Appendix 37

Whale Tail 2022 Freshet Action Plan

AGNICO EAGLE

MEADOWBANK COMPLEX

WHALE TAIL FRESHET ACTION PLAN

MARCH 2022

VERSION 4

AGNICO EAGLE
MEADOWBANK

EXECUTIVE SUMMARY

The purpose of this Freshet Action Plan is to identify areas of concern around the Whale Tail Expansion Project and the associated Hauling road needing to be managed in an organized and timely manner during the annual freshet period to prevent adverse environmental and operational impacts. The Plan outlines specified actions that will be taken by Agnico to manage and mitigate areas where environmental incidents could occur, as well as addressing historical incidents, specifically the WRSF dike seepage.

The freshet period is typically initiated during the annual snow and ice melt sometime around mid-May. During this period excess water is created and must be managed through additional pumping and management practices at vulnerable areas around the site. Mitigation techniques, timeframes and specified roles and responsibilities are outlined in this document for each area of concern.

The main areas of concern are the mining pit, the WT WRSF surrounding and pond, the IVR WRSF, the Whale Tail Attenuation Pond, the IVR attenuation Pond, the Whale Tail South Channel, and the IVR Diversion Ditch.

It is important for all water management and associated infrastructure be in good working order and adequate to manage the expected water flows associated with the freshet period; this includes but is not limited to pumps, ditch, culvert and sump maintenance, critical piping system installation and inspection, as well as adequate resource allocation for preparative work. A summary of the 2022 preparation works and roles and responsibilities is presented in the attached Appendix 1 (2022 Freshet Action Plan Procedures). Appendix 1 will be updated yearly to reflect changes in conditions at the Whale Tail site.

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DOCUMENT CONTROL

Revision				Pages Revised	Remarks
#	Prep.	Rev.	Date		
01	Agnico	Internal	March 2019	All	Initial Version
02	Agnico	Internal	March 2020	All	Comprehensive update from 2019 plan
03	Agnico	Internal	March 2021	All	Comprehensive update from 2020 plan to include IVR infrastructures
04	Agnico	Internal	March 2022	All	Comprehensive update from 2021 plan

Prepared By: Meadowbank Environment

Approved by:

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1 INTRODUCTION

The purpose of the Whale Tail (WT) Freshet Action Plan is to ensure that Agnico can address and manage excess water associated with the freshet season at the Whale Tail site, and to ensure Agnico has implemented specific management and mitigation measures in response to environmental incidents with potential for off site impacts to water or land.

The freshet season is loosely defined as starting approximately May 15th, and in some cases, actions and mitigation measures can extend up to early fall when freezing re-occurs. There are many areas around the site that are vulnerable to excess water; the goal is to identify these areas and develop a clear plan with defined roles and responsibilities (amongst Agnico departments), and to manage the freshet flows.

In addition, several guiding principles are applicable to the formation of this plan. The highest priority principles are:

1) to ensure that the health and safety of Agnico employees is protected, especially with respect to mining operations when excess water is present;
2) to ensure that mine contact water from runoff or seepage is managed to prevent adverse environmental impacts; and
3) to make sure the site is in compliance with the Nunavut Water Board (NWB) License, Part D, Item 21 and Part E, Item 11.

The plan will identify the areas of concern and discuss the potential risks as well as mitigation measures necessary to address the identified issues. The overall site footprint has increased, and experience needs to be gained in identifying key location; lessons learned from the Meadowbank site will provide the necessary guidance. Appendix 1 contains the defined 2022 procedures, the roles and responsibilities and associated timelines. Agnico's intent is to update the Procedural Appendix on a yearly basis. There may be additional mitigation measures for a defined problem area or in some cases a previously defined issue may be permanently rectified.

The main areas of concern are:

- Mining pits and pit walls;
- WRSF pond;
- IVR WRSF;
- Whale Tail South channel;
- IVR Diversion Ditch;
- Whale Tail Attenuation pond;
- IVR Attenuation Pond;
- WT Tank farm;
- Haul road culverts and bridges;
- Pads and roads built since 2021;
- Underground WRSF;
- Culverts.

Each area identified above will be discussed in detail below. All areas of concern are considered priorities based on the guiding principles.

2 AREAS OF CONCERN

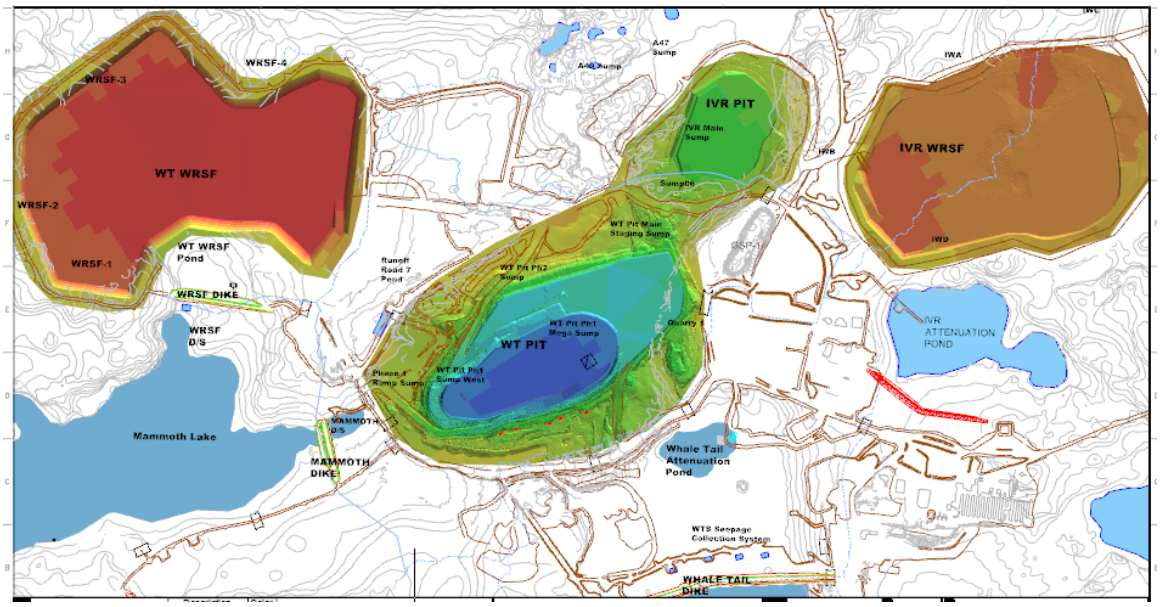

Figure 2-1: View of Whale Tail area

2.1 MINING PITS AND PIT WALLS

All ramps, jump ramps, ditches and sumps must be cleaned of all ice and snow before May in order to contain any water resulting from the snow melt. All allocated pumps must be checked and serviced before the month of May. In addition, a check must be completed confirming that all piping systems starting from the different pits leading to the Whale Tail attenuation pond are free of ice, or any obstruction.

The water management strategy for the pits will be to send water from the WT Pit and IVR Pit area to either the WT Attenuation Pond or the IVR Attenuation Pond.

- A sump and ditch system is used to manage runoff water within the pit footprints. The infrastructures location will be modified or added as required based on the mining sequence.
- Sumps outside of the pit footprint are planned to prevent runoff from reporting to the Pit and to prevent water from ponding against the pit crest;
    - At WT Pit this includes the sumps located at the downstream area of Mammoth Dike and at Road 7;
    - At IVR Pit this include the sump located in former Lake A49 and in the Northern area of IVR Pit.

2.2 WHALE TAIL WASTE ROCK STORAGE FACILITY

Runoff from the Whale Tail Waste Rock Storage Facility (WT WRSF) is collected by 4 sumps (WT WRSF 1,2,3 & 4) as well as the WRSF pond delimited by WRSF Dike. Water from these sumps is pumped to the WRSF Pond and the WRSF Pond water is pumped to the WT Attenuation Pond.

The WT WRSF will require weekly inspections around the perimeter beginning as soon as the freshet starts (May) until freeze up to identify any seepage. In the event that seepage is observed from the WT WRSF, it must be reported to the Environment Departments and samples must be taken to determine the water quality and source. A mitigation plan will be prepared and implemented if necessary. Based on field observation, it may be deemed necessary to remove snow accumulation in the sumps around the WT WRSF to mitigate risk of snowmelt reporting to the surrounding environment. Runoff originating from the WT WRSF ultimately ends up in the WT WRSF pond. In August 2019, seepage from this pond was found to have reported through the WRSF Dike to the Mammoth lake. Remediation measures put in place in 2020 demonstrated to be successful. Daily inspections of the WRSF Downstream Pond will be required to confirm no seepage is occurring. A pump must be available in this location to pump any water potentially seeping through the structure back into the WRSF Pond.

2.3 IVR WASTE ROCK STORAGE FACILITY

Runoff from the IVR Waste Rock Storage Facility (WRSF) is collected by 5 sumps (IW A,B,C,D,E). Water from these sumps is sent to the IVR Pond either by pumping or by gravity.

The IVR Rock Storage Facility (IVR WRSF) will require weekly inspections around the perimeter beginning as soon as the freshet starts (May) until freeze up to identify any seepage and ensure that the gravity flow to the IVR Attenuation Pond are occurring as planned. In the event that seepage is observed from the IVR WRSF, it must be reported to the Environment Departments and samples must be taken to determine the water quality and source. A mitigation plan will be prepared and implemented if necessary. Based on field observation, it may be deemed necessary to remove snow accumulation in key locations around the IVR WRSF to mitigate risk of snowmelt reporting to the surrounding environment.

2.4 WHALE TAIL SOUTH DIVERSION CHANNEL

The South Whale Tail Diversion Channel was constructed in 2020. In early May, partial snow removal will be required in this infrastructure to form a preferential water path and prevent snow blockage. Daily inspection at the start of freshet will be required until freshet is completed and following rain events, to ensure no contaminant is transported into Mammoth Lake. Turbidity barriers were left in place at the end of the previous summer to secure subsequent freshets. Barrier inspection will be required to ensure they perform as intended.

2.5 IVR DIVERSION DITCH

The IVR Diversion Ditch was constructed during the fall of 2020. The IVR Diversion Ditch serves to divert the watershed reporting to the IVR Pit towards the C-Watershed. This will reduce the amount of contact water to manage on site. In early May, partial snow removal will be required in this infrastructure to form a preferential water path and prevent snow blockage. Daily inspection at the start of freshet will be required until freshet is completed and following rain events, to ensure

no contaminant is transported into the surrounding environment. Additional mitigation measures may be required, based on field observations.

2.6 WHALE TAIL ATTENUATION POND

The Whale Tail Attenuation Pond is the secondary contact water management basin on site. Contact water from surrounding infrastructure is pumped to the pond. From there, Whale Tail Attenuation Pond water can be pumped to either the IVR Attenuation Pond or the AsWTP, for treatment, if required, and discharge to approved final effluent locations within Whale Tail South or Mammoth lake. The plant's treatment abilities were designed to remove TSS and arsenic. All piping and the discharge diffuser must be inspected prior to freshet, in order to have all installations in place to proceed with pumping and/or treatment activities during freshet. The pond water levels will be managed closely and inspected regularly.

2.7 WHALE TAIL DIKE SEEPAGE

Water from the Whale Tail Dike seepage is reporting to the WT Attenuation Pond through either a pumping system or by gravity. If water quality criteria are met, it is possible for the system to discharge directly to WTS, a 10-day notice to ECCC would be required. The system is not expected to be put in operation due to the current water quality.

2.8 IVR ATTENUATION POND

The IVR Attenuation Pond is the main contact water management basin on site. Contact water from surrounding infrastructure is pumped to the pond. From there, water can be discharged to approved final effluent locations within Whale Tail South or Mammoth lake, or may be sent to the AsWTP, for treatment, if required, prior to discharge. The plant's treatment abilities were designed to remove TSS and arsenic. All piping and the discharge diffuser must be inspected prior to freshet, in order to have all installations in place to proceed with pumping and/or treatment activities during freshet. The pond water levels will be managed closely and inspected regularly.

2.9 WHALE TAIL FUEL TANK FARMS

The main fuel farm containments were built in 2019, and will be monitored throughout freshet. Snow and ice accumulation within the fuel tank farms must be adequately managed to prevent overflow to the environment and/or damage to the fuel handling systems. The Energy and Infrastructure Department will advise the Environmental Department of their intent to pump the containment area once ice/snow begins to melt. Water samples will be taken in accordance with the Water License to ensure compliance prior to its release. A notice must be provided to the Inspector 10 days prior to this pumping activity. Once sample results have been obtained, the Environmental Department will advise the Energy and Infrastructure Department. If sample results permit, the pumping may begin to direct water to the tundra/ground in a way to prevent erosion. In the event that the water sample results do not meet discharge criteria the water could be trucked in a tanker and transported to the Meadowbank site to be disposed of in the TSF.

2.10 HAUL ROAD CULVERTS AND BRIDGES

Daily inspections will be undertaken starting in May at all culverts and bridges along the Haul road to ensure that water during freshet is flowing freely and no erosion is occurring. If elevated

TSS/Turbidity levels are observed sampling will occur and the results assessed. Turbidity barrier will be installed if required. The Mine department will also be advised if severe erosion/scouring is observed. In addition, snow and ice removal may be required to allow the water to flow as per design specifications. Daily inspections will be performed during the freshet period by the Environment department.

2.11 2021-2022 PAD CONSTRUCTIONS AND ROAD CULVERTS

Weekly inspections at the start of snowmelt will be required to monitor for potential erosion and sediment transport. Mitigation measures may be required to minimize transport of sediments towards water bodies. See below for a list of such constructions:

- Underground Emulsion transfer pad;
- Main tower pad extension.

In addition to the pads, some culverts around site drain towards water bodies. Daily inspections will be undertaken by the Environment Department starting in May for all culverts around the mine site to ensure the water during freshet is flowing freely and no erosion is occurring. If elevated TSS/Turbidity levels are observed sampling will occur and the results assessed. Turbidity barrier will be installed if required. Snow and ice removal may be required to allow the water to flow as per design specifications.

2.12 UNDERGROUND WRSF WATER COLLECTION SYSTEM

The Underground WRSF Water Collection System was built in 2019 to collect any water running off the underground infrastructure, and direct runoff water into GSP1. Steaming of culverts may be necessary if snow or ice blockage are identified prior to the start of freshet. Weekly inspection will be required during freshet to validate operationality and liner integrity of collection system.

2.13 ADAPTIVE WATER MANAGEMENT STRATEGY

An Adaptive Water Management Plan was developed to document specific mitigation measures and associated management actions to be taken when specified thresholds are exceeded. Mitigation measures may include special studies, operational changes, revised or new water and waste management systems, structures and/or facilities, or implementing mitigation activities to prevent, stabilize or reverse a change in environmental conditions or to otherwise protect the receiving environment. The Adaptive Management Plan is to be reviewed periodically to account for the dynamics of mine construction and operation, and adjusted as needed.

Various level thresholds were identified for surface water management, based on the capacity of different water management infrastructure to retain water on site. The objective is to trigger management strategy actions based on the capacity of these structures. The main management response is based on increasing the discharge rate especially when water is meeting effluent discharge criteria.

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3 SNOW MANAGEMENT

A snow management procedure has been developed internally in 2020 and will be updated annually. Refer to Appendix 2 for the snow management map. Temporary snow storage dumps and snow accumulation areas of concern were identified on a map. Removal will be managed accordingly.

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APPENDIX 1

2021 Freshet Action Plan Procedure

Section	Area of Concern	Role/Action	Responsibilities	Dates
2.1	**MINING PITS AND PIT WALLS**			
2.1	Mining Pit and Pit walls - General	1) Clean all ice, mud and snow on all permanent ramps, jump ramps, etc.	Mine Operations	Before May
		2) Check and service all pumps.	E&I (Energy and Infrastructure) and Maintenance	Before May
		3) Check that all piping systems starting from the pit leading to the Attenuation ponds are free of ice by validating pumping values (if pumping systems active) and/or performing an air test in the pipe with a compressor.	E&I/Mine Operations	Before May
2.2	**WHALE TAIL WASTE ROCK STORAGE FACILITY**			
2.2.	WT WRSF Inspection	1) Weekly inspection around the RSF perimeter to identify any seepage.	Env. Department	May - as soon as freshet starts until freeze up
		2) Pump if required from the WRSF periphery to WRSF Pond	E&I	May - as soon as freshet starts until freeze up
		3) If seepage observed notify Env Department AND sample for Water License Parameters.	Env. Department	May - as soon as freshet starts until freeze up
	WRSF Pond	1) Daily inspection - keep record	Env. Department	May - until freshet complete

				and after rain events
		2) Maintain WRSF Pond as dry as possible	E&I	May - until freeze up
		3) Pump any water reporting to the WRSF downstream water collection system – Volumes required to be documented	E&I/Engineering	May - until freeze up
		4) Sample upstream and downstream	Env. Department	May - until freeze up
		5) Report any discharge of TSS to Mammoth Lake to ECCC/NWB (if grab > 30 mg/L).	Env. Department	May - until freshet complete and after rain events
2.3	**IVR WASTE ROCK STORAGE FACILITY**			
2.3.	IVR WRSF Inspection	1) Weekly inspection around the IVR WRSF perimeter to identify any seepage.	Env. Department	May - as soon as freshet starts until freeze up
		2) Pump if required from the IVR WRSF periphery to IVR attenuation pond	E&I	May - as soon as freshet starts until freeze up
		3) If seepage observed notify Env Department AND sample for Water License Parameters.	Env. Department	May - as soon as freshet starts until freeze up

2.4	**WHALE TAIL SOUTH DIVERSION CHANNEL**			
2.4	Whale Tail South Diversion Channel	1) Daily inspection - keep record	Env. Department	May - until freshet complete and after rain events
		2) Install mitigation measures, if needed (elevated TSS observed), and maintain	Env. Department	May - until freshet complete and after rain events
		3) Sample monitoring for TSS, if excess turbidity observed - use external lab.	Env. Department	May - until freshet complete and after rain events
		4) Report any discharge of TSS to Mammoth Lake to ECCC/NWB (if grab > 30 mg/L).	Env. Department	May - until freshet complete and after rain events
2.5	**IVR DIVERSION DITCH**			
2.5	IVR Diversion Ditch	1) Daily inspection - keep record	Env. Department	May - until freshet complete and after rain events
		2) Install mitigation measures, if needed (elevated TSS observed), and maintain	Env. Department	May - until freshet complete and after rain events
		3) Sample monitoring for TSS, if excess turbidity observed - use external lab.	Env. Department	May - until freshet complete and after rain events

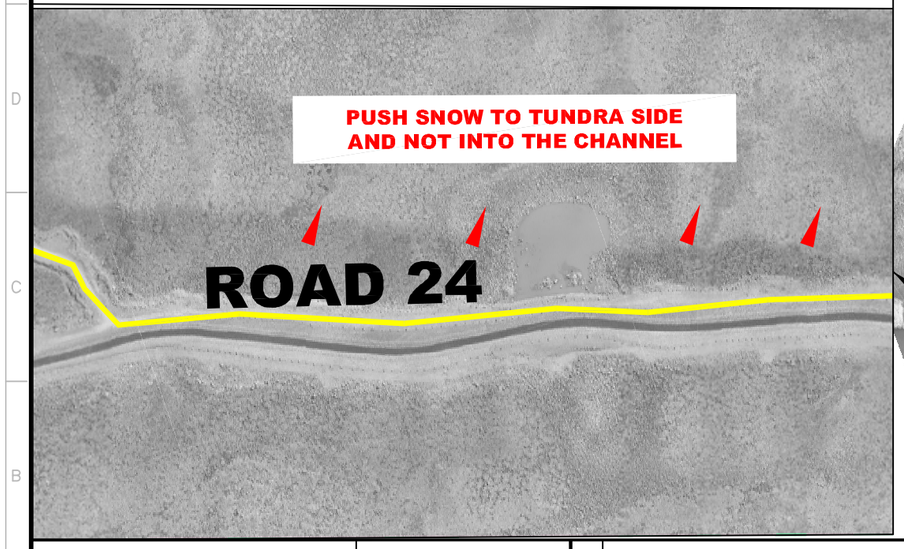
		4) Report any discharge of TSS to Mammoth Lake to ECCC/NWB (if grab > 30 mg/L).	Env. Department	May - until freshet complete and after rain events
2.6	**WHALE TAIL ATTENUATION POND**			
2.6	Whale Tail Attenuation Pond	1) Set-up pumping of the WT Attenuation Pond to prevent water from flowing into the pit area, keeping track of all daily volumes	E&I	At all time
		2) Notify Environmental Department before any environmental discharge.	E&I	At all time
		3) Inspect all piping and discharge diffuser	E&I	May
2.8	**IVR ATTENUATION POND**			
2.8	IVR Attenuation Pond	1) Set-up pumping of IVR Attenuation Pond through the AsWTP, keeping track of all daily volumes	E&I	At all time
		2) Notify Environmental Department before any environmental discharge.	E&I	At all time
		3) Inspect all piping and discharge diffuser	E&I	May
2.9	**FUEL TANK FARMS**			
2.9	WT Tank Farm	1) E&I Dept to advise Env Dept in advance of intent to pump once ice melts in containment area.	E&I and Env. Department	Probably mid-June and September

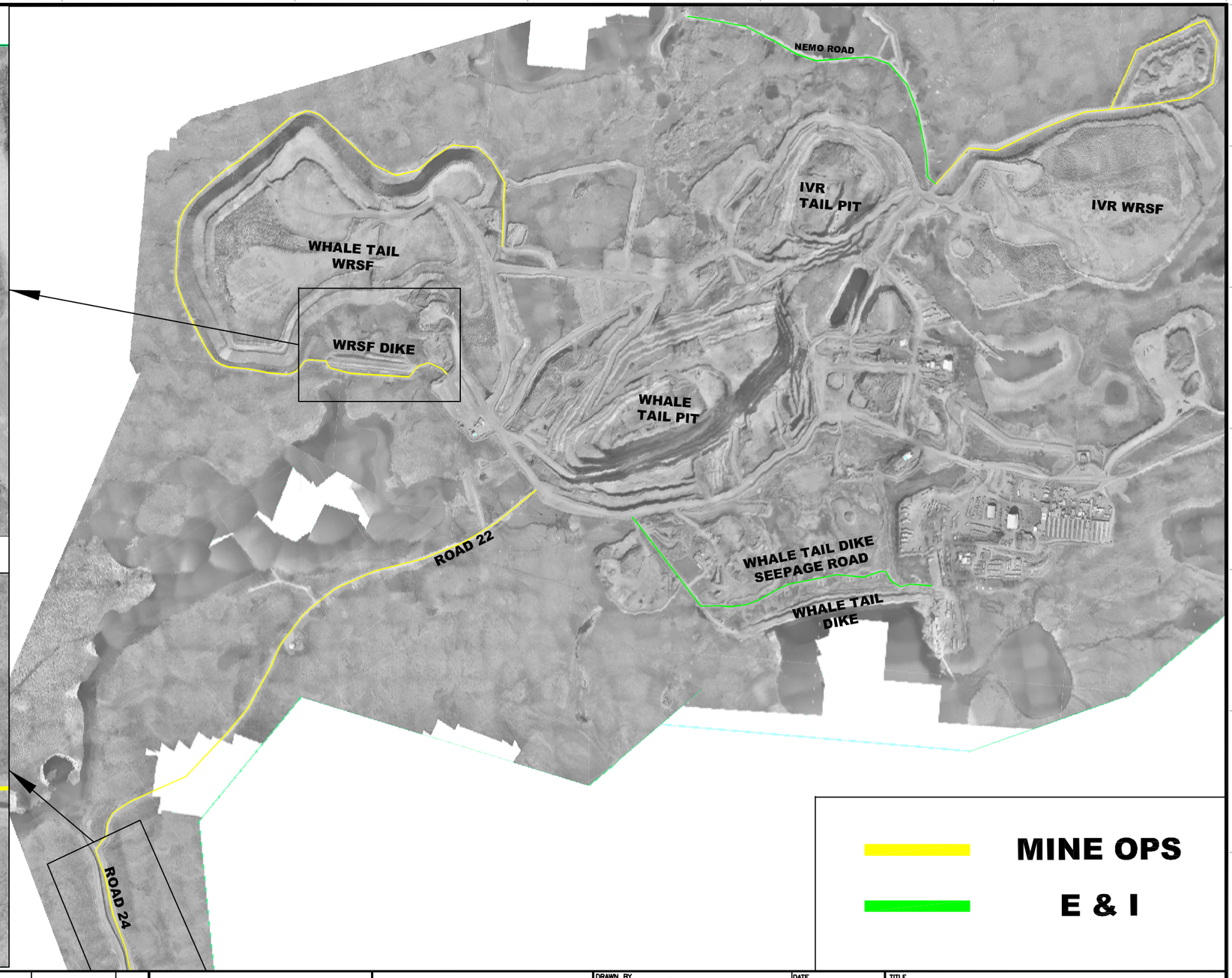
		2) Sample water in accordance with Water License to ensure compliance with limits prior to release.	Env. Department	Probably mid-June and September
		3) Provide notice to Inspector 10 days prior to pumping.	Env. Department	Probably mid-June and September
		4) Advise Energy and Infrastructure Dept if pumping can begin based on sample results.	Env. Department	Probably mid-June and September
		5) Pump to tundra/ground or Meadowbank TSF. **NOTE: The water cannot be pumped out to the tundra if it does not meet the Water License criteria.**	E&I	Probably mid-June and September
2.10	**WHALE TAIL HAUL ROAD CULVERTS AND BRIDGES**			
2.10	Recent pad and road constructions	1) Daily inspection of and bridges on the Whale Tail Haul Road	Env. Department	May and after rain events
		2) Sample for TSS and Turbidity if elevated TSS observed.	Env. Department	May - until freeze up
		3) Notify E&I Dept & the mine department if severe erosion/scouring observed - for repair action.	Env. Department	May - until freeze up
		4) Install mitigation measures if required.	Env. Department	May - until freeze up
2.11	**RECENT PAD AND ROAD CONSTRUCTIONS**			

2.11	Recent pad and road constructions	1)	Daily inspection of culverts around site (Road to emulsion plant, IVR access road)	Env. Department	May and after rain events
		2)	Weekly inspection of toes of constructions built in the last year.	Env. Department	May and after rain events
		3)	Sample for TSS and Turbidity if elevated TSS observed.	Env. Department	May - until freeze up
		4)	Notify E&I Dept if severe erosion/scouring observed - for repair action.	Env. Department	May - until freeze up
		5)	Install mitigation measures if required.	Env. Department	May - until freeze up

APPENDIX 2

2022 Snow Management Map





TITLE	# DWG

REFERENCE DRAWINGS

REV	DESCRIPTION	DATE	BY

REVISIONS

AGNICO EAGLE
MEADOWBANK

DRAWN BY	T. DAHM
DATE	2021–11–04
CHECKED BY	
APPROVED BY	
PROJECT NO.	
DATE	

TITLE
AGNICO–EAGLE – MEADOWBANK DIVISION
SNOW CLEARING MAP
2021

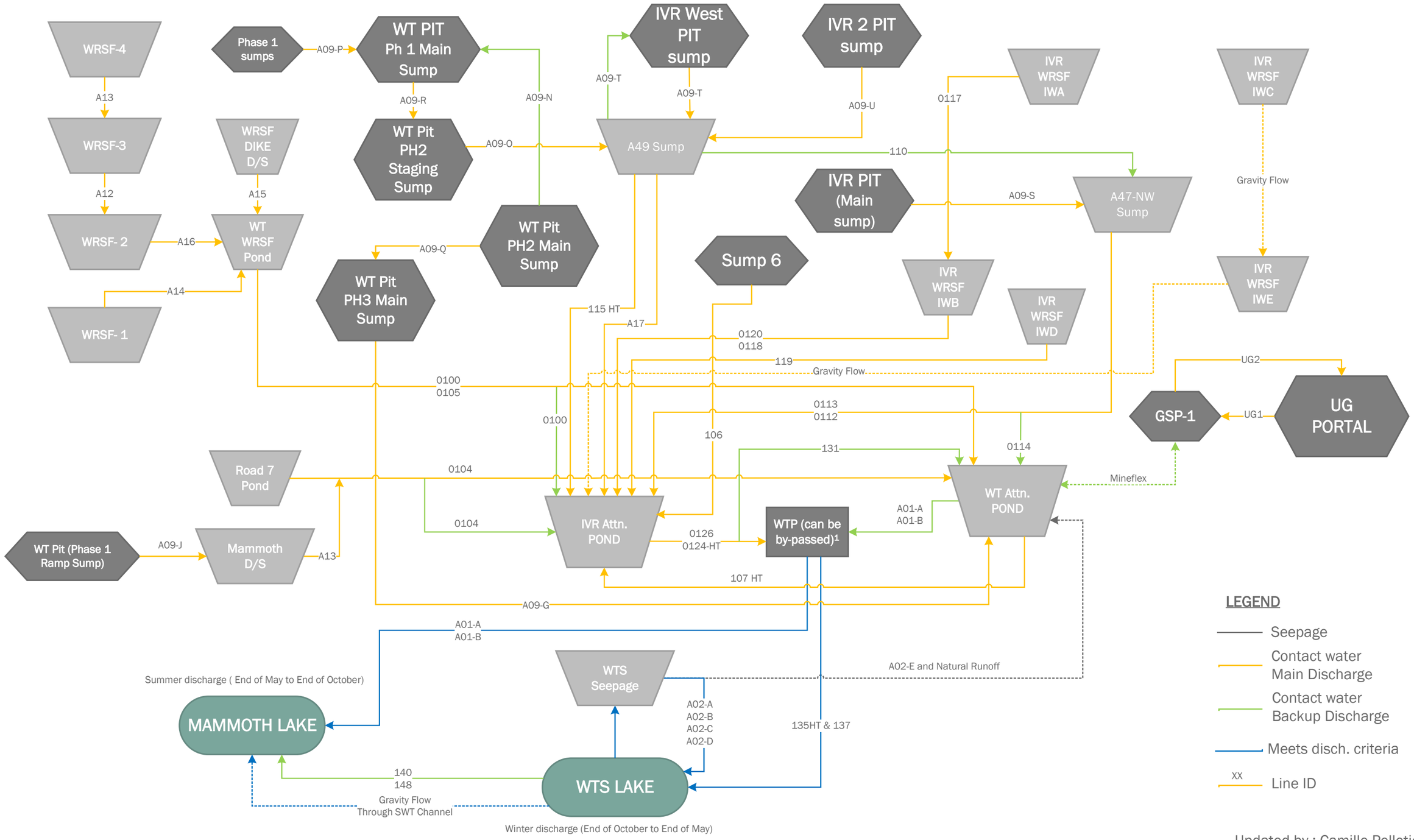
SCALE	FILE
N.T.S.	.DWG

DRAWING NO.	REVISION	SHEET
		1 / 1

APPENDIX 3

2022 Freshet flowchart and plan view

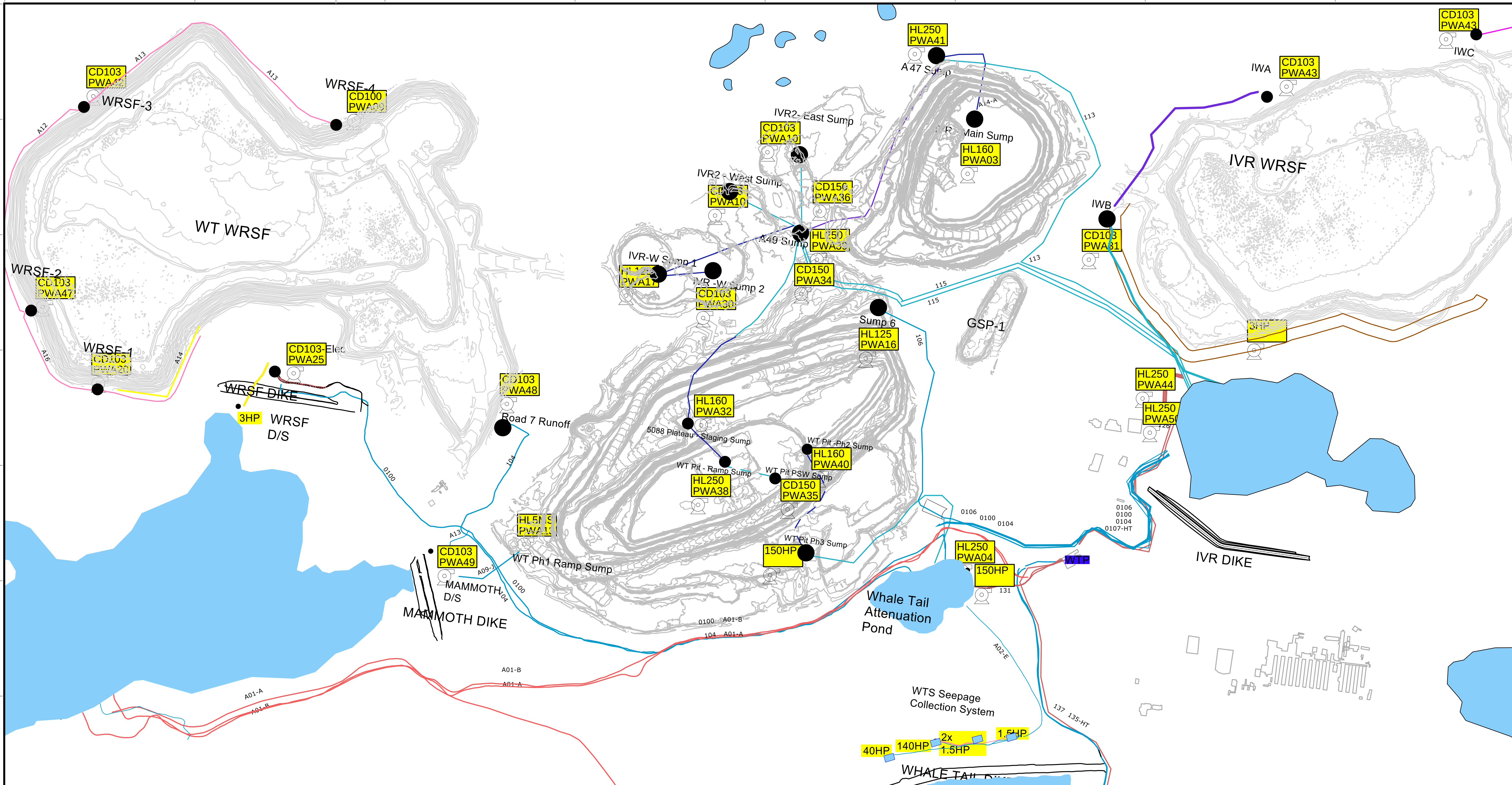
Amaruq 2022 Detailed Freshet Flowsheet



Updated by : Camille Pelletier
Date: 2022-03-06

[1] WTP can be by-passed if water quality in pond meet discharge criteria

FORMAT ANSI B – LANDSCAPE



Survey Lines - March 2022	Description	Color
	4" HDPE DR11	
	4" HDPE DR17	
	4" Layflat	
	8" HDPE DR11	
	8" HDPE DR17	
	12" MineFlex	
	14" HDPE DR11	
	14" HDPE DR17	
	6" HDPE DR17	

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DRAWN BY	Nicole.Brisson	DATE	2021-01-12
MODIFY BY	Nicole Brisson	DATE	2022-03-08

TITLE
AMARUQ
FRESHET 2022 PLAN

SCALE	DATE	FILE
1:10000	3/8/2022	AMQ–Freshet2022–Map

DEPARTMENT	REVISION	SHEET
ENGINEERING		1 / 1

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