\$0.00	\$0 \$0		\$0	
Other SPECIALIZED ITEMS			#IN/A	φυ.00	\$0		<b>D</b> U	\$0
	2 normanant instrumentations		O MADIZ	\$40,000,00	<b>#20.000</b>	E00/	015 000	¢45.000
Install permanent instrumentation	3 permanent instrumentations	each	3 MBK	\$10 000.00	\$30 000	50%	\$15 000	
Install permanent instrumentation, drilling TREAT ROCK PILE SEEPAGE - see "Water Treatmer		each	#N/A	\$0.00	\$0		\$0	\$0

Rock Pi	le Name:	WRSF 8 (Discovery)			<u>8</u>			
ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	% Cost Land	Land Cost V	Vater Cost
HEAP LEACH SEEPAGE TREATMENT - Cyan	ide Detox							
Cyanide destruction water treatment pumping		m3		#N/A	\$0.00	\$0	\$0	\$0
Reagents		tonnes		#N/A	\$0.00	\$0	\$0	\$0
Electrician/mechanic to maintain treatment plan	t	allow		#N/A	\$0.00	\$0	\$0	\$0
Equipment maintenance and parts		allow		#N/A	\$0.00	\$0	\$0	\$0
				Annual tre	atment costs	\$0		
Number of years of treatment		years						
				Total tre	atment costs	\$0		\$0
HEAP LEACH SEEPAGE TREATMENT - ARD	/ML**							
Upgrade/modify pumping system - report to WT	P	allow		#N/A	\$0.00	\$0		\$0
					Total % of Total	\$8 023 765	\$4 011 883 50%	\$4 011 883 50%

<sup>\*</sup> For construction of passive treatment system refer to "Water Management". ARD/ML seepage treatment becomes post-closure water treatment cost

<sup>\*\*</sup>Heap leach ARD/ML seepage treatment becomes post-closure water treatment cost

Building / Equip Name: Meliadine Bldg / Equip #: 1

CTIVITY/MATERIAL	Notes	Units	Cost Quantity Code	Unit Cost	Cost %	Land I	Land Cost	Water Co
DISPOSE MOBILE EQUIPMENT (surfa)	110100	Onits	Quantity Couc	OTHE GOSE	0031 70	Luna .	Luna Gost	Water Co
Dispose and ship off-site		allow	#N/A	\$0.00	\$0	50%	\$0	
Dispose on-site		allow	#N/A	\$0.00	\$0	50%	\$0	
Decontaminate on-site	surface equipment only - Same as Phase 1	manhours	1720 mechl	\$49.00	\$84 300	50%	\$42 150	\$4
REMOVE BUILDINGS - see note below	Surface equipment only - Same as I hase I	mannours	1720 Illecili	ψ43.00	ψ04 300	30 /0	Ψ42 130	Ψ-
accomodation Complex	dorms, corridors, kitchen, laundry, dry, rec hall, ERT (3 add. Wings Meliadine Extension )	m2	18899 BRS1L	\$45.00	\$850 433	50%	\$425 216	\$4:
Main Building process plant	Assuming 5000 TPD plant	m2	148212 BRS1H	\$65.00	\$9 633 780	50%	\$4 816 890	\$4.8
Crusher and conveyor	Assuming 5000 TFD plant	m2	1524 BRS1L	\$45.00	\$68 564	50%	\$34 282	φ4 0 \$
ire Shop		m2	134 BRS1L	\$45.00	\$6 038	50%	\$3 019	φ
Offices, Repair, Lab, Warehouse (MSB)	workers dry Offices, Multi Services Building	m2	21454 BRS1L	\$45.00	\$965 435	50%	\$482 718	\$4
Storage Facilites	workers dry Offices, width Services Building	m2	#N/A	\$0.00	\$903 433	50%	\$0	φ.
•	CETD WTC)	m2	5881 BRS1L	\$45.00	\$264 632	50%	\$132 316	\$1
Vater Treatment Complex (WTC) (house EWTP and Vater Management Workshop (Former EWTP)	SETP-WIC)	m2	1294 BRS1L	\$45.00 \$45.00	\$58 212	50%	\$29 106	a S
vater management workshop (Former EWTP)  totable water treatment facilities (WTP) and STP		m∠ m2	1294 BRS1L 6089 BRS1L	\$45.00 \$45.00	\$58 212 \$273 983	50%	\$29 106 \$136 991	\$
· · ·								Э
totable water treatment facilities	WITH OTH FINTH OFTH WITH	m2	#N/A	\$0.00	\$0	50%	\$0	
rumping systems- pump removal	WTP, STP, EWTP, SETP-WTC	each	5 SNC	\$80 000.00	\$400 000	50%	\$200 000	\$
I/G Heating Plant		m2	#N/A	\$0.00	\$0	50%	\$0	
mulsion Plant and garage		m2	851 BRS1L	\$45.00	\$38 301	50%	\$19 151	
N Storage Facility		m2	#N/A	\$0.00	\$0	50%	\$0	
storage Facility at Laydown/Airstrip		m2	#N/A	\$0.00	\$0	50%	\$0	
uel tanks on-site		m2	3768 BRS1H	\$65.00	\$244 908	50%	\$122 454	\$
Vash bay		m2	976 BRS1L	\$45.00	\$43 905	50%	\$21 952	
CG Temp.		m2	1673 BRS1L	\$45.00	\$75 263	50%	\$37 631	
CG Perm.		m2	2738 BRS1L	\$45.00	\$123 188	50%	\$61 594	
reak foundation slabs	Concrete foundations of all buildings	m2	28471 BRCS	\$6.00	\$170 826	50%	\$85 413	
satch Plant		m2	3013 BRS1L	\$45.00	\$135 584	50%	\$67 792	
ower Plant		m2	9392 BRS1L	\$45.00	\$422 647	50%	\$211 324	\$
Vind Turbine	Wind Turbine N1 removal	each	1 SNC	\$393 000.00	\$393 000	50%	\$196 500	\$
Vind Turbine	Wind Turbine N2 removal	each	1 SNC	\$393 000.00	\$393 000	50%	\$196 500	\$
Vind Turbine	Wind Turbine N3 removal	each	1 SNC	\$393 000.00	\$393 000	50%	\$196 500	\$
Vind Turbine	Wind Turbine N4 removal	each	1 SNC	\$393 000.00	\$393 000	50%	\$196 500	\$
Vind Turbine	Wind Turbine N5 removal	each	1 SNC	\$393 000.00	\$393 000	50%	\$196 500	\$
Vind Turbine	Wind Turbine N6 to N11 removal	each	6 SNC	\$393 000.00	\$2 358 000	50%	\$1 179 000	\$1
Vind Turbine	Wind Turbine N1 to N11 concrete removal (20 x 20 m)	m2	4400 BRCS	\$6.00	\$26 400	50%	\$13 200	
aste Plant	· ,	m2	3630 BRS1L	\$45.00	\$163 350	50%	\$81 675	
Guard House	Gate Trailer House	m2	37 BRS1L	\$45.00	\$1 652	50%	\$826	
ivia Harbour - Saline Water Tank		m2	#N/A	\$0.00	\$0	50%	\$0	
ivia Floating Dock + Portable Crane		m2	#N/A	\$0.00	\$0	50%	\$0	
ncinerator Building	Two incinerator buildings on site	m2	1067 BRS1L	\$45.00	\$47 994	50%	\$23 997	
fine Surface General	existing and future office, megadome, explos. plant	m2	#N/A	\$0.00	\$0	50%	\$0	
Maintenance Shop	Mechanical shops and Megadome	m2	6285 BRS1L	\$45.00	\$282 814	50%	\$141 407	s
exploration Camp	Existing does not include fuel storage area	m2	4257 BRS1L	\$45.00	\$191 565	50%	\$95 783	
ssay Lab/Core shack	Existing does not include idel storage area	m2	5705 BRS1L	\$45.00	\$256 725	50%	\$128 363	9
aises Building/	13 raises total (8.4m height and 192m2)	m2	6989 BRS1L	\$45.00	\$314 496	50%	\$157 248	9
S .	13 raises total (6.411 height and 192112)							•
aline effluent Itivia		m	#N/A	\$0.00	\$0	50%	\$0	
		m2	247 BRS1L	\$45.00	\$11 136	50%	\$5 568	
acilities area (Wolf)	Same as Discovery	m2	1584 BRS1H	\$65.00	\$102 973	50%	\$51 487	
uel farm	Same as Discovery	m2	3768 BRS1H	\$65.00	\$244 920	50%	\$122 460	\$
uel farm (Tiriganiaq-Wolf)	Same as Discovery	m2	3768 BRS1H	\$65.00	\$244 907	50%	\$122 454	\$
uel farm (F-zone)	Same as Discovery	m2	3768 BRS1H	\$65.00	\$244 920	50%	\$122 460	\$
uel farm (Pump)	Same as Discovery	m2	3768 BRS1H	\$65.00	\$244 907	50%	\$122 454	\$
ANDFILL and landfarm								
Place rock cover landfill (Meliadine)	landfill 7750 m² (as-built), covered with 3.7 m WR	m3	28675 RR3L	\$7.00	\$200 725	50%	\$100 363	\$
lace rock cover landfarm	au-dessus de OP2, sous OP2 (Atotale=29 612 m2)	m3	59224 RR3L	\$7.00	\$414 568	50%	\$207 284	\$
Place rock cover Wesmeg landfarm	Assumed mean footprint of landfarm, landfarm ext.	m3	29612 RR3L	\$7.00	\$207 284	50%	\$103 642	\$
lase, sides and cover of closure landfill		m3	#N/A	\$0.00	\$0	50%	\$0	
GRADE AND CONTOUR PADS								
ccomodation Complex		m3	13860.00 AEM	\$8.47	\$117 394	50%	\$58 697	

Building / Equip Name: Meliadine Bldg / Equip #: 1

					Cost					
MAB	ACTIVITY/MATERIAL	Notes	Units	Quantity	Code	Unit Cost			Land Cost	Water Cost
	Process Facilities		m3		#N/A	\$8.47	\$0	50%	\$0	\$0
	Offices, Repair, Lab, Warehouse (MSB)		m3	4394.698		\$8.47	\$37 223	50%	\$18 612	\$18 612
	Water Treatment Complex (WTC) (house EWTP and SETP)		m3	2086.7		\$9.47	\$19 761	50%	\$9 881	\$9 881
	Water Management Workshop (Former EWTP)		m3	431.2		\$10.47	\$4 515	50%	\$2 257	\$2 257
	RO		m3		AEM	\$11.47	\$9 463	50%	\$4 731	\$4 731
	SWTP (Saline Water Treatment Plant)		m3	2028.4		\$12.47	\$25 294	50%	\$12 647	\$12 647
	Portable Water		m3	83.16	AEM	\$13.47	\$1 120	50%	\$560	\$560
	STP (Sewage TP)		m3	440.00	AEM	\$8.47	\$3 727	50%	\$1 863	\$1 863
	U/G Heating Plant		m3		#N/A	\$8.47	\$0	50%	\$0	\$0
	Emulsion Plant and Garage		m3	482.60	AEM	\$8.47	\$4 088	50%	\$2 044	\$2 044
	Main Building process plant		m3	13662.00	AEM	\$8.47	\$115 717	50%	\$57 859	\$57 859
	Wash bay		m3	357.74	AEM	\$8.47	\$3 030	50%	\$1 515	\$1 515
	KCG Temp. (foldway)		m3	613.25	AEM	\$8.47	\$5 194	50%	\$2 597	\$2 597
	KCG Perm.(Honco type)		m3	1003.75	AEM	\$8.47	\$8 502	50%	\$4 251	\$4 251
	Guard House		m3	40.392	AEM	\$8.47	\$342	50%	\$171	\$171
	Fuel tanks on-site		m3	888.13	AEM	\$8.47	\$7 522	50%	\$3 761	\$3 761
	Fuel Tanks Itivia		m3		#N/A	\$8.47	\$0	50%	\$0	\$0
	Incinerator Building	Two incinerator buildings on site	m3	418.00	AEM	\$8.47	\$3 540	50%	\$1 770	\$1 770
	Paste Plant		m3	726.00	AEM	\$8.47	\$6 149	50%	\$3 075	\$3 075
	Power Plant		m3	2173.50	AEM	\$8.47	\$18 410	50%	\$9 205	\$9 205
	Wind Turbine	Wind Turbine N1	m3	8800	AEM	\$8.47	\$74 536	50%	\$37 268	\$37 268
	Wind Turbine	Wind Turbine N2	m3	7040	AEM	\$8.47	\$59 629	50%	\$29 814	\$29 814
	Wind Turbine	Wind Turbine N3	m3	7040	AEM	\$8.47	\$59 629	50%	\$29 814	\$29 814
	Wind Turbine	Wind Turbine N4	m3	7040	AEM	\$8.47	\$59 629	50%	\$29 814	\$29 814
	Wind Turbine	Wind Turbine N5	m3	7040	AEM	\$8.47	\$59 629	50%	\$29 814	\$29 814
	Wind Turbine	Wind Turbine N6 to N11	m3	42240	AEM	\$8.47	\$357 773	50%	\$178 886	\$178 886
	Control Room Building		m3	3520	AEM	\$9.47	\$33 334	150%	\$50 002	-\$16 667
	Maintenance Shop		m3	3606.90	AEM	\$8.47	\$30 550	50%	\$15 275	\$15 275
	Mine Surface General		m3		#N/A	\$8.47	\$0	50%	\$0	\$0
	Communication Tower		m3	13.38	AEM	\$8.47	\$113	50%	\$57	\$57
	Laydown area	Laydown area (TIRI-WES-NOR area) A=139 342 m2	m3	139342.00	AEM	\$8.47	\$1 180 227	50%	\$590 113	\$590 113
	Laydown area	Phase 1 -	m3	44483.00	AEM	\$8.47	\$376 771	50%	\$188 386	\$188 386
	Laydown area	Laydown area ( Wolf A=30 540 m2	m3	30540.00	AEM	\$8.47	\$258 674	50%	\$129 337	\$129 337
	Laydown area	Laydown area ( Pum) A=50 190 m2	m3	50190.00	AEM	\$8.47	\$425 109	50%	\$212 555	\$212 555
	Core shack		m3	1925.00	AEM	\$8.47	\$16 305	50%	\$8 152	\$8 152
	Crusher and conveyor		m3	1676.02	AEM	\$8.47	\$14 196	50%	\$7 098	\$7 098
	Raises Building/	13 raises total (192m2)	m3	2745.60	AEM	\$8.47	\$23 255	50%	\$11 628	\$11 628
	Batch Plant		m3	1215.50	AEM	\$8.47	\$10 295	50%	\$5 148	\$5 148
	Tire Shop		m3	77.00	AEM	\$8.47	\$652	50%	\$326	\$326
	Ore Pad	OP2 (A=102 956 m2)	m3	102956	AEM	\$8.47	\$872 037	50%	\$436 019	\$436 019
	Ore Pad	OP2 EXP (A=80 718 m2)	m3	80718	AEM	\$8.47	\$683 681	50%	\$341 841	\$341 841
	Ore Pad	Ore pad 3 (TRI-WES-NOR area) (A=68 070m2)	m3	68070.00	AEM	\$8.47	\$576 553	50%	\$288 276	\$288 276
	Ore Pad	Ore pad 4 (PUM area) (A=32 680 m2)	m3	32680.00	AEM	\$8.47	\$276 800	50%	\$138 400	\$138 400
	Ore Pad	Ore pad 5 (FZONE area) (A=22 120m2)	m3	22120.00	AEM	\$8.47	\$187 356	50%	\$93 678	\$93 678
	Ore Pad	Ore Pad 7 (Wolf area (A= 22 500 m2)	m3	22500.00	AEM	\$8.47	\$190 575	50%	\$95 288	\$95 288
	Ore Pad		m3		#N/A	\$8.47	\$0	50%	\$0	\$0
	Storage Facilites		m3	51562		\$8.47	\$436 730	50%	\$218 365	\$218 365
	Pad Container 1 Pad Container 2		m3 m3	11631.00 10236.00		\$8.47 \$8.47	\$98 515 \$86 699	50% 50%	\$49 257 \$43 349	\$49 257 \$43 349
	Warehouse pad		m3	28866.00		\$8.47	\$244 495	50%	\$122 248	\$122 248
	Garage Area		m3	22955.00		\$8.47	\$194 429	50%	\$97 214	\$97 214
	Mobil crusher staging area		m3	26514.00		\$8.47	\$224 574	50%	\$112 287	\$112 287
	Waste staging area		m3	12180.00		\$8.47	\$103 165	50%	\$51 582	\$51 582
	Ore staging area		m3	12640.00		\$8.47	\$107 061	50%	\$53 530	\$53 530
	Facilities area (Wolf)	Same as Discovery	m3	1742.40		\$8.47	\$14 758	50%	\$7 379	\$7 379
	Fuel farm	Same as Discovery	m3	1200.00		\$8.47	\$10 164	50%	\$5 082	\$5 082
	Fuel farm (Tiriganiag-Wolf)	Same as Discovery	m3	1200.00		\$8.47	\$10 164	50%	\$5 082	\$5 082
	Fuel farm (F-zone)	Same as Discovery	m3	1200.00		\$8.47	\$10 164	50%	\$5 082	\$5 082
	Fuel farm (Pump)	Same as Discovery	m3	1200.00		\$8.47	\$10 164	50%	\$5 082	\$5 082
	RECLAIM QUARRIES		1110	7200.00		ψ011	ψ.0 10π	3070	ψ0 002	ψ0 002
	THE SECOND CONTRACTOR									

Building / Equip Name: Meliadine Bldg / Equip #: 1

			Co					
MAB ACTIVITY/MATERIAL	Notes	Units	Quantity Co	de Unit Cost	Cost	% Land	Land Cost	Water Cost
Grading and contouring borrow areas	Assuming gently sloping walls when excavated or surface scraping. Grading and contouring of the first 1 m of terrain.	m3	530095 AEM	\$8.47	\$4 489 905	50%	\$2 244 952	\$2 244 952
Drill and blast slopes to 1:1 for quarry PFZ-RQ6 and NW-RQ1	Assuming that the first 3 m slope will have to be drilled and blasted to 1H:1V	m3	31059.9 RB3	H \$17.80	\$552 866	50%	\$276 433	\$276 433
RECLAIM ROADS								
Remove culverts	16 based on Water Management Plan (March 2020) + 20% (Assumption Meliadine Extension)	each	20 MBk	\$4 000.00	\$80 000	50%	\$40 000	\$40 000
Remove bridges		each	#1	I/A \$0.00	\$0	50%	\$0	\$0
Scarify and install water breaks	About 15 km road on site, mean width about 12 m	ha	18 SCF	YL \$4 300.00	\$77 400	50%	\$38 700	\$38 700
Scarify laydown areas		ha	#1	I/A \$0.00	\$0	50%	\$0	\$0
Vegetate		ha	#1	I/A \$0.00	\$0	50%	\$0	\$0
Scarify road to Discovery	15.8 km, width about 17 m	ha	26.86 SCF	YL \$4 300.00	\$115 498	50%	\$57 749	\$57 749
Scarify pad	Discovery pad	ha	1 SCF	YL \$4 300.00	\$4 300	50%	\$2 150	\$2 150
Remove culverts road to Discovery	4 crossing water* 4 culverts	each	16 MBk	\$4 000.00	\$64 000	50%	\$32 000	\$32 000
Scarify road to NORMEG	1,503 km width about 17 m	ha	2.5551 SCF	YL \$4 300.00	\$10 987	50%	\$5 493	\$5 493
Scarify road to WESTMEG 01	386 m width about 17 m	ha	0.6562 SCF	YL \$4 300.00	\$2 822	50%	\$1 411	\$1 411
Scarify road to PUMP01	4,042 km width about 17 m	ha	6.8714 SCF	YL \$4 300.00	\$29 547	50%	\$14 774	\$14 774
Scarify road to FZONE01	1,892 km width about 17 m	ha	3.2164 SCF	YL \$4 300.00	\$13 831	50%	\$6 915	\$6 915
Scarify road from FZONE01 toDiscovery road	1.432 km width about 17 m	ha	2.4344 SCF	YL \$4 300.00	\$10 468	50%	\$5 234	\$5 234
Scarify road to Tiri-Wolf-North			#1	I/A \$0.00	\$0	150%	\$0	\$0
Scarify road to Tiri-Wolf-South			#1	I/A \$0.00	\$0	250%	\$0	\$0
Scarify road to wind turbine	width about 12m	ha	2.1564 SCF	YL \$4 300.00	\$9 273	50%	\$4 636	\$4 636
Boat launch	along the Discovery road	each	1 AEM	\$2 000,00	\$2 000	50%	\$1,000	\$1,000
Other			#1	I/A \$0.00	\$0	50%	\$0	\$0
SPECIALIZED ITEMS								
Dispose of misc. debris and laydown area refuse			#1	I/A \$0.00	\$0	50%	\$0	\$0
			-	Total	\$34 654 270		\$17 360 470	\$17 293 801
				% of Total			50%	50%

Note: Unit costs are based on 3m high, single storey building. Scale larger building areas accordingly. E.g. (H m /3) \* Foot print m2

Building / Equip	Name: ITIVIA + Ro	ad		Bldg / Equip #: A	WAR / ITIVIA			
ACTIVITY/MATERIAL	Notes	Units	Quantity Cost Code	Unit Cost		4 and	Land Cost	Water Cost
DISPOSE MOBILE EQUIPMENT								
Dispose and ship off-site Dispose on-site		allow	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Decontaminate on-site		manhours	#N/A	\$0.00	\$0		\$0 \$0	\$0 \$0
REMOVE BUILDINGS - see note below		marmours	merc	90.00	40		40	40
Accomodation Complex		m2	#N/A	\$0.00	\$0		\$0	\$0
Process Facilities		m2	#N/A	\$0.00	\$0		\$0	\$0
Offices, Repair, Lab, Warehouse		m2	#N/A	\$0.00	\$0		\$0	\$0
Storage Facilities		m2	#N/A	\$0.00	\$0		\$0	\$0
Water and Wastewater Treatment Facilities Water and Wastewater Treatment Facilities - Pumping s	untomo	m2 m3	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
U/G Heating Plant	ystems	m2	#N/A	\$0.00	\$0		\$0	\$0
Emulsion Plant		m2	#N/A	\$0.00	\$0		\$0	\$0
AN Storage Facility		m2	#N/A	\$0.00	\$0		\$0	\$0
Warehouse, Shops and Other		m2	#N/A	\$0.00	\$0		\$0	\$0
Storage Facility at Laydown/Airstrip		m2	#N/A	\$0.00	\$0		\$0	\$0
Fuel tanks on-site		m2	#N/A	\$0.00	\$0		\$0	\$0
Fuel Tanks Itivia Reclaim pumps	3 tanks - 20ML and 13.5ML and 4ML	m2 m2	4918 BRS1H #N/A	\$65.00 \$0.00	\$319 670 \$0	50%	\$159 835 \$0	\$159 835 \$0
Outfall & Diffuser		m2	#N/A	\$0.00	\$0		\$0 \$0	\$0
Airstrip lighting, navigation, electrician		mandays	#N/A	\$0.00	\$0		\$0	\$0
Airstrip lighting, navigation, mechanical		mandays	#N/A	\$0.00	\$0		\$0	\$0
Break foundation slabs	about 1m below ground surface	m2	4918 BRCS	\$6.00	\$29 508	50%	\$14 754	\$14 754
Power Plant	· · · · · · · · · · · · · · · · · · ·	m2	#N/A	\$0.00	\$0		\$0	\$0
Guard House		m2	#N/A	\$0.00	\$0		\$0	\$0
Itivia Harbour - Saline Water Tank	salt water tank 15ML	m2	23.4 BRS1L	\$45.00	\$1 053	50%	\$527	\$527
Itivia Floating Dock + Portable Crane	Lump sum for reclamation	each	1 SNC	\$50 000.00	\$50 000	50%	\$25 000	\$25 000
Incinerator Building		m2	#N/A	\$0.00	\$0		\$0	\$0
Mine Surface General Maintenance Shop		m2 m2	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Exploration Camp		m2	#N/A	\$0.00	\$0		\$0	\$0 \$0
Assav Lab		m2	#N/A	\$0.00	\$0		\$0	\$0
Incinerator Building		m2	#N/A	\$0.00	\$0		\$0	\$0
Incinerator Building		m2	#N/A	\$0.00	\$0		\$0	\$0
Raises Building		m2	#N/A	\$0.00	\$0		\$0	\$0
Communication tower			#N/A	\$0.00	\$0		\$0	\$0
LANDFILL FOR DEMOLITION WASTE								
Place rock cover		m3	#N/A	\$0.00	\$0		\$0	\$0
Place soil cover Base, sides and cover of closure landfill		m3 ha	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
GRADE AND CONTOUR PADS		na	#IVA	\$0.00	\$0		30	\$0
Accompdation Complex		ha	#N/A	\$0.00	\$0		\$0	\$0
Exploration Camp		ha	#N/A	\$0.00	\$0		\$0	\$0
Process Facilities		ha	#N/A	\$0.00	\$0		\$0	\$0
Offices, Repair, Lab, Warehouse		ha	#N/A	\$0.00	\$0		\$0	\$0
Storage Facilities	Laydown areas and material storage area	m3	66800 AEM	\$8.47	\$565 796	50%	\$282 898	\$282 898
Water and Wastewater Treatment Facilities		ha	#N/A	\$0.00	\$0		\$0	\$0
U/G Heating Plant		ha	#N/A #N/A	\$0.00 \$0.00	\$0		\$0	\$0
Emulsion Plant Main Building process plant		ha ha	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Place rock cover		na ha	#N/A	\$0.00	\$0		\$0	\$0 \$0
Venetate		ha	#N/A	\$0.00	\$0		\$0	\$0
Itivia Harbour - Saline Water Tank		m3	23.4 AEM	\$8.47	\$198	50%	\$99	\$99
Guard House		ha	#N/A	\$0.00	\$0		\$0	\$0
Fuel tanks on-site		ha	#N/A	\$0.00	\$0		\$0	\$0
Fuel Tanks Itivia	Tank farm		16350.00 AEM	\$8.47	\$138 485	50%	\$69 242	\$69 242
Laydown area - Itivia Diffuser	Waterline Diffuser	ha	1 SCFYL	\$4 300.00	\$4 300	50%	\$2 150	\$2 150
Paste Plant		ha	#N/A #N/A	\$0.00	\$0		\$0	\$0
Power Plant Assay Lab		ha ha	#N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Assay Lab Maintenance Shop		na ha	#N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Mine Surface General		na ha	#N/A	\$0.00	\$0		\$0	\$0 \$0
PUNCTURE LINED SUMPS		- id	****	QU.00	90		90	30
Puncture liner and place soil cover RECLAIM QUARRIES		m3	#N/A	\$0.00	\$0		\$0	\$0
Drill and blast slopes to 1:1 RECLAIM ROADS	18 quarries and borrow pits along AWAR, including 3 from site	m3	14319 RB3H	\$17.80	\$254 878	50%	\$127 439	\$127 439
Remove culverts	8 x AWAR, 19 x Bypass	each	27 MBK	\$4 000.00	\$108 000	50%	\$54 000	\$54 000
Remove bridges	Meliadine river bridge and M5 bridge	each	2 MBK	\$25 000.00	\$50 000	50%	\$25 000	\$25 000
Scarify and install water breaks	23.8 km AWAR, 6.2 km Bypass, 6.5m width	ha	19.5 SCFYL	\$4 300.00	\$83 850	50%	\$41 925	\$41 925
Scarify airstriip		ha	#N/A	\$0.00	\$0		\$0	\$0
Scarify laydown areas		ha	#N/A	\$0.00	\$0		\$0	\$0
Vegetate		ha	#N/A	\$0.00	\$0		\$0	\$0
Burried pipeline removal along AWAR Other	Based on CIRNAC 2020 estimation for pipeline excavation and rem	oval each	1 CIRNAC	\$97 601.00 \$0.00	\$97 601 \$0	50%	\$48 801 \$0	\$48 801
			#N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Dispose of misc. debris and laydown area refuse				Total	\$1 703 339		\$851 669	\$851 669

2	Building / Equip Name:	Discovery		Blo	ig / Equip #:	1			
				Cost					
_	ACTIVITY/MATERIAL	Notes	Units	Quantity Code	Unit Cost	Cost 5	% Land	Land Cost 1	Water Cost
	DISPOSE MOBILE EQUIPMENT (surfa)								
	Dispose and ship off-site		allow	#N/A	\$0.00	\$0		\$0	\$0
	Dispose on-site		allow	#N/A	\$0.00	\$0		\$0	\$0
	Decontaminate on-site		manhours	#N/A	\$0.00	\$0		\$0	\$0
	REMOVE BUILDINGS - see note below								
	Facilities area	energency shelter + lunch room + dry + office + maintenance shop	m2	1584 BRS1H	\$65.00	\$102 973	50%	\$51 487	\$51 487
	Maintenance Shop - Dome	dome removal lump sum	m2	1 SNC	\$5 000.00	\$5 000	50%	\$2 500	\$2 500
	Explosive magazine		m2	26 BRS1h	\$65.00	\$1 690	50%	\$845	\$845
	Communication Tower	including surface comm equipment - assumed same dimension of Meliadine 2020 (12,17 m² x 61m high)	m2	248 BRS1h	\$65.00	\$16 088	50%	\$8 044	\$8 044
	Water treatment plant		m2	1 MEL20	\$80 000.00	\$80 000	50%	\$40 000	\$40 000
	Power plant	includes electrical sub-station	m2	172 BRS1h	\$65.00	\$11 180	50%	\$5 590	\$5 590
	Service building	includes cement batch plant + compressors + brine mixing plant	m2	697 BRS1h	\$65.00	\$45 331	50%	\$22 666	\$22 666
	Service building - dome	dome removal lump sum	m2	1 SNC	\$5 000.00	\$5 000	50%	\$2 500	\$2 500
	fuel farm	dimensions identical to Meliadine 2020	m2	3768 BRS1h	\$65.00	\$244 907	50%	\$122 454	\$122 454
	LANDFILL and landfarm								
	Place rock cover landfill (Discovery)	Landfill 7750 m2 covered with 3.7 m WR	m3	28675 RR3L	\$7.00	\$200 725	50%	\$100 363	\$100 363
	Place rock cover landfarm	Assumed same footpring as Wesmeg Lanfarm	m3	29612 RR3L	\$7.00	\$207 284	50%	\$103 642	\$103 642
	Base, sides and cover of closure landfill		m3	#N/A	\$0.00	\$0		\$0	\$0
	GRADE AND CONTOUR PADS								
	Facilities area		m²	15000 AEM	\$8.47	\$127 050	50%	\$63 525	\$63 525
	Explosives magazine		m²	400 AEM	\$8.47	\$3 388	50%	\$1 694	\$1 694
	Industrial pad		m²	17500 AEM	\$8.47	\$148 225	50%	\$74 113	\$74 113
	Communication tower		m²	476 AEM	\$8.47	\$4 032	50%	\$2 016	\$2 016
	Water treatment plant		m²	1155 AEM	\$8.47	\$9 783	50%	\$4 891	\$4 891
	Containers storage pad		m²	3300 AEM	\$8.47	\$27 951	50%	\$13 976	\$13 976
	Cement batch plant pad		m²	400 AEM	\$8.47	\$3 388	50%	\$1 694	\$1 694
	Permanent ventilation pad		m²	3036 AEM	\$8.47	\$25 715	50%	\$12 857	\$12 857
	Fuel farm		m²	1200 AEM	\$8.47	\$10 164	50%	\$5 082	\$5 082
	Laydown area	Laydown area (Discovery) (A =16 240 m2)	m3	16240.00 AEM	\$8.47	\$137 553	50%	\$68 776	\$68 776
	Ore Pad	Ore pad 6 (Discovery area) (A=13 750m2)	m3	13750.00 AEM	\$8.47	\$116 463	50%	\$58 231	\$58 231
	PUNCTURE LINED SUMPS								
	Puncture liner and place soil cover		m3	#N/A	\$0.00	\$0		\$0	\$0
	Fuel farm		m²	1200 AEM	\$8.47	\$10 164	50%	\$5 082	\$5 082
	Fuel farm		m²	1200 AEM	\$8.47	\$10 164	50%	\$5 082	\$5 082
	RECLAIM ROADS								
	Remove culverts	4 culverts as per Site Layout	each	4 MEL20	\$4 000.00	\$16 000	50%	\$8 000	\$8 000
	Remove bridges		each	#N/A	\$0.00	\$0		SO	\$0
	Scarifiv remaining road	10m width x 1.493km long	ha	1.493 SCFYL	\$4 300.00	\$6 420	50%	\$3 210	\$3 210
	Scarify road to explosive magazine	8,5m width x 75m long	ha	0.06375 SCFYL	\$4 300.00	\$274	50%	\$137	\$137
	Scarify road to water take	10m width x 504m long	ha	0.504 SCFYL	\$4 300.00	\$2 167	50%	\$1 084	\$1 084
		Based on CIRNAC 2020 estimation for pipeline excavation and removal	km	21 CIRNAC		\$48 801	50%	\$24 400	\$24 400
	Vegetate	- 2000 St. St. St. St. St. St. St. St. St. St.	ha	#N/A	\$0.00	\$0	5076	\$24 400	\$24 400
	SPECIALIZED ITEMS		184	mer	\$0.00	40		•	40
	Reclaim guarries	Drill and blast slopes to 1:1. 1 quarry	m3	1000 RB3H	\$17.80	\$17 800	50%	\$8 900	\$8 900
		and and analysis in 1111 1 dount	1110	INDUIT	Total	\$1 645 678	3070	\$822 839	\$822.839
					% of Total	ψ. 0-0 0/6		50%	50%

Note: Unit costs are based on 3m high, single storey building. Scale larger building areas accordingly. E.g. ( H m /3) \* Foot print m2

Chemicals/Soil Area Name: Meliadine \$42.787

Note: The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity Cost Code	Unit Cost		% Land	Land Cost	Water Cost
HAZARDOUS MATERIALS AUDIT			<u> </u>					
Hazardous materials audit		mandays	#N/A	\$0.00	\$0		\$0	\$0
Approved Project audit	For Meliadine and Discovery	each	1 MBK	\$7 500.00	\$7 500	50%	\$3 750	\$3 750
Meliadine Extension audit	For Meliadine and Discovery	each	1 MBK	\$50 000.00	\$50 000	50%	\$25 000	\$25 000
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERI	•							
Environmental technician/coordinator		mandays	#N/A	\$0.00	\$0		\$0	\$0
Decontaminate: oil, fuel and glycol systems		mandays	#N/A	\$0.00	\$0		\$0	\$(
Decontaminate maintenance shop	ICRP 2020	h	140 journeyh	\$71.79	\$10 051	50%	\$5 025	\$5 025
Decontaminate maintenance shop	ICRP 2020	 h	140 journeyh	\$71.79	\$10 051	50%	\$5 025	\$5 02
Decontaminate bulk fuel storage	ICRP 2020	 h	140 journeyh	\$71.79	\$10 051	50%	\$5 025	\$5 02
Decontaminate bulk fuel storage  Decontaminate emulsion plant	ICRP 2020	h	36 journeyh	\$71.79	\$2 584	50%	\$1 292	\$1 29
Decontaminate emission plant Decontaminate garage area	ICRP 2020	h	140 journeyh	\$71.79	\$10 051	50%	\$5 025	\$5 02
5 5	ICRP 2020		, ,			50%	\$5 U25 \$0	
Decontaminate offices/warehouse/accom		mandays	#N/A	\$0.00	\$0			\$
Removal of asbestos siding on buildings		m2	#N/A	\$0.00	\$0		\$0	\$
Removal of friable asbestos on equipment		m2	#N/A	\$0.00	\$0		\$0	\$
HAZARDOUS MATERIALS REMOVAL								
Vaste oils	ICRP 2020 - 5% of 800k liters (max storage of Phase 1)	litre	40000 ORL	\$0.43	\$17 200	50%	\$8 600	\$8 600
Vaste fuel	ICRP 2020 - 0,5% of 47,182,200 million liters (bullk fuel storage at Meliadine and Itivia) and 350,000L (Wolf)	litre	237661 ORL	\$0.43	\$102 194	50%	\$51 097	\$51 09
Vaste batteries	ICRP 2020 - Lump sum	each	1 MBK	\$3 000.00	\$3 000	50%	\$1 500	\$1 50
Mill and water treatment reagents	ICRP 2020 - 5% of 6798 tons	kg	339900 PCRH	\$2.50	\$849 750	50%	\$424 875	\$424 87
Assay & environmental lab reagents	ICRP 2020 - Hazard. Mat. Mgmt Plan 2018	kg	10000 pcrh	\$2.50	\$25 000	50%	\$12 500	\$12 50
Machine shop paints, solvents etc	ICRP 2020 - Data from AEM	litre	7500 EXPLO	\$1.50	\$11 250	50%	\$5 625	\$5 62
Glycol	ICRP 2020 - Reported gty on site	kg	60000 PCRH	\$2.50	\$150 000	50%	\$75 000	\$75 00
Process reagents		kg	#N/A	\$0.00	\$0		\$0	\$0
Nuclear sources		allow	#N/A	\$0.00	\$0		\$0	\$c
Other hazardous materials		allow	#N/A	\$0.00	\$0		\$0	\$0
HAZARDOUS MATERIALS				*****	**			T.
Transportation to disposal facility		allow	#N/A	\$0.00	\$0		\$0	S
Disposal fees		allow	#N/A	\$0.00	\$0		\$0	\$(
Other		allow	#N/A	\$0.00	\$0		\$0	\$(
CONTAMINATED SOILS			#IN/A	Ψ0.00	Ψ0		Ψ0	اب
	West Constant and Constant Con		4 1451	#00 F00 00	800 500	500/	<b>040.050</b>	040.05
Contam. soil investigation - Phase 1	Water Licence Amendment + 30% for Meliadine Extension	each	1 MEL	\$32 500.00	\$32 500	50%	\$16 250	\$16 250
Contam. soil investigation - Meliadine Extension	Water Licence Amendment + 30% for Meliadine Extension	each	1 MEL	\$130 000.00	\$130 000	50%	\$65 000	\$65 000
CONTAMINATED SOIL REMOVAL								
Excavate, load, haul to biopile or: Excavate and transport to onsite facility	ICRP 2020 - estimation based on Landfarm Mgmt Plan 2019	m3	700 SC4L	\$9.30	\$6 510	50%	\$3 255	\$3 25
Remediate on-site at biopile or: Manage hydrocarbon remediation at facility	Landfarm North OP2	m3	5000 CSRL	\$47.00	\$235 000	50%	\$117 500	\$117 50
Remediate on-site at biopile or: Manage hydrocarbon remediation at facility	Landfarm South OP2	m3	5000 CSRL	\$47.00	\$235 000	50%	\$117 500	\$117 50
Remediate on-site at biopile or: Manage hydrocarbon remediation at facility	Landfarm East B7	m3	5000 CSRL	\$47.00	\$235 000	50%	\$117 500	\$117 50
Excavate and transport to offsite facility	Landfarm North OP2 - 5% of total contaminated soil	m3	250 ICRP 2020	\$1 000.00	\$250 000	50%	\$125 000	\$125 000
Excavate and transport to offsite facility	Landfarm South OP2 - 5% of total contaminated soil	m3	250 ICRP 2020	\$1 000.00	\$250 000	50%	\$125 000	\$125 000
Excavate and transport to offsite facility	Landfarm East B7 - 5% of total contaminated soil	m3	250 ICRP 2020	\$1 000.00	\$250 000	50%	\$125 000	\$125 000
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER								
Supply geomembrame, HDPE, ES3, GCL		m2	#N/A	\$0.00	\$0		\$0	\$0
Jpper and lower bedding layers		m3	#N/A	\$0.00	\$0		\$0	\$
nstall geomembrane, HDPE, ES3, GCL Erosion protection layer		m2 m3	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$ \$
erosion protection layer Vegetate		m2	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$
nstall infiltration/seepage instrumentation		allow	#N/A	\$0.00	\$0		\$0	S
Other			#N/A	\$0.00	\$0		\$0	\$
OTHER								
o men								
			#N/A	\$0.00 Total	\$0 \$2 882 691		\$0 \$1 441 346	\$1 441 346

Chemicals/Soil Area Name: Discovery 42787.84

**Note:** The procedures, equipment and packaging for clean up and removal of chemicals or contaminated soils are highly dependent on the nature of the chemicals and their existing state of containment. Government guidelines should be consulted on an individual chemical basis. Any estimate made here should be considered very rough unless specific evaluations have been conducted.

ACTIVITY/MATERIAL	Notes	Units	Quantity Cost Code	Unit Cost		% Land Land	d Cost	Water Cost
HAZARDOUS MATERIALS AUDIT		00	quantity cool couc	0 000x	0000	Luna Lun		Trutor Goot
Hazardous materials audit		mandays	#N/A	\$0.00	\$0		\$0	\$0
Phase 1 audit		each	#N/A	\$7 500.00	\$0		\$0	\$0
Meliadine Extension audit		each	#N/A	\$50 000.00	\$0		\$0	\$0
BUILDING DECONTAMINATION & CONSOLIDATION OF HAZARDOUS MATERIALS		Cacii	mi V/A	ψ30 000.00	ΨΟ		ΨΟ	ΨΟ
Environmental technician/coordinator		mandays	#N/A	\$0.00	\$0		\$0	\$0
Decontaminate: oil, fuel and glycol systems		mandays	#N/A	\$0.00	\$0		\$0	\$0
Decontaminate maintenance shop	50% of time required at Meliadine	hour	70 journeyh	\$71.79	\$5 025	50%	\$2 513	\$2 513
Decontaminate maintenance shop  Decontaminate power plant	50% of time required at Meliadine	hour	70 journeyh	\$71.79	\$5 025		\$2 513	\$2 513
Decontaminate bulk fuel storage	50% of time required at Meliadine	hour	70 journeyh	\$71.79	\$5 025		\$2 513	\$2 513
Decontaminate bulk ruler storage  Decontaminate explosive magazine	50% of time required at Meliadine	hour	18 journeyh	\$71.79	\$1 292	50%	\$646	\$646
Decontaminate explosive magazine  Decontaminate garage in P-area Laydown	30 % of time required at intelladine	h	journeyh	\$71.79	\$0	30 /6	\$0	\$0
Decontaminate garage in r-area Laydown  Decontaminate offices/warehouse/accom			#N/A	\$0.00	\$0		\$0	\$0
		mandays	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Removal of asbestos siding on buildings Removal of friable asbestos on equipment		m2 m2	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
HAZARDOUS MATERIALS REMOVAL		mz	#IN/A	\$0.00	\$0		\$0	\$0
Waste oils	40 50/ -4 M-1:1: /40 50/ * 40 000! }	litre	6600 ORL	<b>60.40</b>	60.000	F00/	\$1 419	64.440
	16.5% of Meliadine (16.5% * 40,000L)			\$0.43	\$2 838		\$376	\$1 419 \$376
Waste fuel	0,5%*350,000L (bulk fuel storage capacity)	litre	1750 ORL	\$0.43	\$753	50%		
Waste batteries	16,5% of Meliadine	each	0.165 MBK	\$3 000.00	\$495	50%	\$248	\$248
Water treatment reagents	5% of annual consumption (420 085kg)	kg	21004.25 PCRH	\$2.50	\$52 511	50% \$	26 255	\$26 255
Assay & environmental lab reagents		kg	#N/A	\$0.00	\$0		\$0	\$0
Machine shop paints, solvents etc	16.5% of Meliadine	litre	1237.5 EXPLO	\$1.50	\$1 856	50%	\$928	\$928
Glycol	16.5% of Meliadine	kg	9900 PCRH	\$2.50	\$24 750	50% \$	12 375	\$12 375
Process reagents		kg	#N/A	\$0.00	\$0		\$0	\$0
Nuclear sources		allow	#N/A	\$0.00	\$0		\$0	\$0
Other hazardous materials		allow	#N/A	\$0.00	\$0		\$0	\$0
HAZARDOUS MATERIALS								
Transportation to disposal facility		allow	#N/A	\$0.00	\$0		\$0	\$0
Disposal fees		allow	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
CONTAMINATED SOILS								
Contam. soil investigation - Phase 1	25% of Meliadine Phase 1 (25% of 25,000\$)	each	1 MEL20	\$6 250.00	\$6 250		\$3 125	\$3 125
Contam. soil investigation - Meliadine Extension	25% of Meliadine Phase 1 (25% of 100,000\$)	each	1 MEL20	\$25 000.00	\$25 000	50% \$	12 500	\$12 500
CONTAMINATED SOIL REMOVAL								
Excavate, load, haul to biopile or: Excavate and transport to onsite facility	25 % of Meliadine for one landfarm	m3	175 SC4L	\$9.30	\$1 628	50%	\$814	\$814
Remediate on-site at biopile or: Manage hydrocarbon remediation at facility	25 % of Meliadine for one landfarm	m3	1250 CSRL	\$47.00	\$58 750	50% \$	29 375	\$29 375
Remediate on-site at biopile or: Manage hydrocarbon remediation at facility (new landfarm area)		m3	CSRL	\$47.00	\$0		\$0	\$0
Reagents/stabilizing agent		m2	#N/A	\$0.00	\$0		\$0	\$0
Excavate and transport to offsite facility	25 % of Meliadine for one landfarm	m3	62.5 MEL20	\$1 000.00	\$62 500	50% \$	31 250	\$31 250
Excavate and transport to offsite facility (new landfarm area)		m3	#N/A	\$1 000.00	\$0		\$0	\$0
Contour decontaminated area		m3	#N/A	\$0.00	\$0		\$0	\$0
CONTAMINATED SOIL VERY LOW PERMEABILITY COVER								
Supply geomembrame, HDPE, ES3, GCL		m2	#N/A	\$0.00	\$0		\$0	\$0
Upper and lower bedding layers		m3	#N/A #N/A	\$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Install geomembrane, HDPE, ES3, GCL Erosion protection layer		m2 m3	#N/A #N/A	\$0.00 \$0.00	\$0 \$0		\$0 \$0	\$0 \$0
Vegetate		m2	#N/A #N/A	\$0.00	\$0 \$0		\$0	\$0 \$0
Install infiltration/seepage instrumentation		allow	#N/A	\$0.00	\$0		\$0	\$0
Other			#N/A	\$0.00	\$0		\$0	\$0
OTHER								
			#N/A	\$0.00	\$0		\$0	\$0
				Total	\$253 698	\$1	126 849	\$126 849

				Cost		
ACTIVITY/MATERIAL	Notes	Units	Quantity	Code	Unit Cost	Cost
BREACH DIKE EMBANKMENT	DIKES					
Excavate breaches	D-CP1 - Phase 1	m3	705.6 \$		\$5.90	\$4 163
Excavate breaches	D-CP6 - Phase 1	m3	705.6 \$		\$5.90	\$4 163
Excavate breaches	D-SP6 North (TRI-WES-NOR area)	m3	1520 \$		\$5.90	\$8 968
Excavate breaches	D-SP6 West (TRI-WES-NOR area)	m3	1520 5	B1H	\$5.90	\$8 968
Excavate breaches	D-A6 (F Zone area)	m3	1200 5	B1H	\$5.90	\$7 080
Excavate breaches	D-A8 North (Wesmeg area)	m3	820 8	B1H	\$5.90	\$4 838
Excavate breaches	D-A8 South (Wesmeg area)	m3	820 8	B1H	\$5.90	\$4 838
Excavate breaches	D-CP8 North (Westmeg North area)	m3	1200 \$	B1H	\$5.90	\$7 080
Excavate breaches	D-CP8 South (Westmeg North area)	m3	1200 \$	B1H	\$5.90	\$7 080
Excavate breaches	D-CP8 West (Westmeg North area)	m3	1200 \$	B1H	\$5.90	\$7 080
Excavate breaches	D-CP8 East (Westmeg North area)	m3	1200 \$	B1H	\$5.90	\$7 080
Excavate breaches	D-B5 North (Westmeg North area)	m3	816 9	SB1H	\$5.90	\$4 814
Excavate breaches	D-B5 South (Westmeg North area)	m3	1020 \$	SB1H	\$5.90	\$6 018
Backfill pond		m3		#N/A	\$0.00	\$0
Contour water intake area		m3		#N/A	\$0.00	\$0
STABILIZE SEDIMENT PONDS/WATER MANAGEMENT PONDS						
Place soil cover		m3		#N/A	\$0.00	\$0
Remove pump		m3		#N/A	\$0.00	\$0
Backfill SPD11	Discovery	m3	87760 \$	B3L	\$5.10	\$447 576
Backfill CPD1	Dscovery	m3	25250 \$	B3L	\$5.10	\$128 775
Backfill SUMP	SUMP P1 (A=2350M2)	m3	36971 8	B3L	\$5.10	\$188 552
Backfill SUMP	SUMP P2 (A=3960m2)	m3	31490 \$	B3L	\$5.10	\$160 599
Backfill SUMP	SUMP P3 (A=2330m2)	m3	9614 9	SB3L	\$5.10	\$49 031
Backfill SUMP	SUMP P4 (A=11 120m2)	m3	136600 \$	B3L	\$5.10	\$696 660
Backfill SUMP	SUMP P5	m3	97800 \$	SB3L	\$5.10	\$498 780
Backfill SUMP	SUMP F1 (A=12 030m2)	m3	47379 \$	B3L	\$5.10	\$241 633
Backfill SUMP	SUMP F2 (A=3010m2)	m3	92550 \$	SB3L	\$5.10	\$472 005
Backfill SUMP	SUMP W (Tiriganiaq-Wolf area) (A=6770m2)	m3	293386 5	B3L	\$5.10	\$1 496 269
Doze & spread excavated material		m3		#N/A	\$0.00	\$0
Vegetate spread material		ha		#N/A	\$0.00	\$0
Rip rap in channel base		each		#N/A	\$0.00	\$0
Saline Ponds		m3		#N/A	\$0.00	\$0
P-area				#N/A	\$0.00	\$0
REDIRECT RUNOFF/CONSTRUCT DIVERSION DITCHES						

				Cost		
ACTIVITY/MATERIAL	Notes	Units	Quantity	Code	Unit Cost	Cost
Excavate ditches -soil		m3		#N/A	\$0.00	\$0
Excavate ditches -rock		m3		#N/A	\$0.00	\$0
Stabilize side slopes		m3		#N/A	\$0.00	\$0
Rip rap in channel base		m3		#N/A	\$0.00	\$0
BREACH DITCHES	BERMS					
Excavate Diversion Berms		m3		#N/A	\$0.00	\$0
Removal berms of containment pond		m3		#N/A	\$0.00	\$0
Removal berms of containment pond	CP2 Thermal Berm (TIRI-WES-NOR area)	m3	25900	SB1L	\$4.30	\$111 370
Removal berms of containment pond	Berm-CP7 (F Zone area)	m3	91364	SB1L	\$4.30	\$392 865
Removal berms of containment pond	BERM-D1 (Discovery)	m3	6139	SB1L	\$4.30	\$26 398
Removal berms of containment pond	BERM-D2 (Discovery)	m3	1720	SB1L	\$4.30	\$7 396
Removal berms of containment pond	Berm-CPD2	m3	21400	SB1L	\$4.30	\$92 020
Removal berms of containment pond	Berm-SP5 (Tiriganiaq-Wolf area)	m3	215240	SB1L	\$4.30	\$925 532
Removal berms of containment pond	Berm-P5 (Pump area)	m3	29388	SB1L	\$4.30	\$126 368
Removal berms of containment pond	Berm-F2 (F-Zone)	m3	35785	SB1L	\$4.30	\$153 876
Backfill & contour channels	Channel 9 (TRI-WES-NOR area)	m3	5960	SB3L	\$5.10	\$30 396
Backfill & contour channels	Channel 10 (TRI-WES-NOR area)	m3	5240	SB3L	\$5.10	\$26 724
Backfill & contour channels	Channel 11 (Pump area)	m3	1750	SB3L	\$5.10	\$8 925
Backfill & contour channels	Channel 12 (Pump area)	m3	1744	SB3L	\$5.10	\$8 894
Backfill & contour channels	Channel 13 (Pump area)	m3	383	SB3L	\$5.10	\$1 953
Backfill & contour channels	Channel P4 (Pump area)	m3	0	SB3L	\$5.10	\$0
Backfill & contour channels	Channel P5 (Pump area)	m3	0	SB3L	\$5.10	\$0
Backfill & contour channels	Channel P6 (Pump area)	m3	0	SB3L	\$5.10	\$0
Backfill & contour channels	Channel P7 (Pump area)	m3	0	SB3L	\$5.10	\$0
Backfill & contour channels	Channel 14 (F Zone area)	m3	1710	SB3L	\$5.10	\$8 721
Backfill & contour channels	Channel 15 (F Zone area)	m3	1726	SB3L	\$5.10	\$8 803
Backfill & contour channels	Channel 16 (F Zone area)	m3	721	SB3L	\$5.10	\$3 677
Backfill & contour channels	Channel 17 (Discovery)	m3	1790	SB3L	\$5.10	\$9 129
Backfill & contour channels	Channel 18 (Discovery)	m3	430	SB3L	\$5.10	\$2 193
Backfill & contour channels	Channel 19 (Discovery)	m3	5408	SB3L	\$5.10	\$27 581
Backfill & contour channels	Channel 20 (Discovery)	m3	3010	SB3L	\$5.10	\$15 351
Backfill & contour channels	Channel 21 (Discovery)	m3	5840	SB3L	\$5.10	\$29 784
Backfill & contour channels	Channel 22 (TRI-WES-NOR area)	m3	4450	SB3L	\$5.10	\$22 695
Install flow dissipation		m3		#N/A	\$0.00	\$0

			Cost		
ACTIVITY/MATERIAL	Notes	Units	Quantity Code	Unit Cost	Cost
Vegetate remainder of ditch		m2	#N/A	\$0.00	\$0
DECOMISSION FRESH WATER SUPPLY					
Breach embankment		m	#N/A	\$0.00	\$0
Remove pump	Infras CP1-CP2-CP5-CP6-CP7-CPD1	each	6 SNC	\$80 000.00	\$480 000
Remove pipeline - Diffuser Meliadine Lake		m	390 PLRL	\$22.00	\$8 580
Effluent diffuser Meliadine Lake		each	1 MBK	\$3 000.00	\$3 000
Freshwater intake	remove pump	each	1 MBK	\$3 000.00	\$3 000
Remove pipeline - Saline effluent		m	778 PLRL	\$22.00	\$17 116
Saline water effluent (Itivia)		each	1 MBK	\$3 000.00	\$3 000
Remove pump fresh water intake	twin pumps 200 GPM each (Discovery)	m2	150 BRS1L	\$45.00	\$6 750
Remove pump sea water discharge	twin pumps 300 GPM each (Discovery)	LS	1 SNC	\$50 000.00	\$50 000
Remove pump SPD1 to WTP	twin pumps 300 GPM each (Discovery)	LS	1 SNC	\$1 000.00	\$1 000
Remove pump CPD1 to SPD1	twin pumps 350 GPM each (Discovery)	LS	1 SNC	\$1 000.00	\$1 000
WATER CONTROL IN RECLAMATION QUARRY					
Install pumping system		LS	#N/A	\$0.00	\$0
Remove pumping system		LS	#N/A	\$0.00	\$0
REMOVE PIPELINES					
Remove piping on site	0 to 6-in	m	2400 PSRL	\$1.00	\$2 400
Remove piping on site	6-in and above	m	66500 PLRL	\$22.00	\$1 463 000
Remove piping on site			#N/A	\$0.00	\$0
Concrete plug deep pipes		m3	#N/A	\$0.00	\$0
Remove saline pipeline (Waterlines)	(34 km+7km) *2	m	82000 PLRL	\$22.00	\$1 804 000
Remove fresh water intake line	2,250 m length - twin 6" diameter line (Discovery)	m	2250 PLRL	\$22.00	\$49 500
Remove transfer line CPD1 to SPD1	990 m length +20%, 10" diameter line (Discovery)	m	1188 PLRL	\$22.00	\$26 136
Remove transfer line CPD2 to SPD1	2440 m lengh+20%, 4" diameter line (Discovery)	m	2928 PSRL	\$1.00	\$2 928
Remove transfer line CPD2 to SP6	21 km +20% length, 10" diameter (Discovery	m	25200 PLRL	\$22.00	\$554 400
DIFFUSER					
New diffuser	25 M	each	1 MBK	\$6 000.00	\$6 000
Diffuser pipe	Outfall pipe	m	75 PLRH	\$72.00	\$5 400
SP6 FLOODING					
Maintain pump/piping	2 skilled laborers x 12hrs days, 4 month/yr m	nanhours	2880 MBK	\$49.60	\$142 848
Annual Pump Servicing	2x Manufacturer Consultants x 12 hours day x 7 da	\$/h	168 MBK	\$120.00	\$20 160
Pump Servicing Travel Allowance	Round Trip Fligth/person	visits	2 MBK	\$4 000.00	\$8 000

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
Accommodations	120 days x 2 skilled labourers + 7 days x 2 Consul			ACCML	\$100.00	\$25 400
Water from Meliadine Lake to SP6	612,000 m3 over 117 days approx	m3	612 000	MBK	\$0.03	\$16 218
Water from SP6 to UG	80,000 m3 at 6000 m3/day (approx 13 days)	m3	80 000	MBK	\$0.03	\$2 120
GROUNDWATER COLLECTION SYSTEM						
Excavate/install sumps		m3		#N/A	\$0.00	\$0
Install pumping wells		m3		#N/A	\$0.00	\$0
Install pumps/pipelines/power supply		LS		#N/A	\$0.00	\$0
CONSTRUCT CONTAMINATED WATER STORAGE POND						
Excavate pond		m3		#N/A	\$0.00	\$0
Doze & spread excavated material		m3		#N/A	\$0.00	\$0
Vegetate spread material		ha		#N/A	\$0.00	\$0
Bedding layer		m3		#N/A	\$0.00	\$0
Supply geomembrane		m2		#N/A	\$0.00	\$0
Install geomembrane		m2		#N/A	\$0.00	\$0
Erosion protection layer		m3		#N/A	\$0.00	\$0
CONSTRUCT PASSIVE TREATMENT SYSTEM (e.g. Constructed	Wetland)					
Construct access roads		km		#N/A	\$0.00	\$0
Install HDPE piping system from collection pond		m		#N/A	\$0.00	\$0
Inter-cell flow structures		allow		#N/A	\$0.00	\$0
Install liners		m2		#N/A	\$0.00	\$0
Install growth media		m3		#N/A	\$0.00	\$0
Wetland vegetation		ha		#N/A	\$0.00	\$0
CONSTRUCT WATER TREATMENT PLANT						
Build treatment plant		LS		#N/A	\$0.00	\$0
Build sludge containment facility		LS		#N/A	\$0.00	\$0
SHORT TERM WATER TREATMENT*						40
Annual water treatment cost, from "Water Treatment"					Total	\$0 \$11 204 657

<sup>\*</sup>Note: include water treatment cost from "Water Treatment" worksheet if treatment is considered short term and is not included in a particular component worksheet.

### 1 Long-Term / Post-Closure Water Treatment

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
ADDITION OF REAGENTS						
H2O2		kg		#N/A	\$0.00	\$0
lime		kg		#N/A	\$0.00	\$0
ferric sulphate		kg		#N/A	\$0.00	\$0
ferrous sulphate		kg		#N/A	\$0.00	\$0
flocculents		kg		#N/A	\$0.00	\$0
Other				#N/A	\$0.00	\$0
LABOUR AND SUPPLIES						
Annual fuel		litres		#N/A	\$0.00	\$0
Annual power		kW-h		#N/A	\$0.00	\$0
Electrician/mechanic to maintain treatment plant		allow		#N/A	\$0.00	\$0
Equipment maintenance and parts		allow		#N/A	\$0.00	\$0
Misc. supplies, hoses, tools		allow		#N/A	\$0.00	\$0
Communications		allow		#N/A	\$0.00	\$0
Other				#N/A	\$0.00	\$0
WATER MANAGEMENT						
Water Treatment (reagents, equip.)	CP1 volume at max water elev (normal condition)	m3	742075	AEM	\$0.75	\$556 556
Skilled laborers	1 labor x 12hr/day x 6 months/yr	manhours	2160	OPER-W1	\$41.00	\$88 560
Annual Treatment Plant Servicing	2 consultants x 7days/year	manhours	168 I	MBK	\$120.00	\$20 160
Treatment Plant Servicing Travel Allowance	Round trip flight/person	visits	2 1	MBK	\$4 000.00	\$8 000
Camps Accomodations	30 days x 6 months + 7 days x 2 consultants	days	194 /	ACCML	\$100.00	\$19 400
WATER SAMPLING AND ANALYSES						
Sampling equipment		allow		#N/A	\$0.00	\$0
Analyses		allow		#N/A	\$0.00	\$0
Shipping to laboratory		allow		#N/A	\$0.00	\$0
Reporting		allow		#N/A	\$0.00	\$0
Other				#N/A	\$0.00	\$0
SITE ACCESS						
Road maintenance (incl. snow removal)		allow		#N/A	\$0.00	\$0
Winter road tariff		allow		#N/A	\$0.00	\$0
Truck rental		allow		#N/A	\$0.00	\$0

### 1 Long-Term / Post-Closure Water Treatment

ACTIVITY/MATERIAL	Notes	Units	Quantity	Cost Code	Unit Cost	Cost
Air support		allow		#N/A	\$0.00	\$0
			Annual	water tre	atment costs	\$692 676
Number of years of water treatment		years	3		Total	\$2 078 029

Note: Short term water treatment is intended to be included in "Water Management", whereas long term, or post-closure, water treatment is included in "Post-Closure Monitoring and Maintenance"

#### 1 Closure Monitoring & Maintenance:

			Cost		
ACTIVITY/MATERIAL	Notes	Units	Quantity Code	Unit Cost	Cost
MONITORING & INSPECTIONS Active Closure					
Annual geotechnical inspection -Meliadine	1 eng, trans, rep, 5 days \$150 h, accom	each	1 AEM	\$16 000.00	\$16 000
Annual geotechnical inspection Discovery	3 add. Days on Meliadine inspection + add. Reporting fees. Accomodation and transportation incl. in Meliadi	ne. each	1 AEM	\$7 000.00	\$7 000
Annual Surface water sampling - Meliadine	Estimated cost from AEM	each	1 AEM	\$42 997.00	\$42 997
Monitoring program (Meliadine and AWAR)	AEM sampling cost list of Phase 1 + 25% contigency	each	1 AEM	\$1 193 750.00	\$1 193 750
Receiving/downstream water sampling		each	#N/A	\$0.00	\$0
Annual surface water sampling - Discovery	Estimated cost from AEM (based on sampling cost).	each	1 AEM	\$8 801.00	\$8 801
Monitoring program - Discovery	Based on 25% of cost from MEL (955,000*0,25)	each	1 AEM	\$238 750.00	\$238 750
Underground water		each	#N/A	\$0.00	\$0
Regulatory costs*		each	#N/A	\$0.00	\$0
Site water monitoring (AEMP and SNP)		each	#N/A	\$0.00	\$0
- Active closure and flooding		each	#N/A	\$0.00	\$0
- Post pit flooding		each	#N/A	\$0.00	\$0
Air Quality Monitoring Program (AQMP)		each	#N/A	\$0.00	\$0
Wildlife Effects Monitoring Program (WEMP)		each	#N/A	\$0.00	\$0
Vegetation Monitoring		each	#N/A	\$0.00	\$0
Other			#N/A	\$0.00	\$0
COVER MAINTENANCE					
Repair erosion - infill gullies		allow	#N/A	\$0.00	\$0
Repair erosion - upgrade diversion ditches		allow	#N/A	\$0.00	\$0
Remove problem vegetation		allow	#N/A	\$0.00	\$0
Repair animal damage		allow	#N/A	\$0.00	\$0
Repair/upgrade access controls		allow	#N/A	\$0.00	\$0
Other			#N/A	\$0.00	\$0
SPILLWAY MAINTENANCE					
Repair erosion		m3	#N/A	\$0.00	\$0
Clear spillway		each	#N/A	\$0.00	\$0
CWTS MAINTENANCE					
Maintain flow, restore vegetation		allow	#N/A	\$0.00	\$0
MAINTENANCE AND SURVEILLANCE					
Site care-taker - Meliadine + Disco	bi-weekly visits, 2 care-takers, 12hr/day, 5 months per year	manhours	240 OPERH	\$65.00	\$15 600
Site vehicule and equipment - Meliadine + Disco		allow	1 AEM	\$20 000.00	\$20 000
Accomodation and site maintenance - Meliadine + Disco		mandays/ALLOWS	40 ACCMh	\$175.00	\$7 000
Subtotal, Annual post-closure costs					\$1 549 898
Discount rate for calculation of net present value of post-closure cost, %			0.00%		
Number of years of post-closure activity			7	years	
Present Value of payment stream					\$10 849 286

 $<sup>{}^{\</sup>star}\text{Regulatory costs}$  - annual reporting, management plans, progress reports etc.

Include water treatment cost from "Water Treatment" worksheet if treatment is considered long term, such as ARD/ML.

#### POST Closure Monitoring & Maintenance:

ACTIVITY/MATERIAL	Notes		Units Quantity Cost	Unit Cost	Cost
MONITORING & INSPECTIONS					
Annual geotechnical inspection Meliadine	1 eng, trans, rep, 5 days \$150 h, accom	each	1 AEM	\$16 000.00	\$16 000
Annual geotechnical inspection - Discovery	3 add. Days on Meliadine inspection + add. Reporting fees. Accomodation and transportation incl. in Meliadine.	each	1 AEM	\$7 000.00	\$7 000
Annual Surface water sampling	Estimated cost from AEM	each	1 WSH	\$42 927.00	\$42 927
Monitoring program (Meliadine and AWAR)	0.5 x Active closure cost	each	1 AEM	\$596 875.00	\$596 875
Annual surface water sampling Discovery	Estimated cost from AEM (based on sampling cost).	each	1 AEM	\$8 801.00	\$8 801
Monitoring program - Discovery	Based on 25% of cost from MEL (477500*0,25)	each	1 AEM	\$119 375.00	\$119 375
Survey inspection		each	#N/A	\$0.00	\$0
Regulatory costs*		each	#N/A	\$0.00	\$0
Site water monitoring (AEMP and SNP)		each	#N/A	\$0.00	\$0
- Active closure and flooding		each	#N/A	\$0.00	\$0
- Post pit flooding		each	#N/A	\$0.00	\$0
Air Quality Monitoring Program (AQMP)		each	#N/A	\$0.00	\$0
Wildlife Effects Monitoring Program (WEMP)		each	#N/A	\$0.00	\$0
Vegetation Monitoring		each	#N/A	\$0.00	\$0

#### 1 Closure Monitoring & Maintenance:

Total closure and post closure

			Cost		
ACTIVITY/MATERIAL	Notes	Units Qu	antity Code	Unit Cost	Cost
Other			#N/A	\$0.00	\$0
COVER MAINTENANCE					
Repair erosion - infill gullies		allow	#N/A	\$0.00	\$0
Repair erosion - upgrade diversion ditches		allow	#N/A	\$0.00	\$0
Remove problem vegetation		allow	#N/A	\$0.00	\$0
Repair animal damage		allow	#N/A	\$0.00	\$0
Repair/upgrade access controls		allow	#N/A	\$0.00	\$0
Other			#N/A	\$0.00	\$0
SPILLWAY MAINTENANCE					
Repair erosion		m3	#N/A	\$0.00	\$0
Clear spillway		each	#N/A	\$0.00	\$0
CWTS MAINTENANCE					
Maintain flow, restore vegetation		allow	#N/A	\$0.00	\$0
MAINTENANCE AND SURVEILLANCE					
Site care-taker - Meliadine + Disco	bi-weekly visits, 2 care-takers, 12hr/day, 5 months per year	manhours	240 OPERH	\$65.00	\$15 600
Site vehicule and equipment - Meliadine + Disco		allow	1 AEM	\$20 000.00	\$20 000
Accomodation and site maintenance - Meliadine + Disco		mandays/ALLOWS	40 ACCMh	\$175.00	\$7 000
Subtotal, Annual post-closure costs					\$833 578
Discount rate for calculation of net present value of post-closure cost, %			0.00%		
Number of years of post-closure activity			10	years	
Present Value of payment stream					\$8 335 780

\*Regulatory costs - annual reporting, management plans, progress reports etc.

Include water treatment cost from "Water Treatment" worksheet if treatment is considered long term, such as ARD/ML.

10 years

\$19 185 066

### 1 Interim Care and Maintenance

ACTIVITY/MATERIAL	Notes Units	Cos Quantity Code		Cost
INTERIM CARE & MAINTENANCE	Notes Units	Quantity Cou	e Offic Cost	Cost
on-site caretaker	manmonths	#N/A	0	\$0
extra personnel	manmonths	#N/A		\$0
-electrician	manmonths	#N/A		\$0
-mechanic	manmonths	#N/ <i>F</i>		\$0
annual fuel	litre	#N/A	0	\$0
misc. supplies	allow	#N/A	0	\$0
pick-up truck	each	#N/A	0	\$0
small dozer	allow	#N/A	0	\$0
small excavator	allow	#N/A	0	\$0
snow machine	allow	#N/A	0	\$0
communications	allow	#N/A	0	\$0
SNP/AEMP water sampling & reporting	each	#N/A	0	\$0
geotechnical assessment	each	#N/A	0	\$0
interim water treatment		#N/A	Ą	\$692 676
Maintenance, surveillance, monitoring and inspection-Active closure	each	1 AEM		\$1 072 197
		Annua	Interim C&M Cost	\$1 072 197
Number of years of ICM	years	7	Total	9 583 408 \$

### 1 Mobilization/Demobilization:

MOBILIZE HEAVY EQUIPMENT  Excavators  Barge to/from Rankin Inlet  1 for seacans, 1 for mobile equip, 1 for demolition	each each	#N/A		
		44 N 1 / A		
Barge to/from Rankin Inlet 1 for seacans, 1 for mobile equip, 1 for demolition	each	#IN/A	0	\$0
•		3 AEM	1000000	\$3 000 000
Dump trucks	each	#N/A	0	\$0
Dozers	each	#N/A	0	\$0
Demolition shears One for both MEL and Disco	each	1 #N/A	1000000	\$1 000 000
Crane	each	#N/A	0	\$0
Loader	each	#N/A	0	\$0
Compactor	each	#N/A	0	\$0
Light duty vehicles	each	#N/A	0	\$0
MOBILIZE MISC. EQUIPMENT				
Pump shipping	each	#N/A	0	\$0
Pipe shipping	m	#N/A	0	\$0
Minor tools and equipment	allow	#N/A	0	\$0
Truck tires	allow	#N/A	0	\$0
Other		#N/A	0	\$0
MOBILIZE CAMP				
Reclamation activities	allow	#N/A	0	\$0
Long term reclamation activities (eg pump flooding)	allow	#N/A	0	\$0
MOBILIZE WORKERS				
Reclamation activities - transport MEL + Disco - 75 workers, 4 trips/yr, 3 yr	each	900 AEM	1386	\$1 247 400
Reclamation activities - travel time MEL + Disco - 75 workers, 4 trips/yr, 6h/trip, 3 yr	hour	5400 operl	41	\$221 400
Long term reclamation activities (eg pump flooding) - transport	each	#N/A	0	\$0
Long term reclamation activities (eg pump flooding) - travel time	each	#N/A	0	\$0
Monitoring Airfare	each	#N/A	0	\$0
Rotations over reclamation period	manhours	#N/A	0	\$0
Crew Rotations	each	#N/A	0	\$0
WORKER ACCOMODATIONS				**
Reclamation activities MEL + Disco - Maintain camp for 75 workers, 180 days/yr, 3yr	mandays	40500 ACCML	100	\$4 050 000
Long term reclamation activities (eg pump flooding)	manmonths	#N/A	0	\$0
MOBILIZE FUEL	maimonilo	#1 <b>4</b> /7C	, , ,	ΨΟ
Fuel freight - reclamation activities	litre	#N/A	0	\$0
Fuel freight - long term reclamation activities	litre	#N/A	0	\$0
Fuel freight accomodations	litre	#N/A	0	\$0
WINTER ROAD		71.47.		40
Construction and operation	km	#N/A	0	\$0
Limited winter use	km	#N/A	0	\$0
Winter road tarriff	km	#N/A	0	\$0
DEMOBILIZE HEAVY EQUIPMENT	Kill	#1 <b>4</b> /7C	, , ,	ΨΟ
Excavators	km	#N/A	0	\$0
Mobile equipment - Meliadine 189 Surface + 151 UG +15% Contignecy of surface equip	km	11730 MHERH	10.25	\$120 233
Mobile equipment - Discovery  36 equipments x 30 km (AWAR + Bypass road)	km	1080 MHERH	10.25	\$120 233
Dump trucks	km	#N/A	0	\$11.070
Seacans - Meliadine Estimated 6000 to be the maximal capacity on site, 50 % of which remains at the site for closure	km	90000 MHERH	10.25	\$922 500
		22500 MHERH	10.25	\$922 500 \$230 625
		22500 MHERH #N/A	10.25	\$230 625
Dozers  One for both MEL and Disco-	km			
Demolition shears  One for both MEL and Disco	km	30 MHERH	10.25	\$308
Crane	km	#N/A	0	\$0

### 1 Mobilization/Demobilization:

			Cost	Unit	
ACTIVITY/MATERIAL	Notes	Units Quantity	Code	Cost	Cost
Loader		km	#N/A	0	\$0
Compactor		each	#N/A	0	\$0
Light duty vehicles		km	#N/A	0	\$0
Other		km	#N/A	0	\$0
DEMOBILIZE CAMP					
		allow	#N/A	0	\$0
DEMOBILIZE WORKERS					
crew travel time		mandays	#N/A	0	\$0
crew transportation		each	#N/A	0	\$0
WINTER ROAD					
Construction and operation		km	#N/A	0	\$0
Limited winter use		km	#N/A	0	\$0
Winter road tarriff		km	#N/A	0	\$0
_				Total	\$10 803 535

Filter by unit

Inf Rate:

n/a

		COST		•	.,	
ITEM	Detail	CODE	UNITS	LOW\$	HIGH \$	SPECIFIED \$
Acco	modation					
		ACCM	manday	100.00	175.00	
Build	ings - Decontaminate					
	Asbestos	BDA	m2	25.60	51.20	
Build	ings - Remove					
	Wood	BRW	m2	27.50	41.00	
	Concrete	BRC	m2	40.00	65.00	6.00
	Steel - teardown	BRS1	m2	45.00	65.00	
	Steel - for salvage	BRS2	m2	67.00	100.00	
Conc	rete work					
	Small pour	CSF	m3	426.50	639.75	
	Large pour	CLF	m3	353.50	530.25	2 130.00
Conta	aminated Soils					
	ESA Phase 1	CS1	each	7500.00		
	ESA Phase 1	CS2	each	50000.00		
	Remediate on site	CSR	m3	47.00	146.00	
Dozin	ng					
	doze rock piles	DR	m3	1.05	2.40	
	doze overburden/soil piles	DS	m3	0.95	3.80	
Exca	vate Rock; Low Spec's and	JQA/QC				
	drill/blast/load/short haul	RB1	m3	11.40	17.05	
	drill/blast/load/long haul	RB2	m3	12.05	17.80	
	RB1 + spread and compact	RB3	m3	12.05	17.80	
	RB2 + spread and compact	RB4	m3	12.50	30.75	
	Specified activity	RBS	m3			
Exca	vate Rock; High Spec's and	d QA/QC				
	drill/blast/load/short haul	RC1	m3	12.05	17.80	

	Filter b	y unit				
			Inf Rate:	n	/a	
drill/blast/load/long haul	RC2	m3		12.70	18.40	
RC1 + spread and compact	RC3	m3		12.70	18.40	
RC2 + spread and compact	RC4	m3		13.50	19.20	
Specified activity	RCS	m3				175.00
Excavate Rip Rap						
drill/blast/load/short haul/pla	ice RR1	m3		13.50	17.75	
drill/blast/load/long haul/plad	ce RR2	m3		14.20	20.65	
source is waste dump/short	haul RR3	m3		7.00		
source is waste dump/long	haul RR4	m3		7.60		
Specified activity	RRS	m3				
Excavate Soil; Low Spec's a	nd QA/QC					
clear & grub	SBC	m2		3.40	5.00	
excavate/load/short haul	SB1	m3		4.30	5.90	
excavate/load/long haul	SB2	m3		4.60	7.30	
SB1 + spread and compact	SB3	m3		5.10	8.90	
SB2 + spread and compact	SB4	m3		5.50	11.00	
Specified activity	SBS	m3		3.20	6.30	
Tailings	SBT	m3		1.35	3.70	15.50
Excavate Soil, High Spec's a	ind QA/QC					
excavate/load/short haul	SC1	m3		6.80	9.30	
excavate/load/long haul	SC2	m3		7.10	11.75	
SC1 + spread and compact	SC3	m3		8.90	14.20	
SC2 + spread and compact	SC4	m3		9.30	23.20	
Specified activity	SCS	m3				18.80
Fence						
	FNC	m		13.55	203.00	
Fuel and Electricity						
Fuel cost - gas	FCG	litre		1.05	1.40	
Fuel cost - diesel	FCD	litre		0.99	1.39	
Fuel mobilization	FCM	litre		0.22	0.42	

### Filter by unit

			Inf Rate:	n/	/a	
Electricity	FCE	kW-h		0.17	0.19	0.49
Geo-Synthetics						
geotextile	GST	m2		3.44		
geogrid	GSG	m2		5.75		
liner, HDPE	GSHDPE	E m2		7.95		
liner, ES3	GSES3	m2		20.20		
geosynthetic installation	GSI	m2		3.16	14.00	
bentonite soil ammendment	GSBA	tonne		308.30	348.50	
Grouting (/m3 of rock grouted)						
	grout	m3		236.55	286.75	
Labour & Equipment Rates						
Site manager	sman	\$/hr		125.00	152.00	
Supervisor	super	\$/hr		52.00	91.84	
Registered engineer	eng	\$/hr		95.00	220.00	
Environmental coordinator	envco	\$/hr		74.16	130.00	
Evironmental technologist	envtech	\$/hr		36.00		
Electrician	elec	\$/hr		74.00	95.00	
Journeyman - various	journey	\$/hr		44.00	71.79	
Labour - skilled	lab-s	\$/hr		41.00	49.60	
Labour - unskilled	lab-us	\$/hr		31.00	43.98	
Equipment operator	oper	\$/hr		41.00	65.00	
Heavy duty mechanic	mech	\$/hr		49.00	72.85	
Water treatment plant operator	oper-wt	\$/hr		41.00	59.86	
Security / first aid	safety	\$/hr		36.00	66.97	
Administative staff	admin	\$/hr		38.00	57.89	
Equipment rates include operator ar	nd fuel					
Loader - 4 cu.yd (3.06m3)	load-s	\$/hr		175.00		
Loader - 7 cu.yd (5.35m3)	load-l	\$/hr		315.00		
Excavator - 26.76-30.84 tonnes	exc-s	\$/hr		190.00		

install

# Unit Cost Table (for refining unit costs see "Estimator" worksheet)

		Filter by	unit				
				Inf Rate:		n/a	
	Excavator - 68.95+tonnes	exc-l	\$/hr		420.00		
	Grader	grad	\$/hr		190.00		
	Dump truck off hwy 30-50 tonnes	truck-s	\$/hr		225.00		
	Dump truck off hwy 55-75 tonnes	truck-l	\$/hr		300.00		
	dozer, small	dozers	\$/hr		205.00	260.00	
	dozer, large	dozerl	\$/hr		490.00	565.00	
	smooth drum compactor	comp	\$/hr		155.00		
	scooptram, 6 yd3 bucket	scoop	\$/hr		170.00		
	flat bed truck with hiab	hiab	\$/hr		155.00		
	fuel truck	ftruck	\$/hr		150.00		
	water truck	wtruck	\$/hr		58.00	150.00	
Mobil	ize Heavy Equipment						
	Road access	MHER	kmtonne		3.40	10.25	
	Air access	MHEA	kmtonne		12.00		
Mobil	ize Camp						
	Road access	MCR	each		50000.00		
Mobil	ize Workers						
	flight	MW	each		4500.00	9100.00	
Oil Re	emoval						
	oil removal	OR	litre		0.43	1.20	
PCB F	Removal						
	Remove from site	PCBR	litre		40.20	46.90	
<b>Pipes</b>	, small (<6in dia.)						
	remove/dispose on site	PSR	m		1.00	24.00	
	supply	PSS	m		6.10	11.10	
	install	PSI	m		25.00		
<b>Pipes</b>	, large (>6in dia.)						
	remove/dispose on site	PLR	m		22.00	72.00	
	supply	PLS	m		129.00	143.00	

50.00

m

PLI

### Filter by unit

	-		Inf Rate:		n/a	
Power Lines						
remove/dispose on site	POWR	m		25.50		
<b>Process Chemicals</b>						
Remove from site	PCR	kg		0.45	2.50	
Pumps						
Pump capital cost	PC	each	1950	00.00		
Pump shipping	PS	each	25	00.00		
Pump operating cost	POC	m3		0.12		
Pump maintenance	PM	allow	250	00.00		
Pump sand BackFill						
	PBF	m3	}	85.00	300.00	
Scarify - road/mine site						
	SCFY	ha		4300	6030	2150
Shaft, Raise & Portal Closures						
Shaft & Raises	SR	m2	6	45.00	2132.00	
Portals	POR	m3		18.80	250.00	1200.00
Site Inspection Report						
	RPT	each	100	00.00	20000.00	
SpillWay - Clear						
	SW	each	30	00.00	7000.00	
Survey/Instrumentation						
	SI	each	18	00.00	3600.00	
Treatment Plant - Construct						
Small (< 1000 m3/d)	TPS	lump sum	900	0000	15000000	
Large (> 1000 m3/d)	TPL	lump sum	1500	0000	46000000	
Constructed Wetland	CWTS	ha	20	0000	300000	
Treatment Plant - Operate						
	TPO	m3		0.35	2.00	
Treatment Chemicals						
ferric sulphate	ferric	kg		1.19		

	Filter by	unit		
		Inf Rat	e:	n/a
ferrous sulphate	ferrous	kg	1.32	
lime	lime	kg	0.56	
hydrogen peroxide, 35%	hperox	kg	1.50	
Sodium Metabisulfate	Nametab	kg	1.18	
Caustic soda, 50%	caustic	kg	0.74	
Sulfuric acid, 93%	sulfuric	kg	0.31	
flocculant	flocc	kg	6.00	
copper sulphate	copper	kg		
shipping	shipping	kg	0.20	
Vegetation				
Hydroseed, Flat	VHF	ha	4000.00	
Hydroseed, Sloped	VHS	ha	4500.00	
Veg. blanket/erosion mat	VB	ha	13000.00	
Tree planting	VT	ha	2600.00	6000.00
Wetland species	VW	ha		47.72
Water Sampling/Analysis/Reporting	g			
	WS	each	7000.00	10000.00
Winter Road				
Construction	WRC	km	2000.00	11500.00
Usage	WRU	kmtonne	0.29	



# Appendix B

Closure Cost Sequence for Letter of Credit (LOC) for Meliadine Extension

Part   Part	Legend							and Operation	ional Monit	Operations, Operational Monitoring and Prog							e Reclamation				Closure (Fit Flooding and/or decomissioning of infrastrucuture)					Closure Manikaring					Post-Closure Monitoring DV Dewatering							
Sequence of the content of the conte															Meliad			ension Operations						1		Meliadine l	ie Extension - Active Closure			Meliadi						- 1	-	
Set 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Area	Main Closure Activity			Sub-Tot. Mel Ext. Only (M\$	3020	3021	3022	2023	2024	2028	2027	2028	8228	2030	2032	2033	2035	2036	2037	800	2840	2041	2043	84	2045	2847	2M8	2050	200	382	2053	252	3055	82	2058	2029	3060
See Legislate of the control of the	Infrastructure Decomissioning Activities																																					
Maria Carle Carl	Infrastructure <sup>1</sup>																																					
Martine properties   Martine		reclaimation of quarries and roads		18.54						10.97																												
Section   Sect	MELIADINE									2.29																												
**************************************					2.7	3	$\rightarrow$	_	$\rightarrow$	_	_	2.7	13		_	_			_		_	_		_		_		_	_	+							-	-
Marian and the properties   Marian and the properties	ITIVIA + Road	Removal of fuel tanks, break concrete foundation, drill and blast slopes to 1:1 for quarries, remove culverts, bridges and scarify roads		1.70																																		
See Level 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	purcourny				1.6	5				1.65			_		_													_										
Section 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Reclaim Discovery Road			0.1	2				0.12																												
Section 1. The content of the conten		Decontamination & hazardous mat'l removal		2.36	0.5	2				0.52																												
Mary   Mary		Decentamination & hazardour mat'l removal			0.2	,				0.25																												
Section 1. Section 1.																																						
Section Sectio	Surface & Groundwater Management	channels, remove pumps and pipelines.		4.46						6.19																												
THE THE THE THE THE THE THE THE THE THE		Remove of waterline along Discovery Road			0.5	5				0.55																				_								
Manufaction content				1.00						116																												
The content of the co										-1.10	DW -C	0.29	+	_	_				_		_	_		+	_	_		_	_	-					_			_
The content of the co																			0.11																			
Section (1988) (	Open Pit - TIRI04				0.5	5																	0.55															
Part   Part	WRSF1 - Extension	Grade and stabilize slope. New instrumentation	ш				Ţ	Ţ	Ţ		0.25																											
THE THE THE THE THE THE THE THE THE THE	WRSF3 - Extension		+							-0.03																												
The content of the co		Cap vent raises. Backfill and remove portal.		1.10	0.0	ь				0.06																												
Control   Cont	Wesmeg nad Wesmeg North Deposit  Open Pit - WES01	Pit flooding activity. New access control infra			0.1	9					0.19																											
							$\rightarrow$	$\rightarrow$	-										0.62																			
The first properties of the pr	Open Pit - WES03	Pit flooding activity. New access control infra.			0.1	9														0.19																		
Part   Part	Open Pit - WES04	Pit flooding activity. New access control infra.								0.08																												
STATE OF THE PROPERTY OF THE P			ш				Ţ	Ţ	Ţ													0.35																
THE STATE OF THE S	-					-				0.55																												
Part   Part		New instrumentation			0.0	13			_	0.03					-									+										_				=
Part Model   Par	Pump Deposit																																					
See Transport American Control Program America	Open Pit - PUM01 - CP9	5 and WRSF6. CP9 will be dewatered in 2029 to allow for PUMP01 mining													0.10																							
See the second of the second o																0.14	ı																					
See See See See See See See See See See													0.13						0.00		_			-				_	_	_								$\leftarrow$
The section of the control of the co	wesse												0.03						0.08		_	+		+														=
The proper section of the proper section of													4.27	_	_	_					_	_		_														=
See of Profession of Professio														0.73																								
See 1. Mining wash, we asses centration (s. 1) 1. Mining wash, we as	F Zone Deposit																																					
See 1. Se															0.50													_										
Set 1 Set 1												_				0.10	•		0.10					_				_	_						_			
Operation															0.03				0.12		_	_		_					_									_
Section of the lang spars, have anse control sub	F Zone Underground											_		_	0.03		0.75		_		_																	
Sees Configure (as from found specified with the content plane). See See See See See See See See See Se	Discovery Deposit																																					
Consistant Substitution from sports.    Consistant Substitution from sports.   Consistant Substi		Pit flooding activity. New access control infra.			0.7	8									-	0.78																						
Part   Part	WRSF8 and WRSF9														1	3.19																						
Suppose of the property of the		Cap vent raises. Backfill and remove portal.			0.6	9					(	0.69																										
The fine of the man of column of the man of column of the man of column of the man of column of the man of column of the man of the man of column of the man of the m	Tiriganiaq-Wolf Mining Area																	0.75																				
Statistics of Machine Machine for all and not one of wall and not		Cap vent raises. Backfill and remove portal.			0.7	5												0.75																				
SMORTCOS FORMING MAINTAINESS. SATION STATE OF ST		Placement of soil and rock cover		5.00	6.7	9				5.79																												
Inductive follows:   See   1.50   1.5	Interim Care and Maintenance			3.06	3.7																																	
Institution Course I include Closure    Institution Closure I include Closure   Instit				5.29	2.2	1																		2.21														
**************************************	Inspection - Active Closure Water Treatment	active closure  3 years of treatment during active closure	$\vdash$				-+	-				-	+ +	-+	+				+		_		$\vdash$	2.08														
SMETCH STORIAGE  SMETCH			nly. On	ce the actual d			id operat	ion of w	rind turb	bines N6 to	o N11 is co	onfirmed,	the year th	e LOC is tr	iggered	for this iter	n will be	updated.	1	· I						, T						1						
SUR-TOTAL  1 4.87 5.52 0.00 0.00 0.00 0.00 0.00 0.00 0.00												,																										
Notification and Demoklication and Authoriting and Maintenance Surface Groups Course for first 3 years of Surface Groups Course for first 3 years of Surface Groups Course for first 3 years of Surface Groups Course Monitoring and Maintenance Surface Groups Course Monitoring and Main																																						
Modification and Demonstlatation with Substration of models heavy equipments:    5.6	SUB-TOTAL		Ш	40.89	59.2	3 0.00	0.00	0.00	0.00	27.87	0.44	0.40 2.7	3 4.42	0.73	0.63 1	3.97 0.24	0.75	0.75 0.	.00 0.92	0.19	0.00	0.35	0.55 0.0	10 4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	0.00
Modification and Demonstlatation with Substration of models heavy equipments:    5.6																																						
State Cloure. Demolished heavy equipment of the cure bases of the Cloure Monitoring and Materianscene (but 1) and particularial immediate for family and affective state ramping and affective state r																																						
And productive important i	Mobilization and Demobilization	Mobilization and accomodations for workers for closure for first 3 years of active closure. Demobilization of mobile heavy equipment	f	6.96	3.8	4																		3.84														
TOTAL COMMENT MAINTENING   1   1   1   1   1   1   1   1   1													+																									-
**************************************		for 7 years of active closure														_		$\Box$			_ _			7.63														
SAME   1.00	Post Closure Monitoring and Maintenance	Annual geotechnical inspection, surface water sampling and site-care taker for 10 years post closure		5.95	2.3	19																							2	2.39								
**NORTHANGAMENT   S. 1.0.    ENGINEERING		5%													0.70 0.01	0.04	0.04 0	0.00	0.01	0.00 0.00	0.02	0.03 0.0	0.21	0.00		0.00	0.00	0.00	0.00	0.00 0.00	0.00	0.00	0.00		0.00	0.00	0.00	
### PARTHER PART PART PART PART PART PART PART PAR	PROJECT MANAGEMENT			2.04	2.9	0.00	0.00	0.00	0.00	1.39	0.02	0.02 0.1	14 0.22	0.04	0.03	0.70 0.01	0.04	0.04 0	0.00	0.01	0.00	0.02	0.03 0.0	0.21	0.00	0.00 0.00	0.00	0.00	0.00	0.00	0.00 0.00	0.00	0.00	0.00	0.00 0.0	0.00	0.00	
18%   7.36   19.70   0.0   0		A/QC		0.82										0.01	0.01												0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00 0.0	0.00		0.00
598-TOTAL  12.26 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07																		0.01 0	0.00	0.00	0.00	0.00	0.01 0.0	0.04	0.00													
598-TOTAL  12.26 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07						0.00	0.00	0.00	0.00	5.02	0.08	0.07 0.4	0.80	0.13	0.11	2.51 0.04	0.14	0.14 0	0.17	0.03	0.00	0.06	0.10 0.0	0.77	0.00	0.00 0.00	0.00	0.00	0.00	0.00	0.00 0.00	0.00	0.00	0.00	0.00 0.0	0.00	0.00	
OMULATIVE 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0			0%															0.00 0	0.00	0.00	0.00	0.00	0.00 0.0	0.00	0.00													
	SUB-TUTAL	1		20.80	32.2	U 0.00	0.00	0.00	0.00	0.04	w.14 L	v.a4  U.8	1.3/	0.23	v.13	J U.U/	0.23	0.23 0.	0.29	0.00	0.00	0.11	0.17 0.0	TZ.80	0.00	0.00	0.00	0.00	J.JU 2	ا إدر	0.00	U 0.00	0.00	3.00	0.0	0.00	0.00	0.00
	TOTAL COST FOR LOC			69.7	91.	5 0.0	0.0	0.0	0.0	36.5	0.6	0.5 3.	6 5.8	1.0	0.8 1	18.3 0.3	1.0	1.0	0.0 1.2	0.2	0.0 0.0	0.5	0.7 0.	0 17.1	0.0	0.0 0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL RECLAIM COST PHASE 1 + PHASE 2: 161.14	CUMULATIVE						0.00	0.00	0.00	36.50	37.08 37	7.61 41.1	8 46.98	47.93 4	8.76 6	7.06 67.37	68.36	69.34 69.	.34 70.55	70.80 7	0.80 70.80	71.25	71.98 71.9	89.07	89.07	89.07	89.07	89.07	9.07 91	.46 91	1.46 91.46	91.46	91.46	91.46 9	1.46 91.4	91.46	91.46	91.46
		TOTAL RECLAIM COST PH	ASE 1	+ PHASE 2:	161.14	4																																

1/1



# Appendix C

Updated Site Layout Figures

