Meliadine Extension

Nunavut Water Board Technical Meeting

October 12-13, 2023
Rankin Inlet, NU

AGNICO EAGLE

PRESENTATION SUMMARY

- Meliadine Extension Description
- Public Engagement and Community Response Update
- Technical Comments
  - Summary
  - Fisheries
  - Water Model
  - Meliadine Lake / AEMP
  - In-pit Deposition Alternative
  - Security
- Conclusion

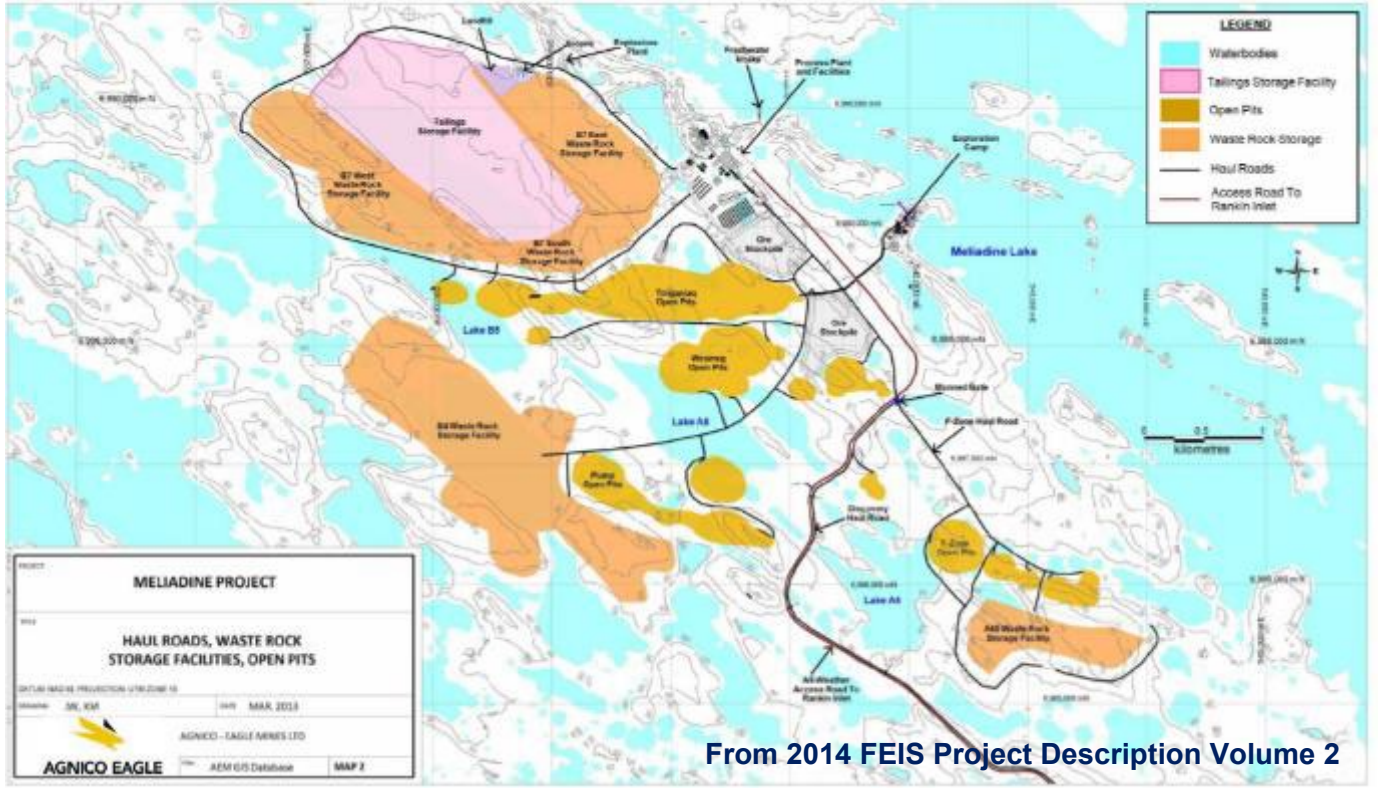
MELIADINE MINE – HISTORY

- **Project Certificate**
  - **2015:** issuance of Project Certificate No.006
  - **2018:** Project Certificate Amendment 001
  - **2022:** Project Certificate Amendment 002
  - **2023:** Project Certificate Amendment 003, in progress

- **Water Licence**
  - **2016:** issuance of Water Licence 2AM-MEL1631
  - **2021:** Water Licence Amendment

2014 FEIS HISTORY

- 2014 assessment included:
  - Tiriganiaq deposit using open pit and underground mining methods
  - Pump, F Zone, Wesmeg, and Discovery deposits using open pit methods
  - All-weather access road
  - Discovery road
  - Ore processing (8,500 tpd)



From 2014 FEIS Project Description Volume 2

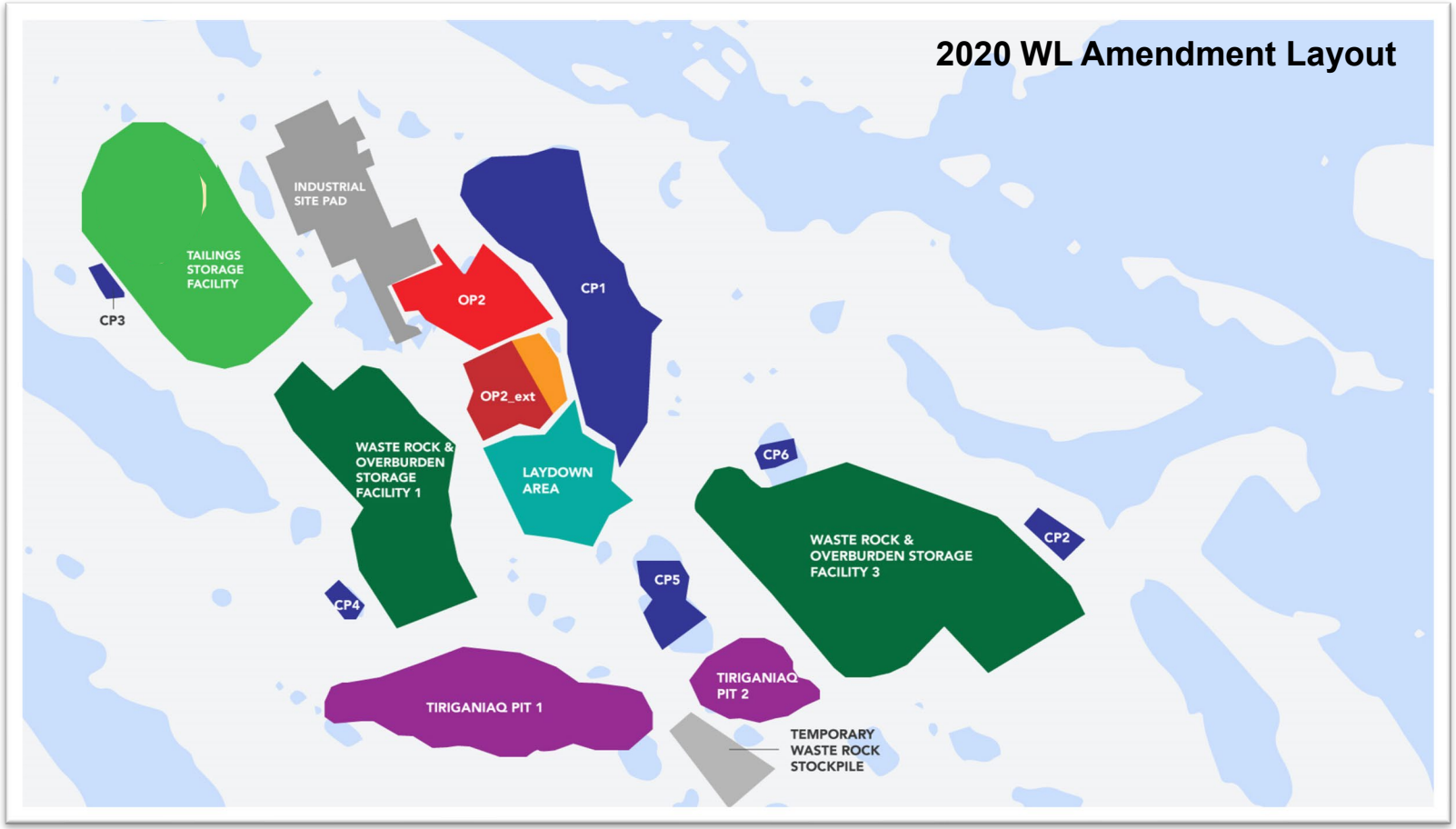
WATER LICENCE HISTORY

Approved Water Licence

- Only open pit and underground mining of the Tiriganiaq deposit
- Operations to 2027 (plus initial closure to 2031)

2020 Water Licence Amendment

- Construction of access roads
- Additional laydown areas
- Updated waste management strategy



MELIADINE EXTENSION FOR WATER LICENCE AMENDMENT

- Continue to mine open pit and underground at Tiriganiaq
- Initiate open pit mining at previously assessed and approved Pump, F Zone, Wesmeg, and Discovery deposits
- Include underground mining of Pump, F Zone, and Discovery deposits
- Extend existing underground mining of Tiriganiaq-Wolf
- Extend the mine of life to 2043

MELIADINE EXTENSION SEQUENCING

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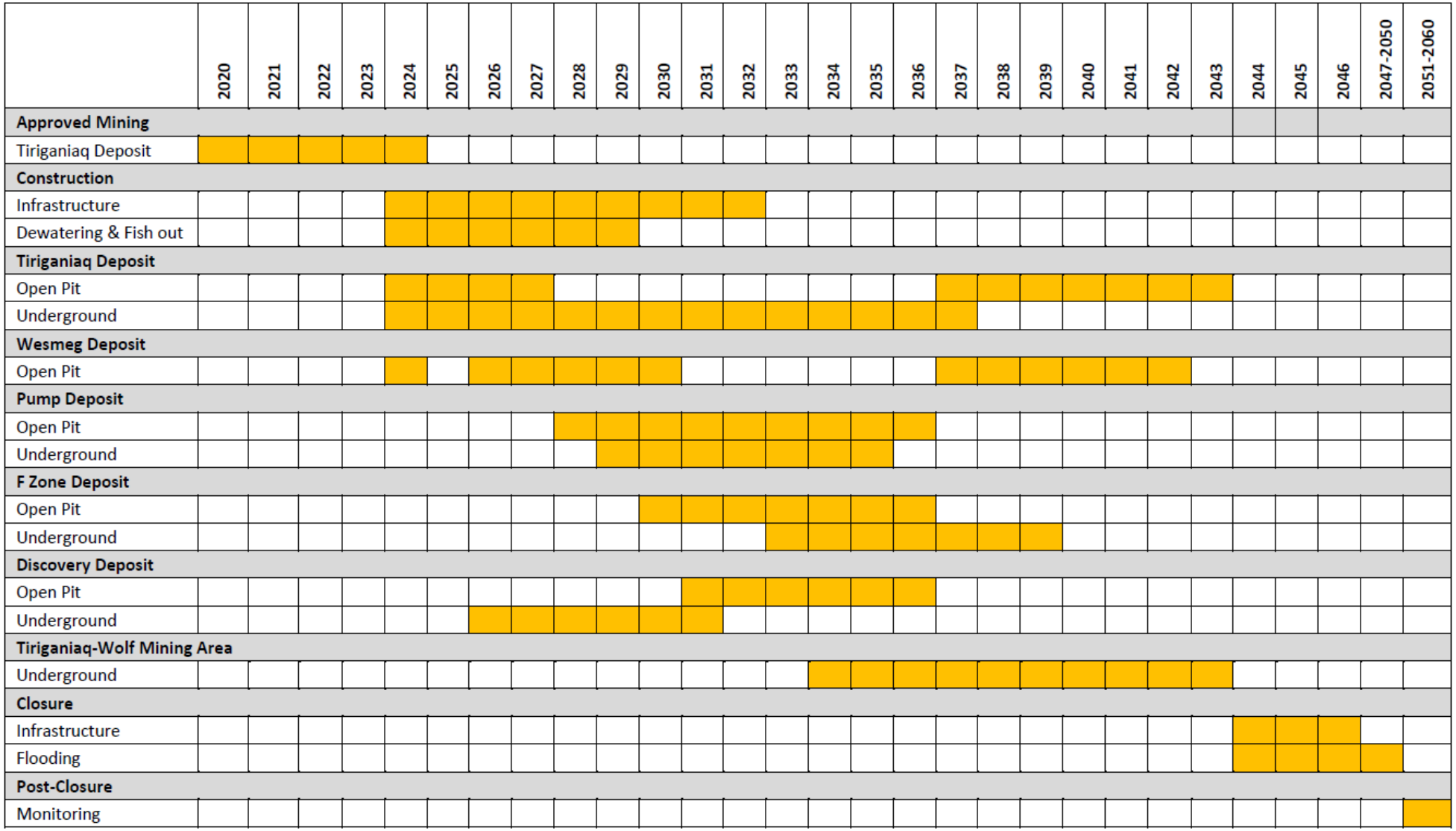
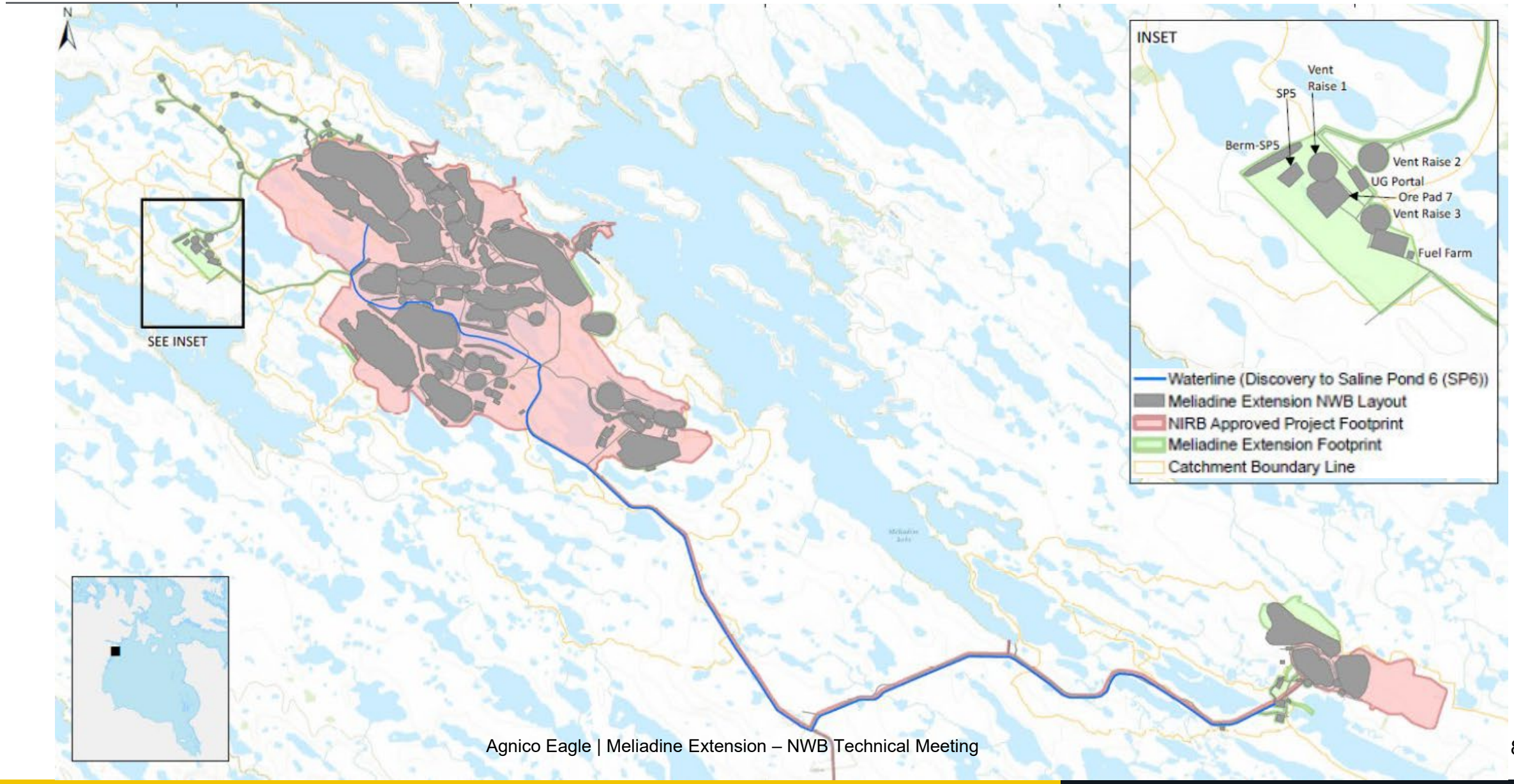


MELIADINE EXTENSION – NIRB APPROVED FOOTPRINT VS MELIADINE EXTENSION



MELIADINE EXTENSION – REFINED SITE LAYOUT

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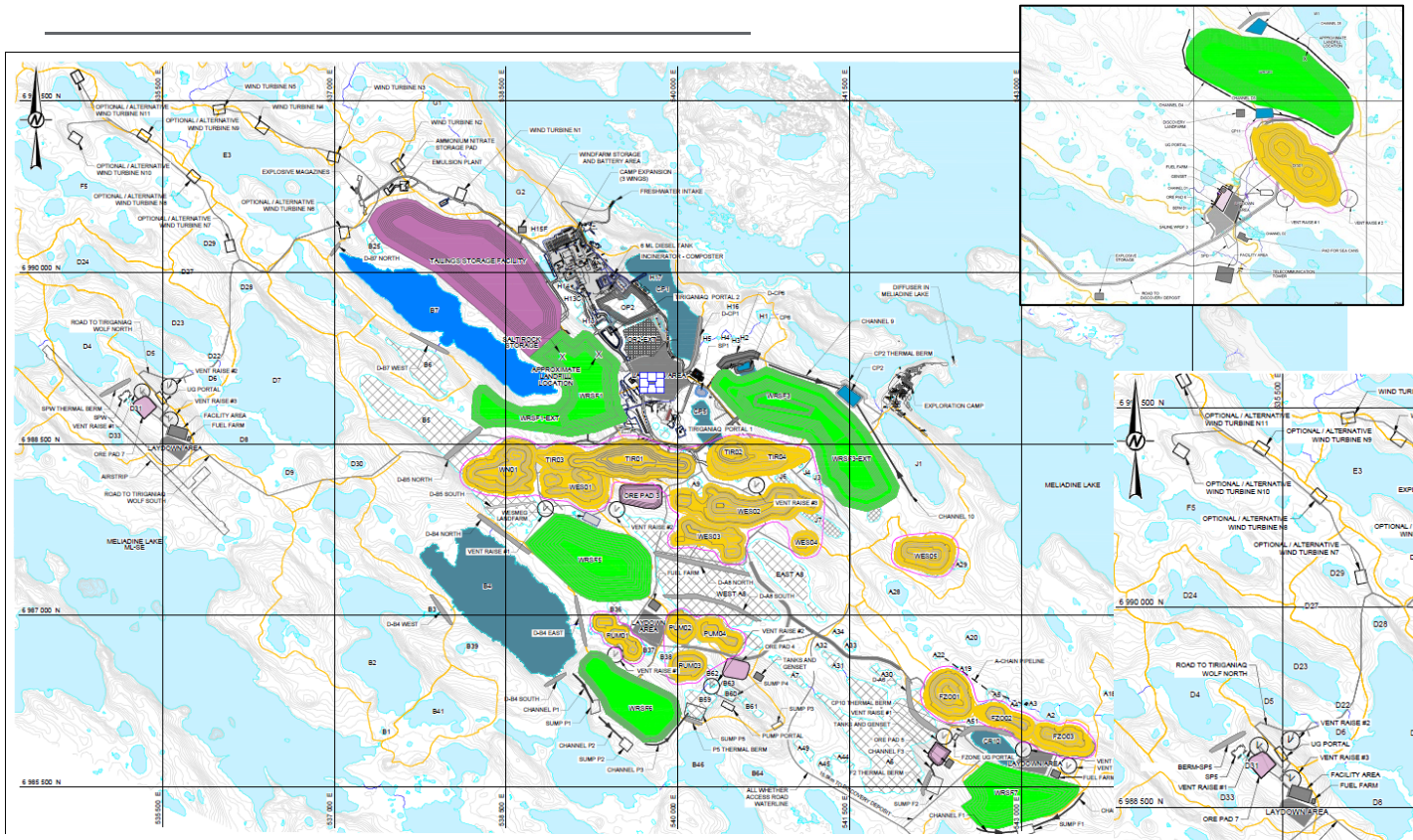
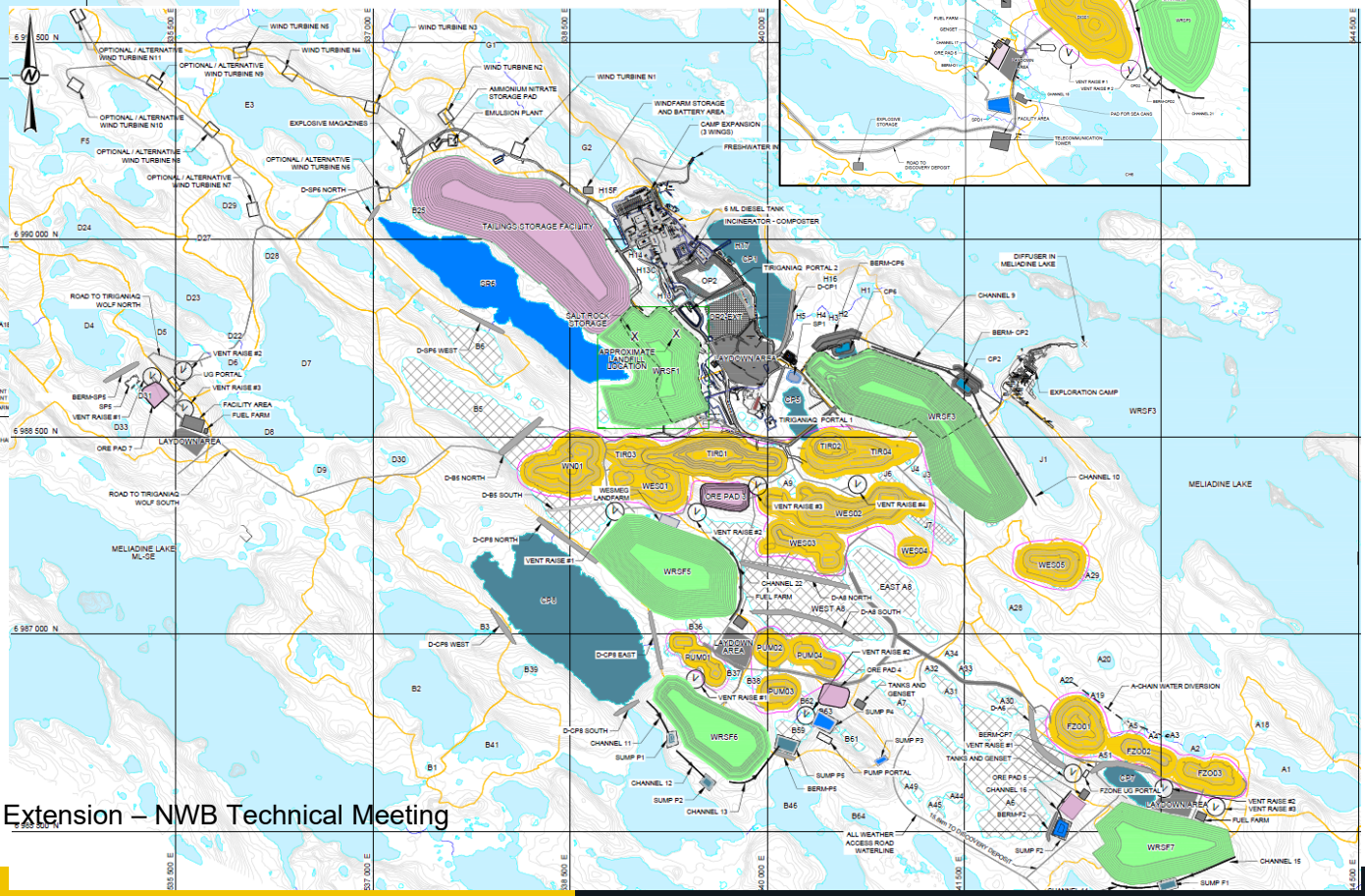


NIRB – 2022 FEIS Addendum

NWB – Water Licence Amendment



MELIADINE EXTENSION – ALTERNATIVE IN-PIT DISPOSAL

- Evaluating locations for in-pit tailings and waste rock deposition

- Benefits
  - Optimize the site footprint
  - Within areas that has previously been impacted
  - Reduces the surface area impacted

Public Engagement and Community Response Update

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MELIADINE EXTENSION - ENGAGEMENT EVENTS

- 12 focus group meetings
- 12 meetings
- 4 public sessions at the tent at kilometer 15
- 5 hybrid in-person-virtual public sessions
- Public Open houses in
  - 3 Rankin Inlet
  - 1 Coral Harbour
  - 1 Whale Cove
- 6 Site Visits

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- 12 ᑕᐅᑐᒃᖃᕐᓂᕐᒧᑦ ᑲᑎᒪᑎᑦᑎᓂᑦ
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  - 3 ᑲᖏᖅᓂᓂᖅ
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- 6 ᐅᔨᕐᑕᕆᐊᖑᑦ ᑕᓱᔨᖅᑐᐃᓂᑦ

Water Management Engagement 2023

- Discussions surrounding water quality and the health of Meliadine Lake led to the collaborative idea with the KivIA of a site visit to Meliadine Mine
- Firsthand understanding of how water is managed at site
- Included a tea tasting of Meliadine Lake Water (water intake) and accommodations complex water (treated tap water)
- Overview of water quality and tea properties that affect the colour and clarity of brewed tea

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- ᐅᖅᓪᓗᓇᖅᓴᐅᑎᓂᖅᓪᓚᐅᔨᖅᑐᑦ ᐃᒪᐅᐸ ᖃᓄᐃᓕᓂᖅ ᐊᒻᒪᓗ ᖃᓄᐃᖏᑦᑎᐊᖏᓕᓂᖅ ᑕᓯᖏᐊᐸ ᐊᓗᖓ ᐱᓕᓇᖅᑎᑦᓗᑦ ᐃᓯᒪᒋᐅᔨᕐᖏᖅ ᑭᓲᓕᖏᑦ ᐃᓄᐃᑦ ᑲᑐᔭᖅᑎᒋᔭᖅᑯᑦ ᐅᔪᖁᑕᓇᐊᖏᑦ ᑕძᖅᑐᐃᓂᐊᓕᓗᓂᖅ
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- ᐱᔪᑎᖃᖅᑐᖅ ᐃᒪᐅᐸ ᖃᓄᐃᓕᓂᓂᓂᑦ ᐊᒻᒪᓗ ᑎᑐᖅᑕᐅᔨᒻᑐᑦ ᖃᓄᖅᑕᐅᔨᖅᑐᑦ ᐊᓯᐊᓐᖓᖅᓯᔨᑦ ᐊᒻᒪᓗ ᖃᑭᐊᓂᓐᑕ ᑎᓕᐅᖅᑕᐅᔨᔪᐸ

Technical Comment Summary

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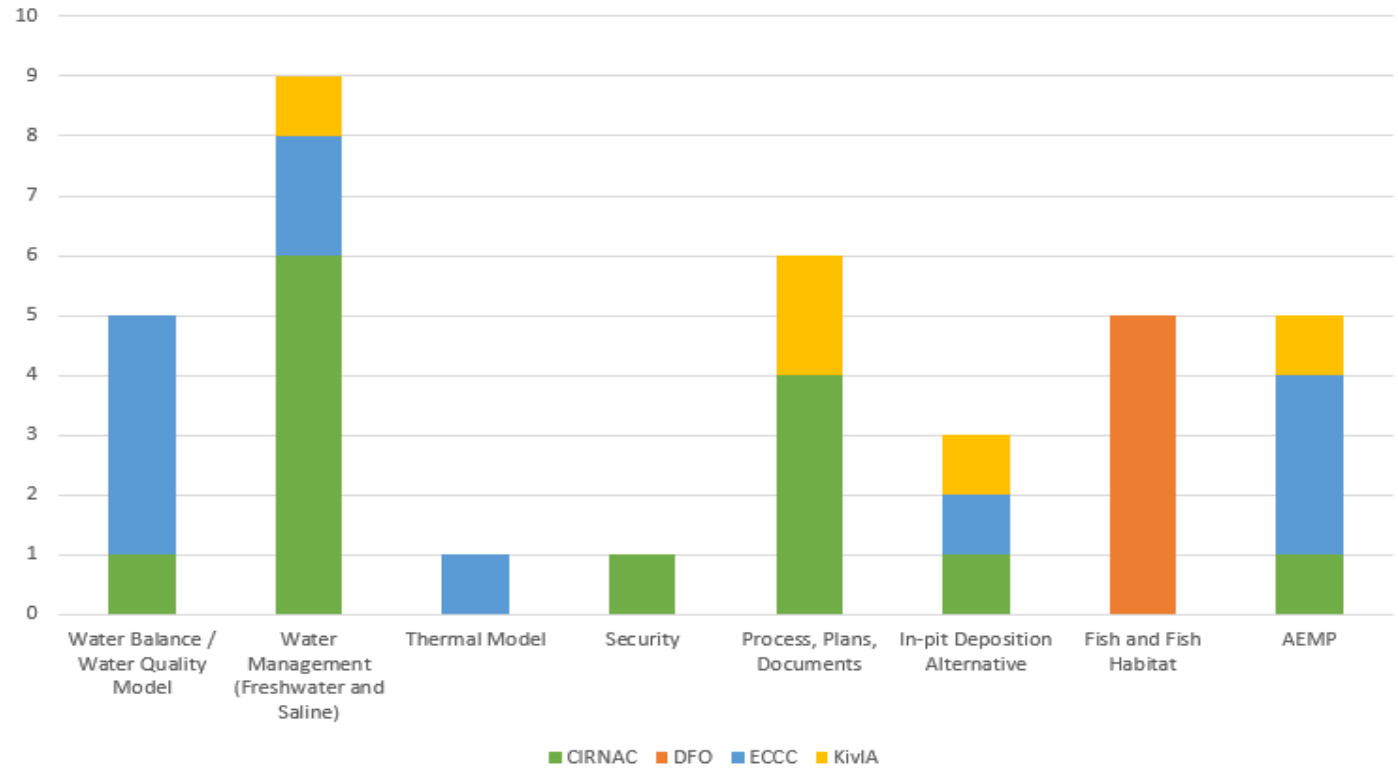
TECHNICAL COMMENT SUMMARY

Resolved through Response to Technical Comments	Resolved based on Current Operations / Annual Reporting	Resolved through Term and Condition, Commitment, NIRB Assessment	Resolved through Existing Conditions of Water Licence for WBWQ Forecast Updates	Resolved through Fisheries Act / Offsetting Plan
KivIA-TRC-04	KivIA-TRC-02	KivIA-TRC-01	KivIA-TRC-05	DFO-TRC-01
CIRNAC-R-03	KivIA-TRC-03	CIRNAC-R-01	CIRNAC-R-04	DFO-TRC-02
CIRNAC-R-05	CIRNAC-R-08	CIRNAC-R-02	ECCC-TRC-03	DFO-TRC-03
CIRNAC-R-06	CIRNAC-R-13		ECCC-TRC-09	
CIRNAC-R-07	ECCC-TRC-04			
CIRNAC-R-09				
CIRNAC-R-10				
CIRNAC-R-11				
CIRNAC-R-12				
CIRNAC-R-14				
ECCC-TRC-01				
ECCC-TRC-02				
ECCC-TRC-05				
ECCC-TRC-06				
ECCC-TRC-07				
ECCC-TRC-08				
ECCC-TRC-10				
ECCC-TRC-11				
DFO-TRC-04				
DFO-TRC-05				



TECHNICAL COMMENT SUMMARY – FISHERIES

- Comprehensive understanding of the fish communities and fish habitat within the local study area
- Extensive fisheries studies since 1994
  - Sampled more than 205 waterbodies and 110 watercourses since 2011; and,
  - Undertaken more than 1500 individual fishing events
- Nine freshwater fish species occur in the study area.
- No new species have been identified in the study area in more than 25 years

Common Name (Taxonomic Name)
Arctic Char (*Salvelinus alpinus*)
Lake Trout (*Salvelinus namaycush*)
Arctic Grayling (*Thymallus arc*ticus)
Round Whitefish (*Prosopium cylindraceum*)
Burbot (*Lota lota*)
Cisco (*Coregonus artedi*)
Ninespine Stickleback (*Pungitius pungitius*)
Slimy Sculpin (*Cottus cognatus*)
Threespine Stickleback (*Gasterosteus aculeatus*)

TECHNICAL COMMENT SUMMARY – FISHERIES

- Anticipated impacts to fish and fish habitat are well documented and understood.
- Conservative approach to determining losses of fish and fish habitat
- Conservative Assumptions:
  - All impacts occur on day 1 of the extension project
  - More diverse fish communities
  - All impacts are a complete loss of fish habitat
  - Reduced flows to downstream areas are a complete loss of fish habitat
- Fish habitat loss calculations were based on the above assumptions.

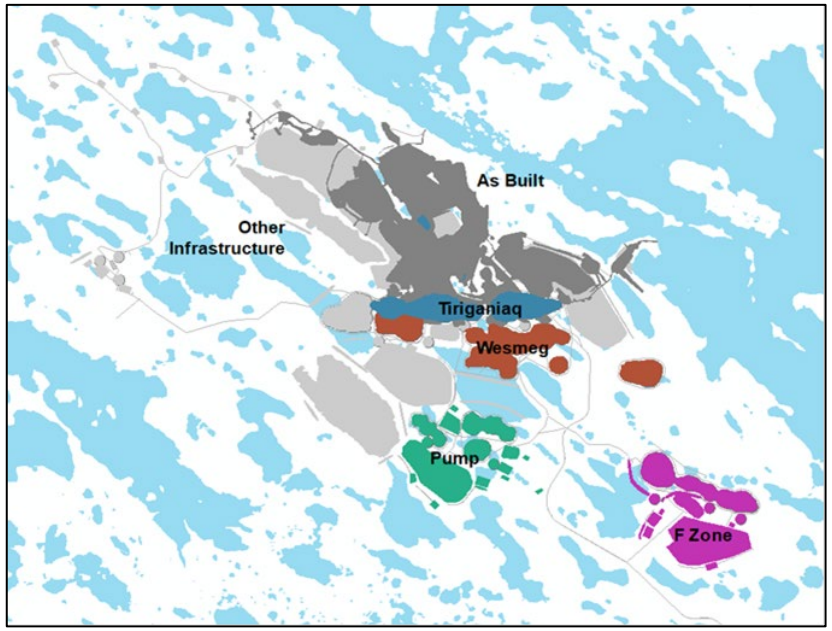


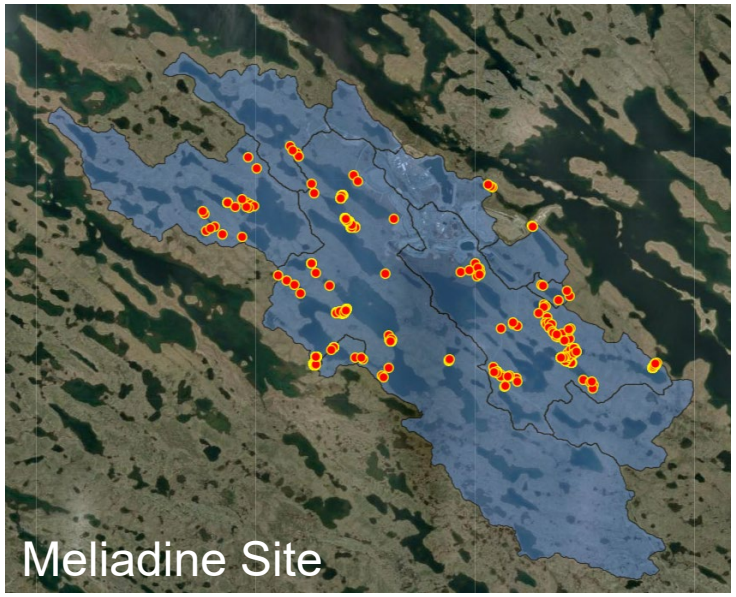
Table 2-5:
Open pit and underground mine water management schedule

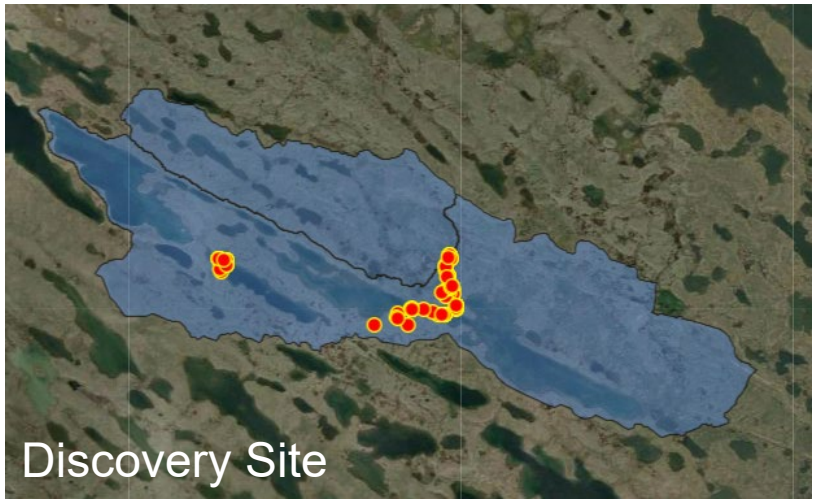
Calendar Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Mine Year	-4	-3	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Approved Mining	M	M	M	M	M																			
TIRI02	M	Saline contact water storage			M	M	D	D	D	D	D	D	D	D	D	D	D	D	x	x	x	x	x	x
TIRI01	-	M	M	M	M	M	M	M	D	D	D	D	D	D	D	D	D	D	x	x	x	x	x	x
TIRI03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	M	M	M	M	x	x	x
TIRI04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	M	M	M
TIRI UG	-	-	-	-	U	U	U	U	U	U	U	U	U	U	U	U	U	U	x	x	x	x	x	x
TIRI-Wolf UG	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	U	U	U	U	U	U	U	U	U
WES04	-	-	-	-	M	M	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
WES01	-	-	-	-	-	M	M	M	M	D	D	D	D	D	D	D	D	D	x	x	x	x	x	x
WN01	-	-	-	-	-	-	M	M	M	M	M	D	D	D	D	D	x	x	x	x	x	x	x	x
WES02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	M	M	M	M	x	x	x
WES03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	M	M	M	x	x	x
WES05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	M	x	x
PUMP03	-	-	-	-	-	-	-	-	M	M	M	D	D	D	D	D	x	x	x	x	x	x	x	x
PUMP01	-	-	-	-	-	-	-	-	-	M	M	M	x	x	x	x	x	x	x	x	x	x	x	x
PUMP02	-	-	-	-	-	-	-	-	-	-	-	-	M	M	M	M	x	x	x	x	x	x	x	x
PUMP04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	x	x	x	x	x	x	x
PUMP UG	-	-	-	-	-	-	-	-	-	U	U	U	U	U	U	U	x	x	x	x	x	x	x	x
F ZONE01	-	-	-	-	-	-	-	-	-	-	M	M	M	M	M	D	D	D	D	D	x	x	x	x
F ZONE02	-	-	-	-	-	-	-	-	-	-	-	-	M	M	M	M	M	D	D	D	x	x	x	x
F ZONE03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M	D	D	D	x	x	x	x
F ZONE UG	-	-	-	-	-	-	-	-	-	-	-	-	-	U	U	U	U	U	U	U	x	x	x	x
Discovery	-	-	-	-	-	-	-	-	-	-	-	M	M	M	M	M	M	x	x	x	x	x	x	x
Discovery UG	-	-	-	-	-	-	U	U	U	U	U	U	x	x	x	x	x	x	x	x	x	x	x	x

M = Open pit (OP) mining and dewatering
D = finished mining (OP), still dewatering
U = Underground mining
x = finished mining (UG or OP), no dewatering
- = Pre-mining

TECHNICAL COMMENT SUMMARY – FISHERIES – OFFSETTING PLAN

- Extensive consultation with Fisheries and Oceans Canada to determine locations and types of data to be collected in 2023.
  - Focus on seasonal use of habitats
  - Connectivity during the freshet
- Detailed field data collection at Pistol Bay in support of the Meliadine Extension Offsetting Plan
  - Hydrology
  - Fisheries (Arctic Char)



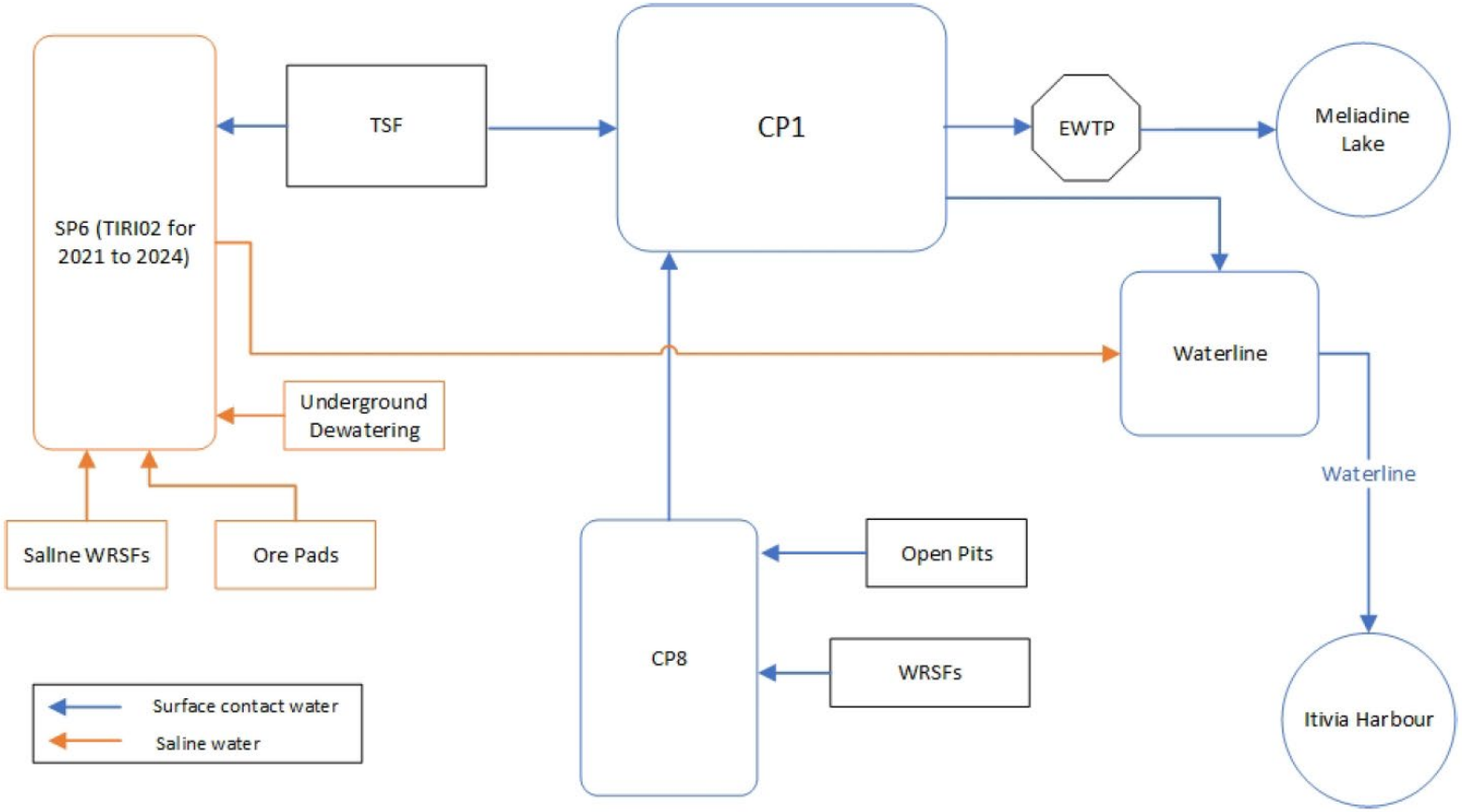


TECHNICAL COMMENT SUMMARY – FISHERIES – OFFSETTING PLAN

- Updates to the offsetting plan:
  - July 2022: Conceptual Plan (submitted to the NIRB)
  - January 2023: Detailed plan (submitted to DFO and the NWB)
  - June 2023: Updates included assumed presence based on nearby observations, losses due to reduced flows (submitted to DFO)
  - July 2023: Updates loss calculations to biomass (submitted to DFO and to the NWB in September)
- Final plan to be submitted with *Fisheries Act* Authorization Package (anticipated Q1 2024)

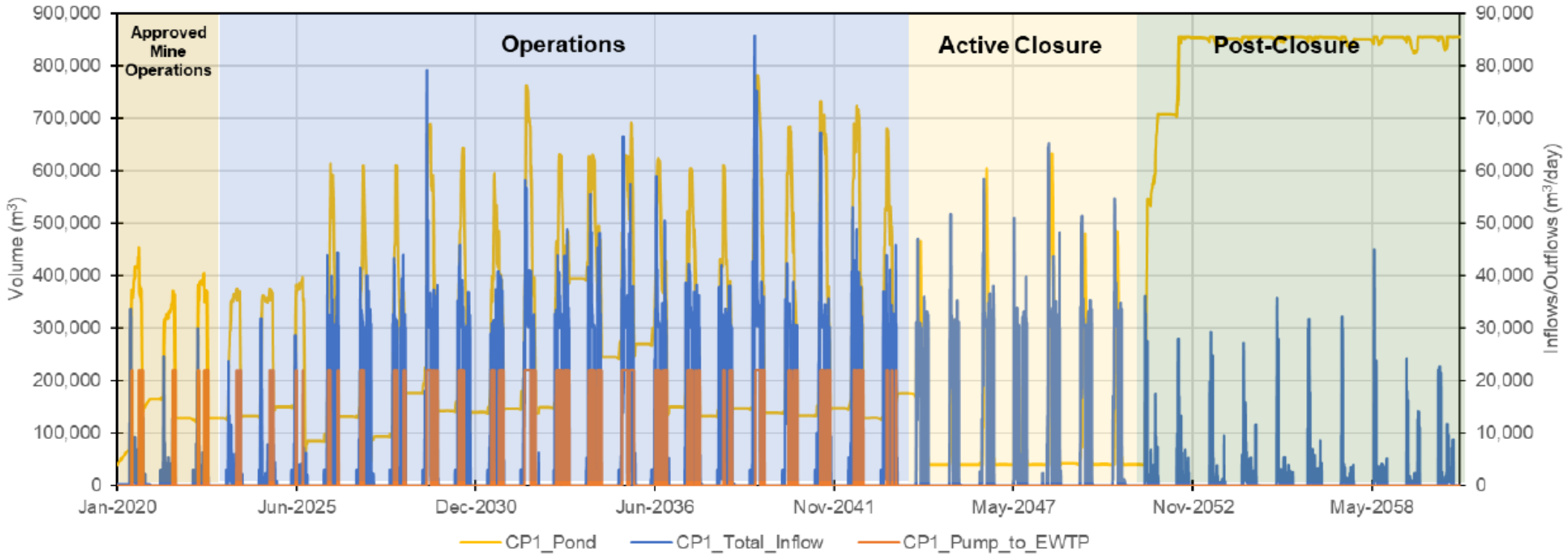
TECHNICAL COMMENT SUMMARY – WATER MODEL

- Site Water Management Flow Diagram



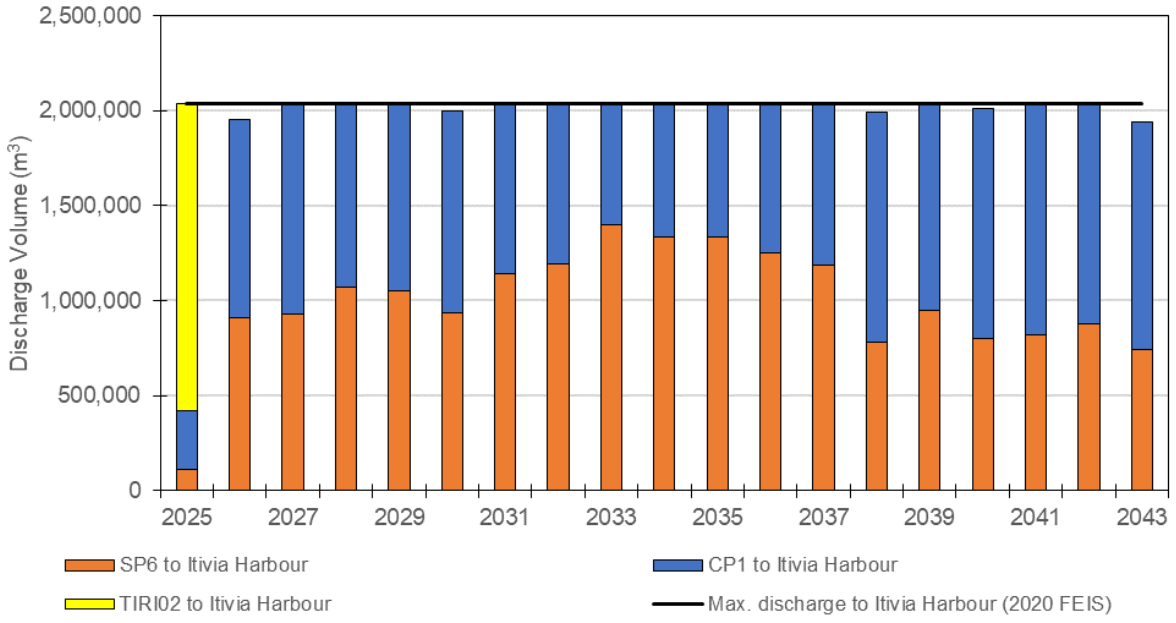
TECHNICAL COMMENT SUMMARY – WATER MODEL

- Pond volume predictions

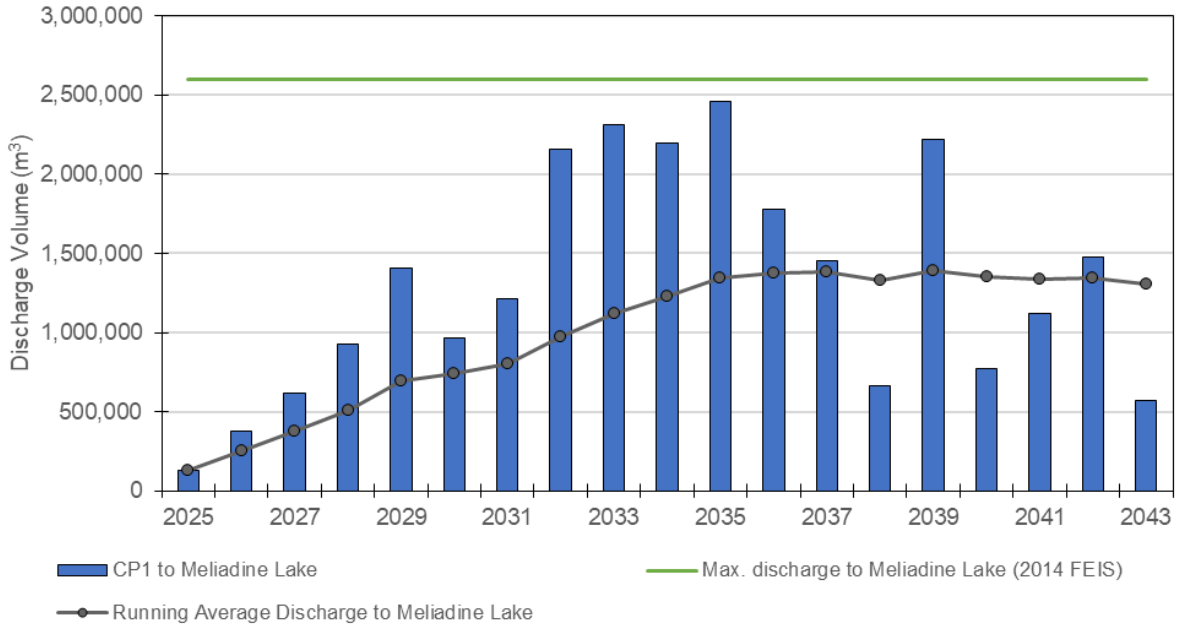


TECHNICAL COMMENT SUMMARY – WATER MODEL

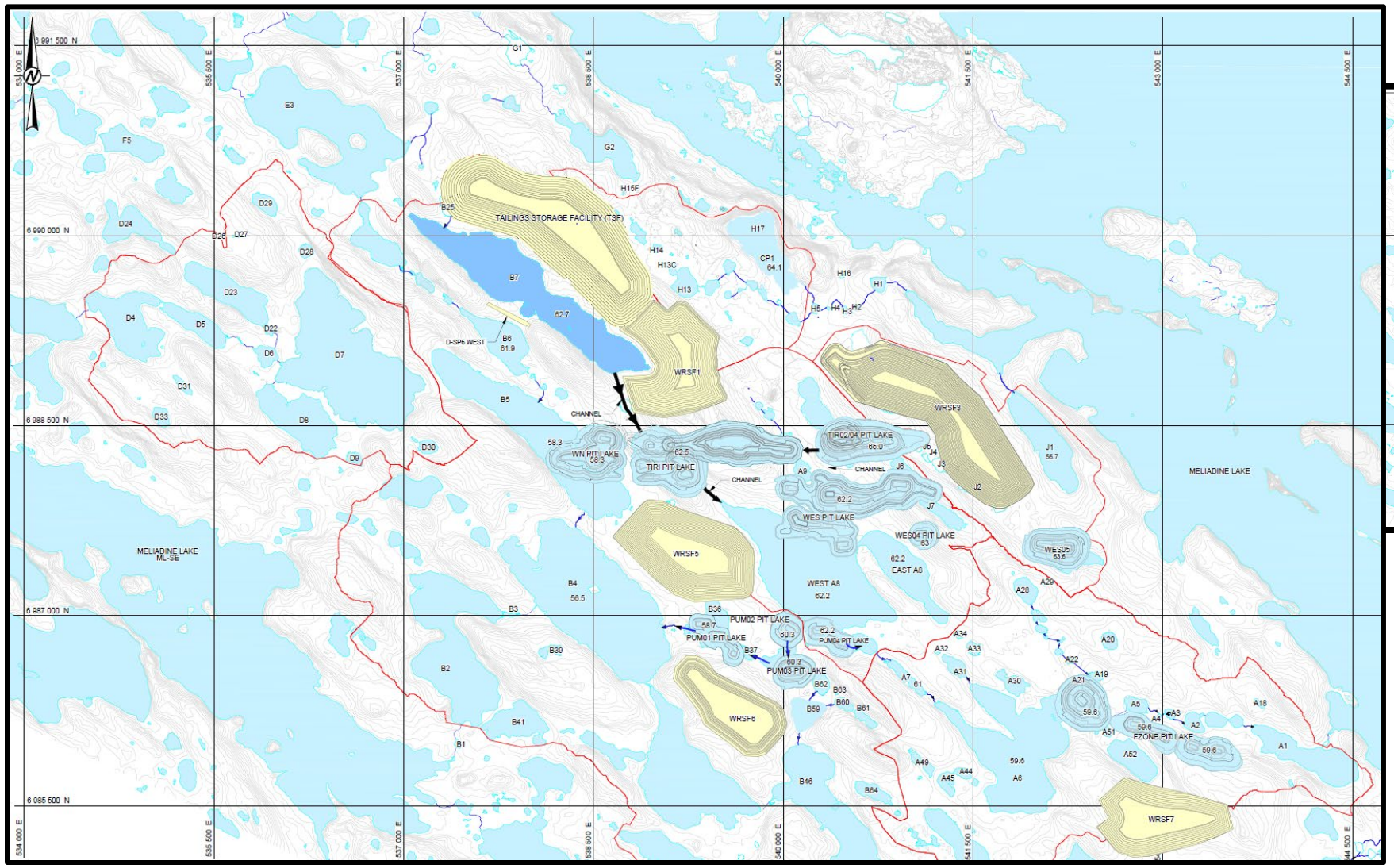
- Discharge (saline water) to Itivia Harbour

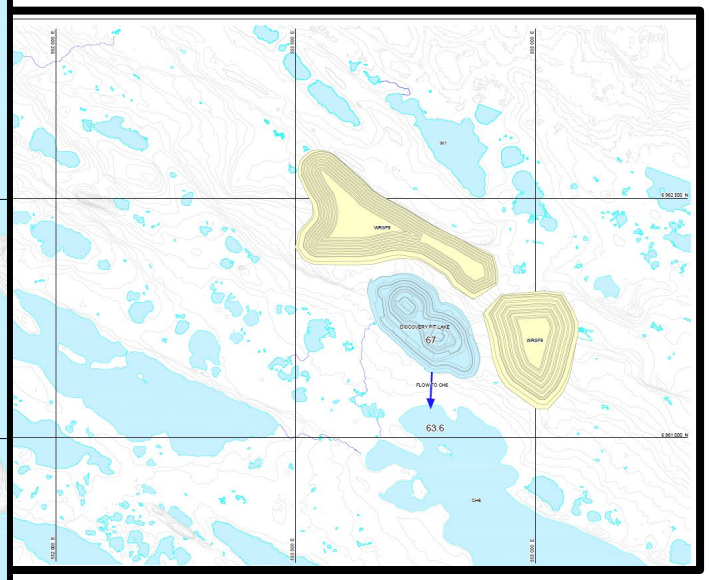


- Discharge (contact water) to Meliadine Lake



TECHNICAL COMMENT SUMMARY – WATER MODEL



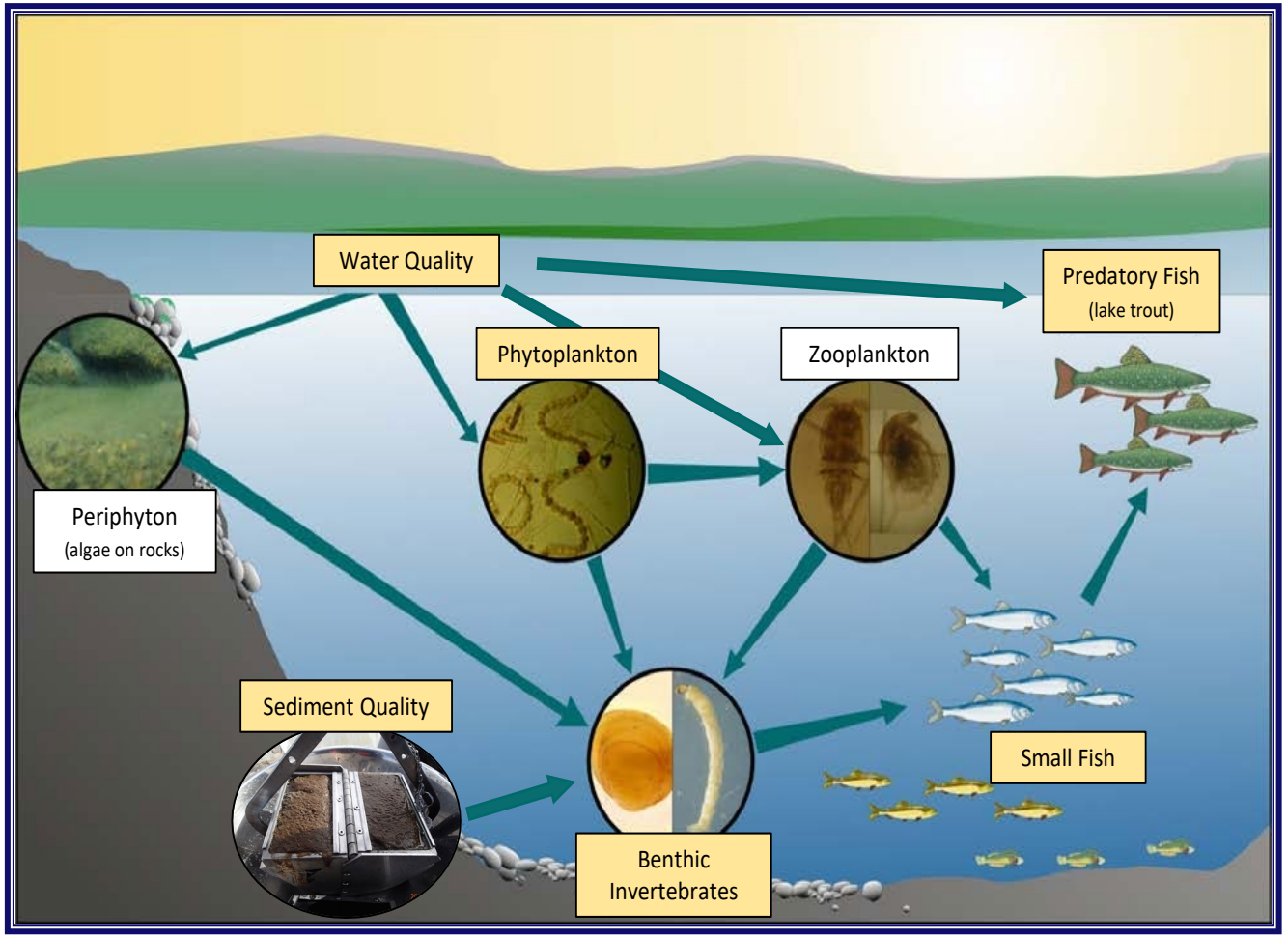


TECHNICAL COMMENT SUMMARY – AEMP

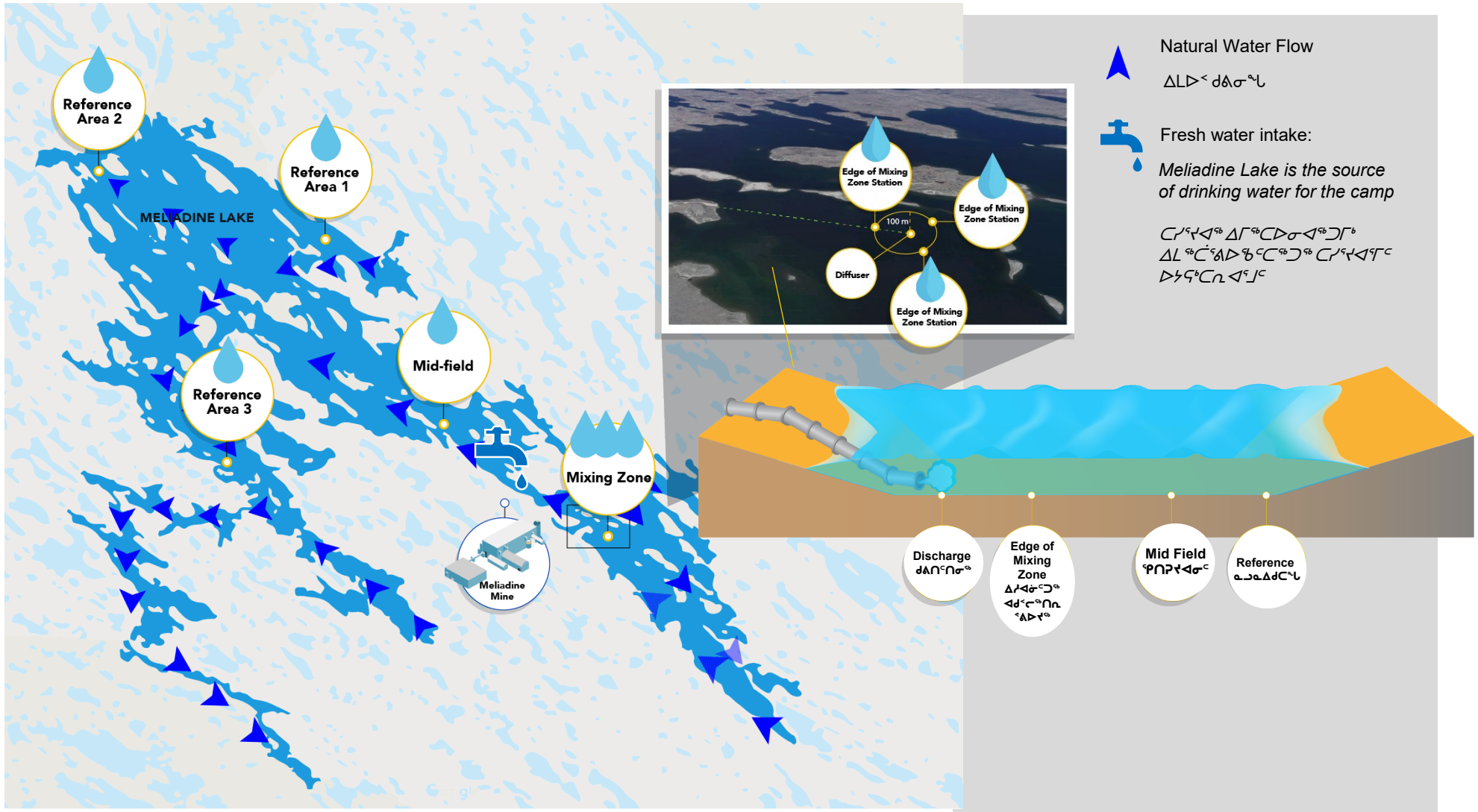
Aquatic Effects Monitoring Program – What is it?

Regular monitoring in Meliadine Lake to make sure that:

1. Water is safe to drink
2. Fish are safe to eat
3. The lake is healthy for fish and other organisms

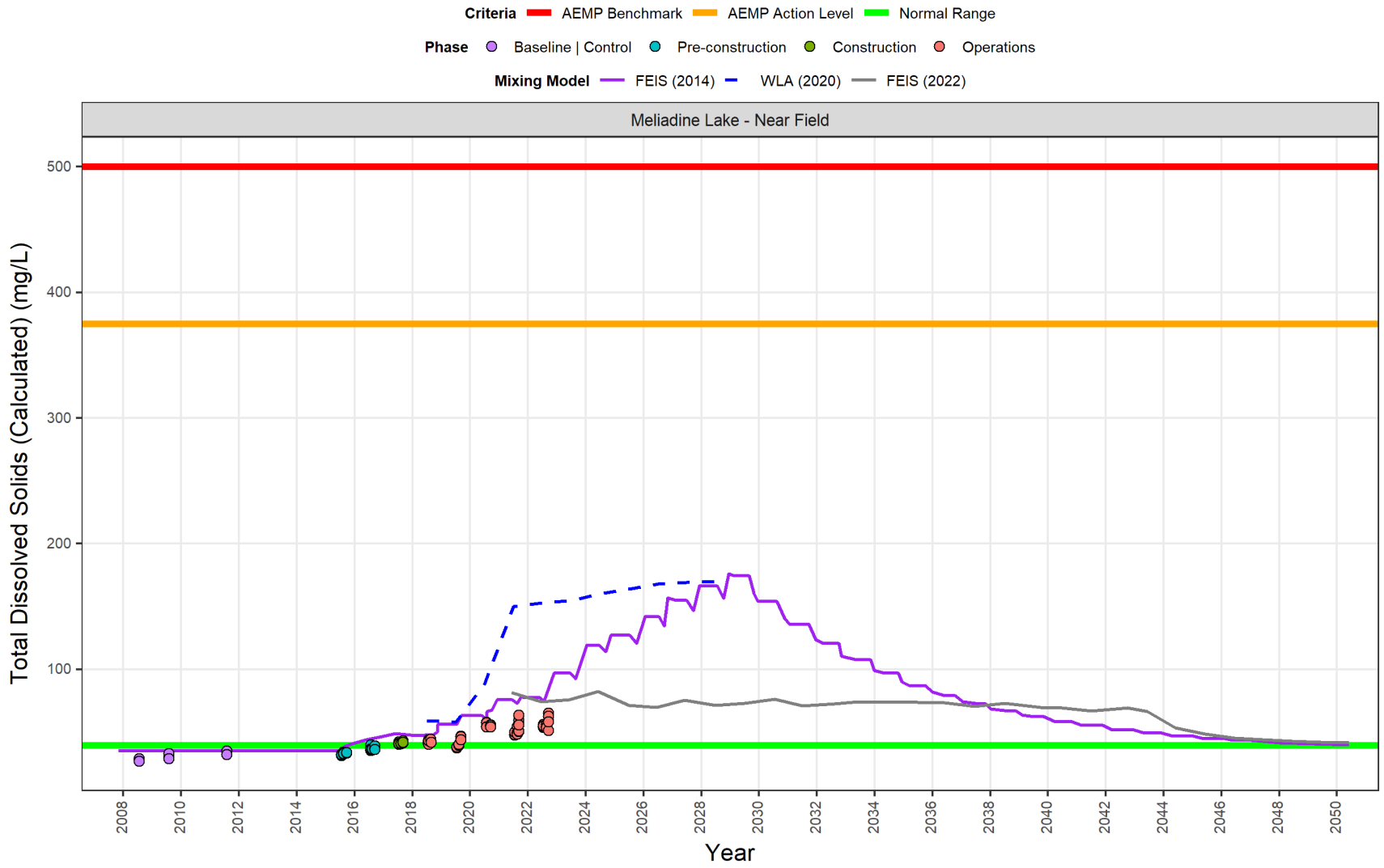


TECHNICAL COMMENT SUMMARY – MELIADINE LAKE MONITORING AREAS



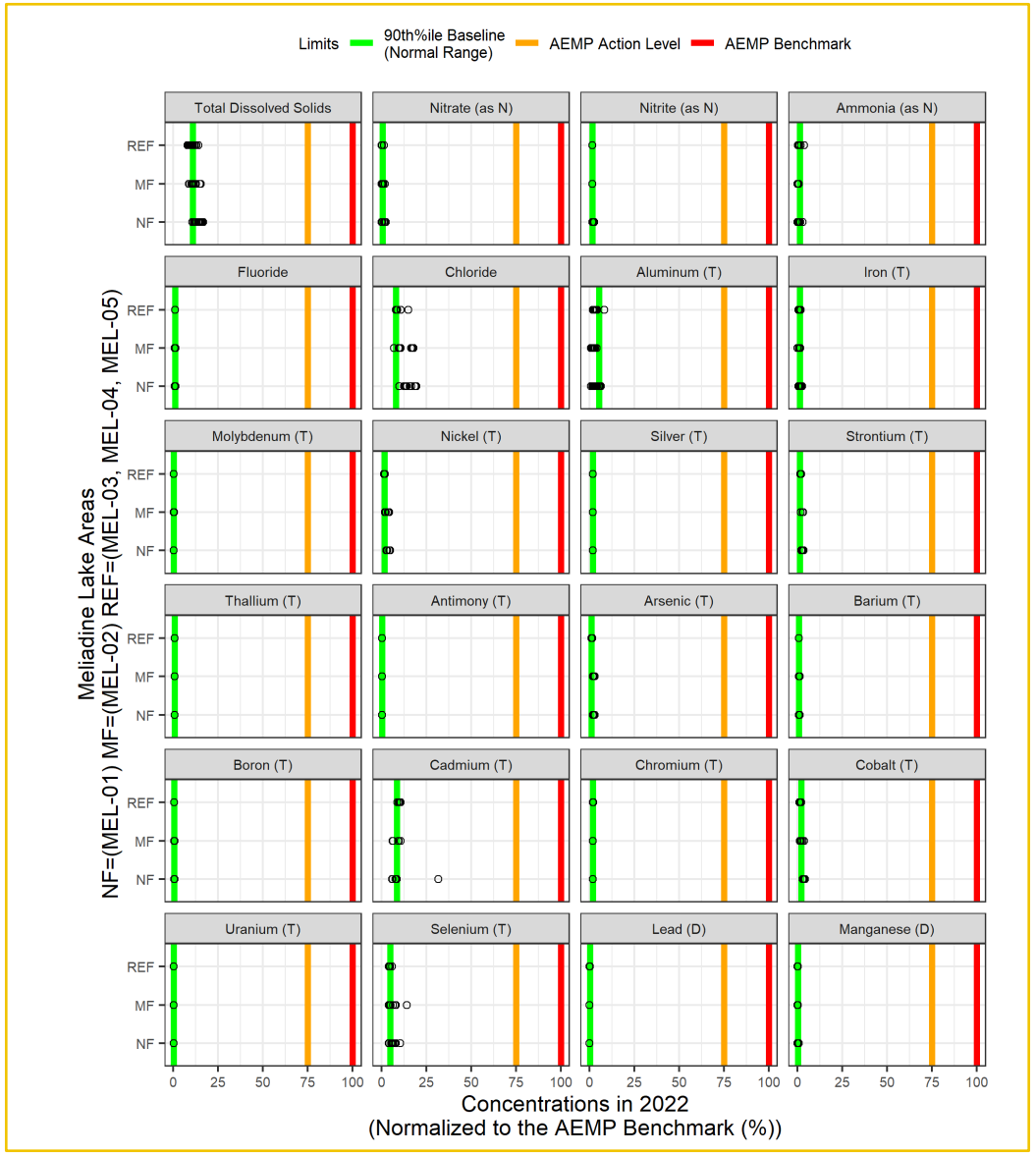
TECHNICAL COMMENT SUMMARY – WATER QUALITY IN MELIADINE LAKE

- Water quality was predicted to change
- Concentrations of total dissolved solids (TDS) and constituent major ions (e.g., chloride) remain well below guidelines



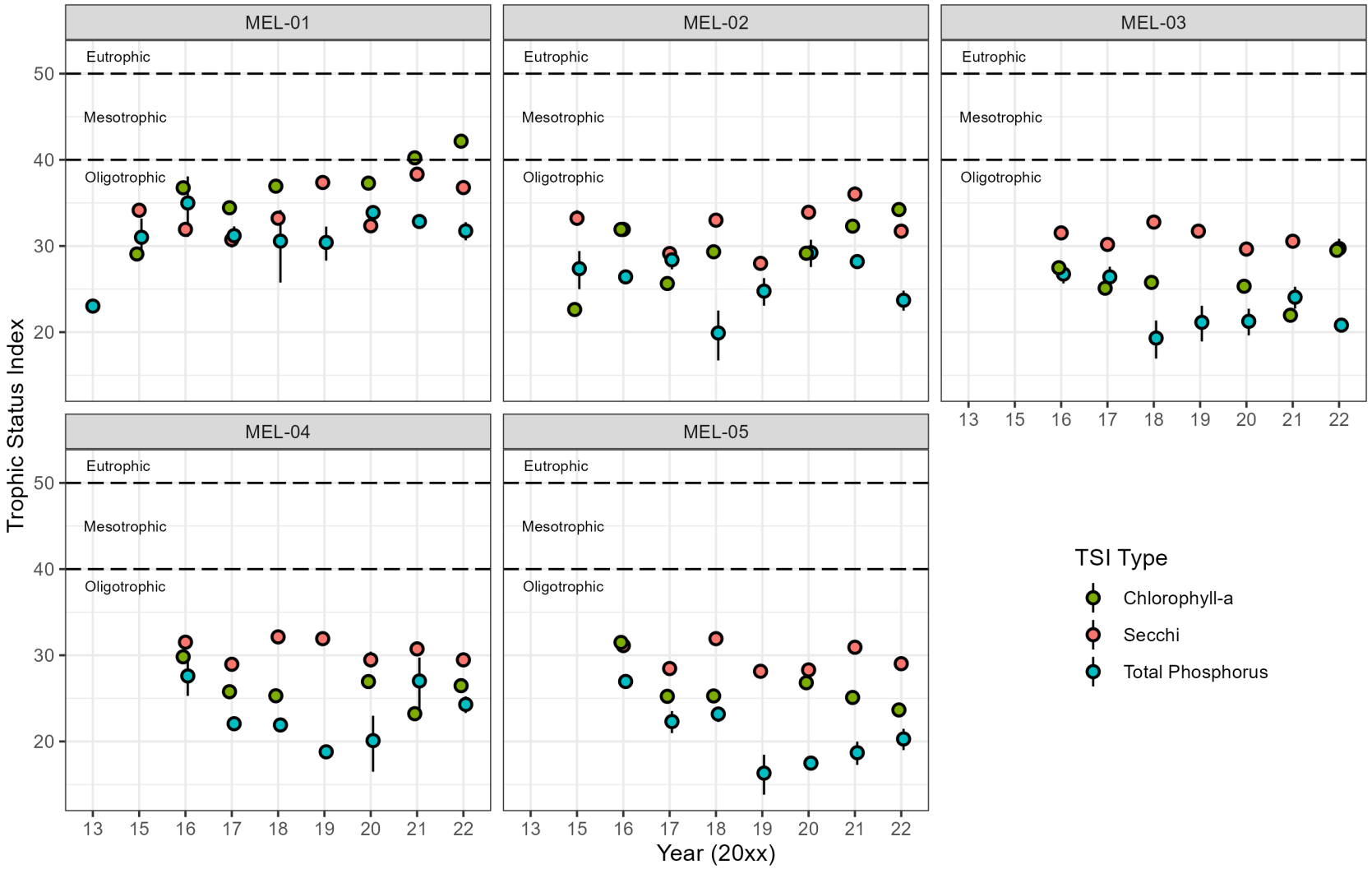
TECHNICAL COMMENT SUMMARY – WATER QUALITY IN MELIADINE LAKE

- Concentrations of parameters with aquatic life and human health guidelines are low throughout Meliadine Lake, including in samples collected at 100 m to 250 from the discharge location.



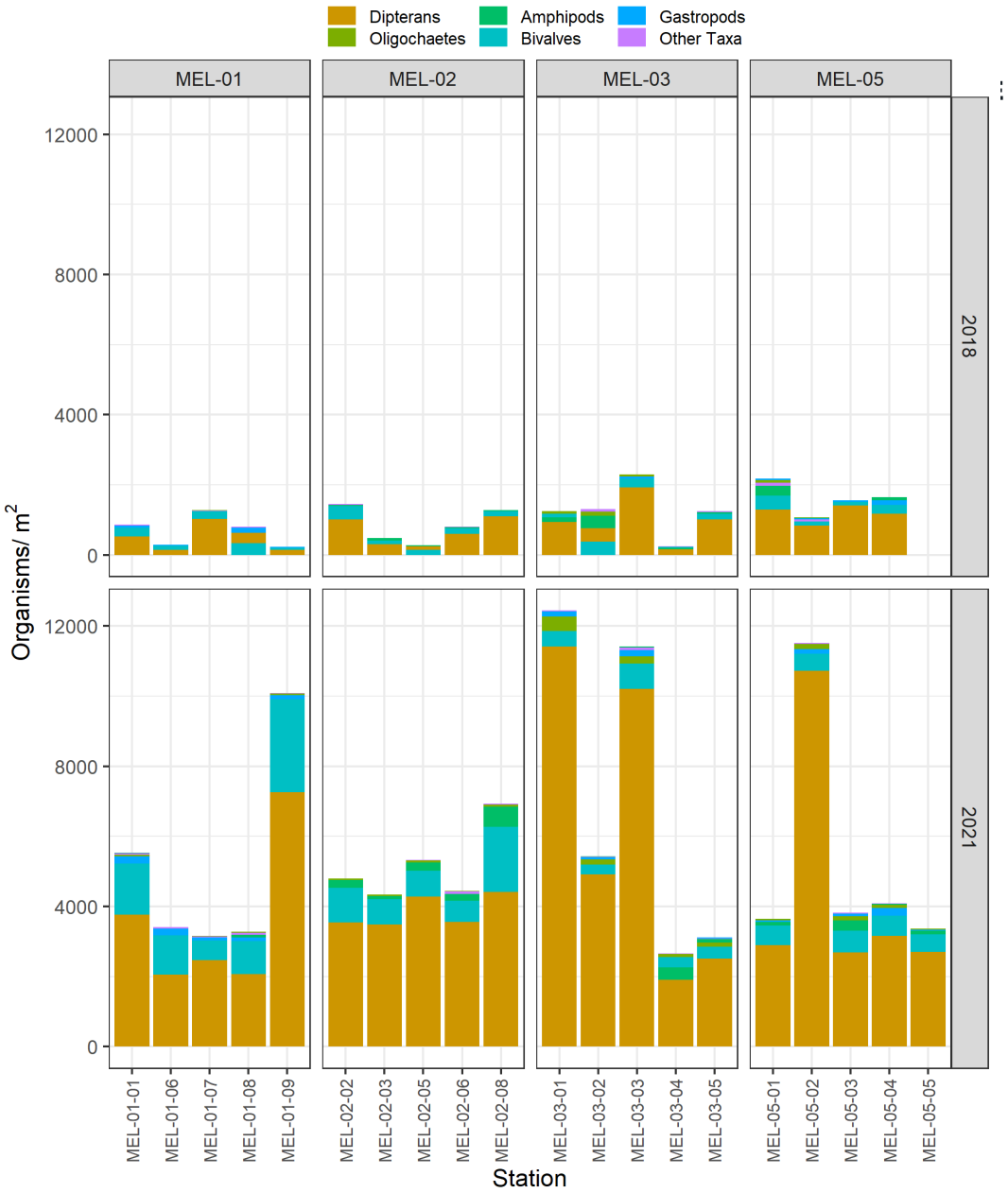
TECHNICAL COMMENT SUMMARY – HEALTH OF AQUATIC LIFE – PHYTOPLANKTON

- Chlorophyll-a, an indirect measure of primary productivity, has increased in the East Basin in recent years, but phytoplankton biomass has remained stable.
- There is no evidence of widespread nutrient enrichment and algal blooms in Meliadine Lake.

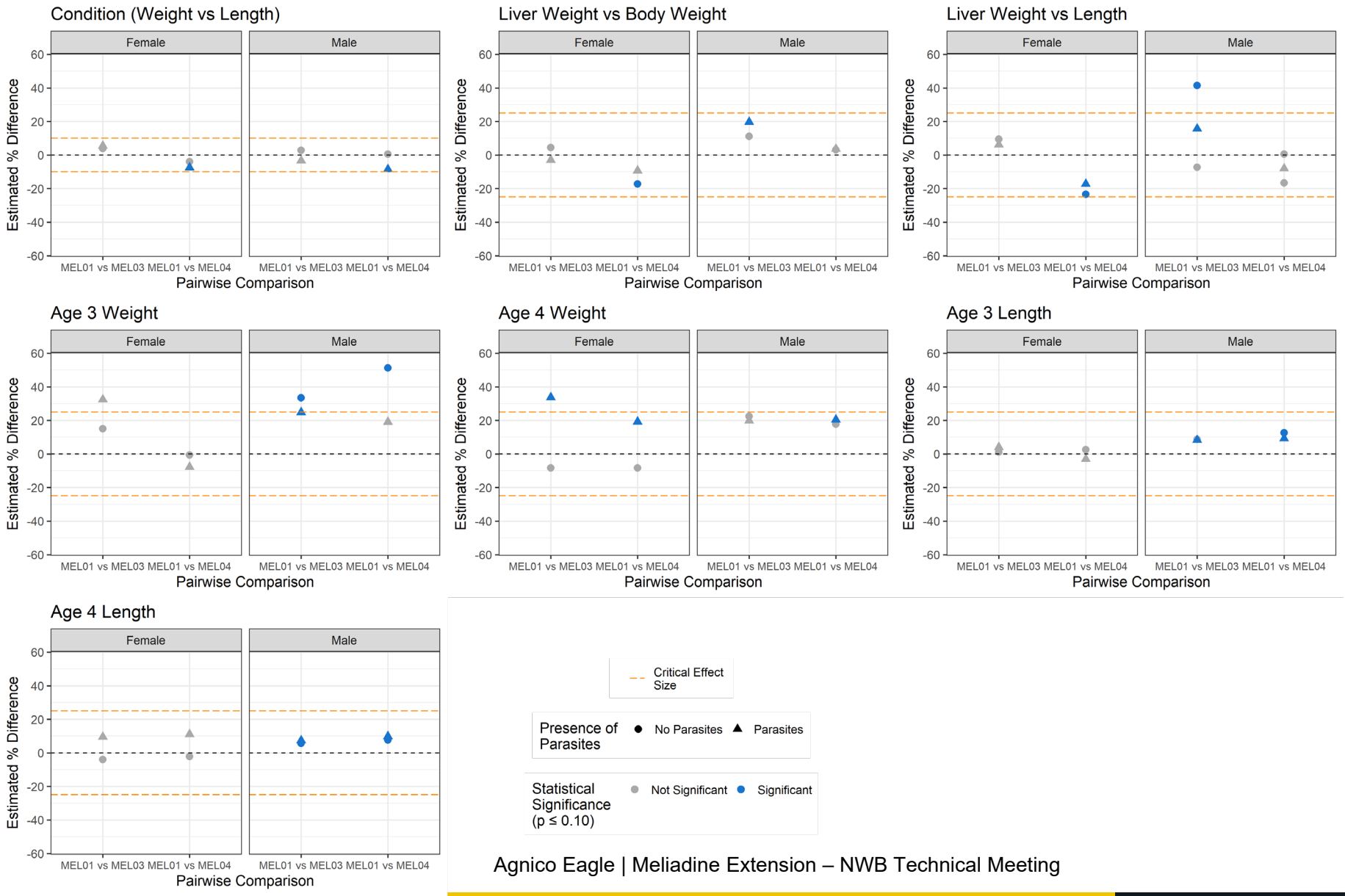


TECHNICAL COMMENT SUMMARY – HEALTH OF AQUATIC LIFE – BENTHIC INVERTEBRATES

- Benthic invertebrate community abundance is highly variable from year-to-year.
- Abundance (# of organisms/m^2) was higher in 2021 compared to 2018 at all study areas.
- No statistical differences in abundance, richness, or diversity indices at MEL-01 (NF) compared to the reference areas (MEL-03 and MEL-05).
- Back-to-back monitoring cycles where no effects were observed (2018 and 2021).



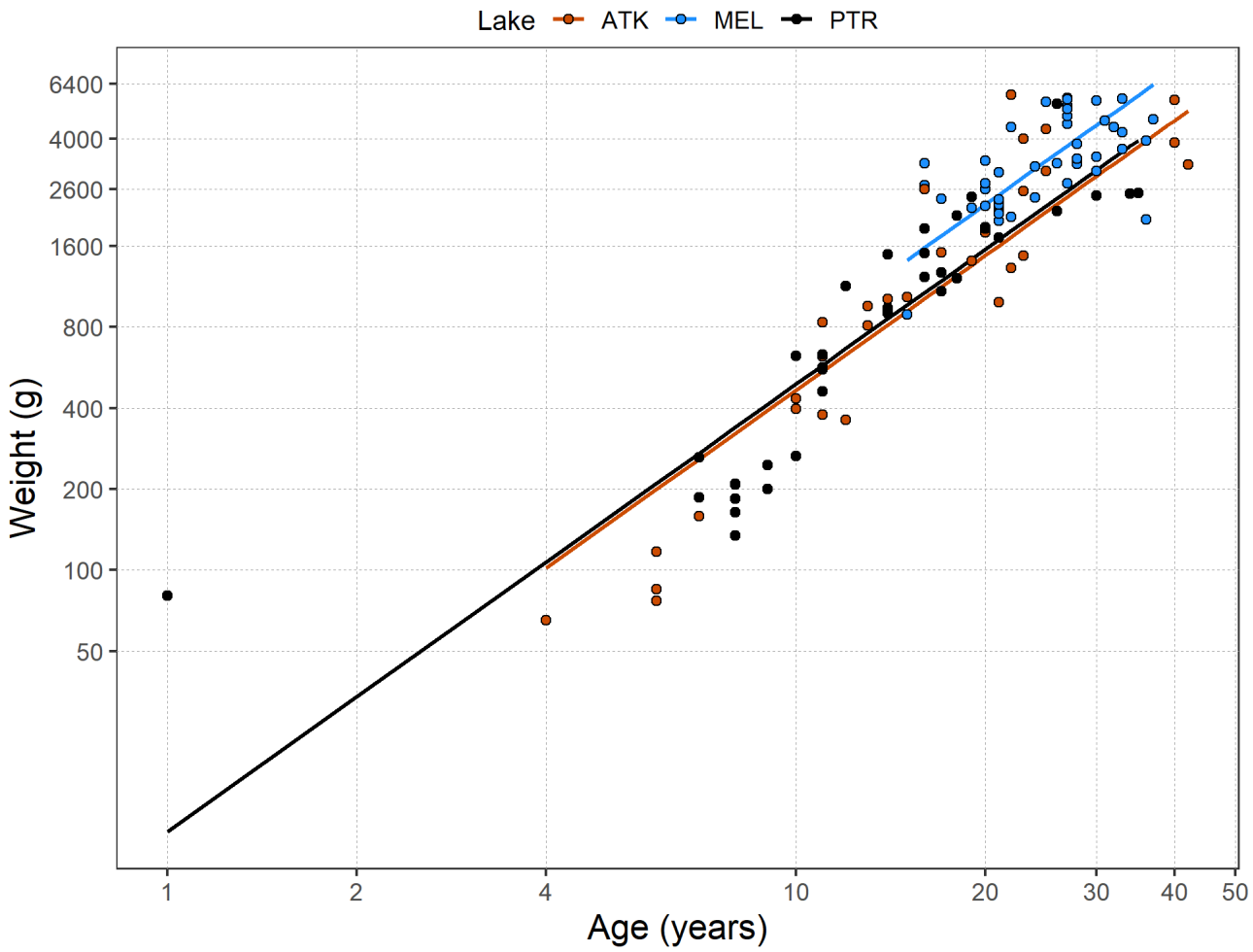
TECHNICAL COMMENT SUMMARY – HEALTH OF SMALL-BODIED FISH (THREESPINE STICKLEBACK)



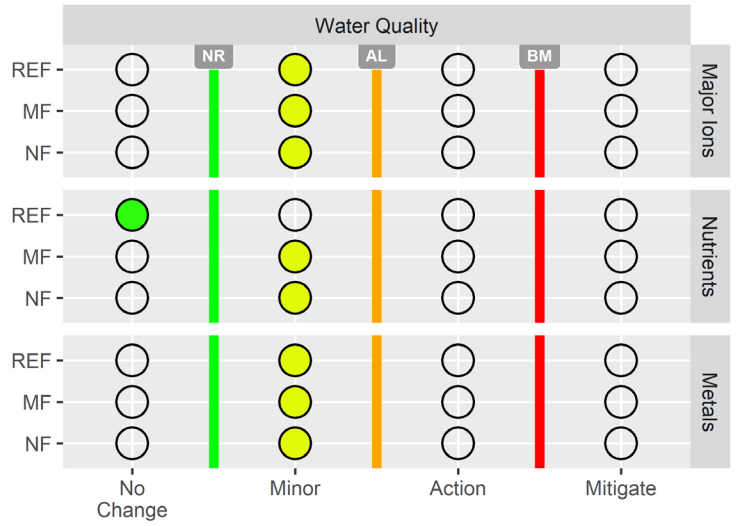
TECHNICAL COMMENT SUMMARY – HEALTH OF LARGE-BODIED FISH (LAKE TROUT)

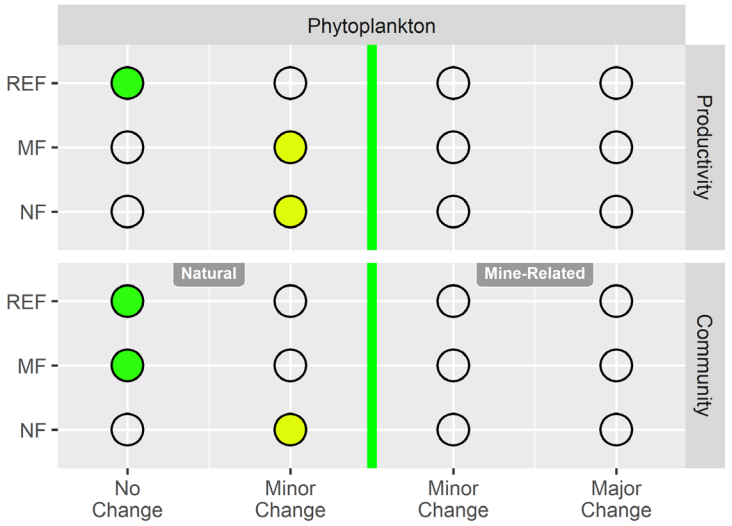
- Lake Trout collected from Meliadine Lake tended to be older, longer, and heavier than those collected from both Atulik Lake and Peter Lake.

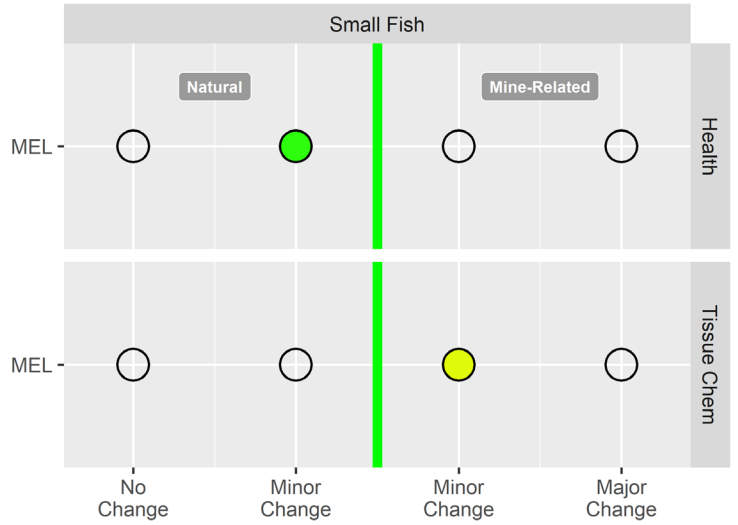
Dependent Variable	Independent Variable	p-value	% Difference		Critical Effect Size (%)
			Meliadine vs Peter	Meliadine vs Atulik	
Weight (log_{10})	Fork Length (log_{10})	0.84	1.13	1.99	10
Liver Weight (log_{10})	Fork Length (log_{10})	**0.053**	3.28	**19.8**	25
Liver Weight (log_{10})	Weight (log_{10})	**0.029**	0.75	**16**	25
Weight (log_{10})	Age (log_{10})	**0.01**	**33.7**	**34.7**	25
Fork Length (log_{10})	Age (log_{10})	**0.013**	**9.91**	**9.65**	25

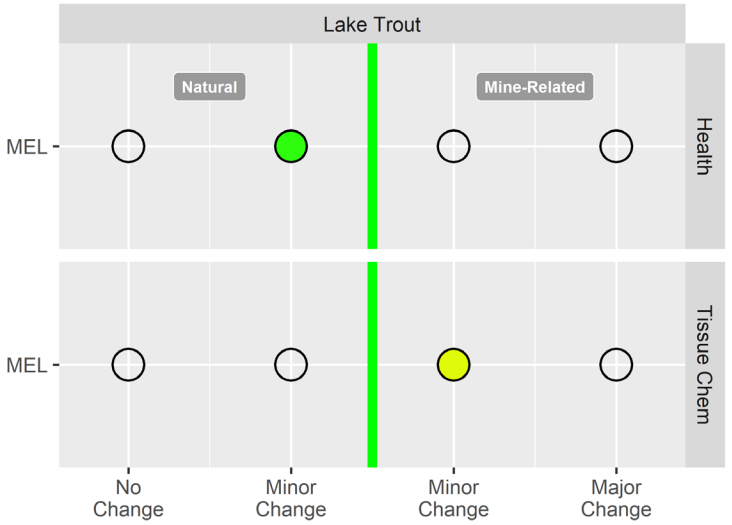


TECHNICAL COMMENT SUMMARY – HEALTH OF MELIADINE LAKE







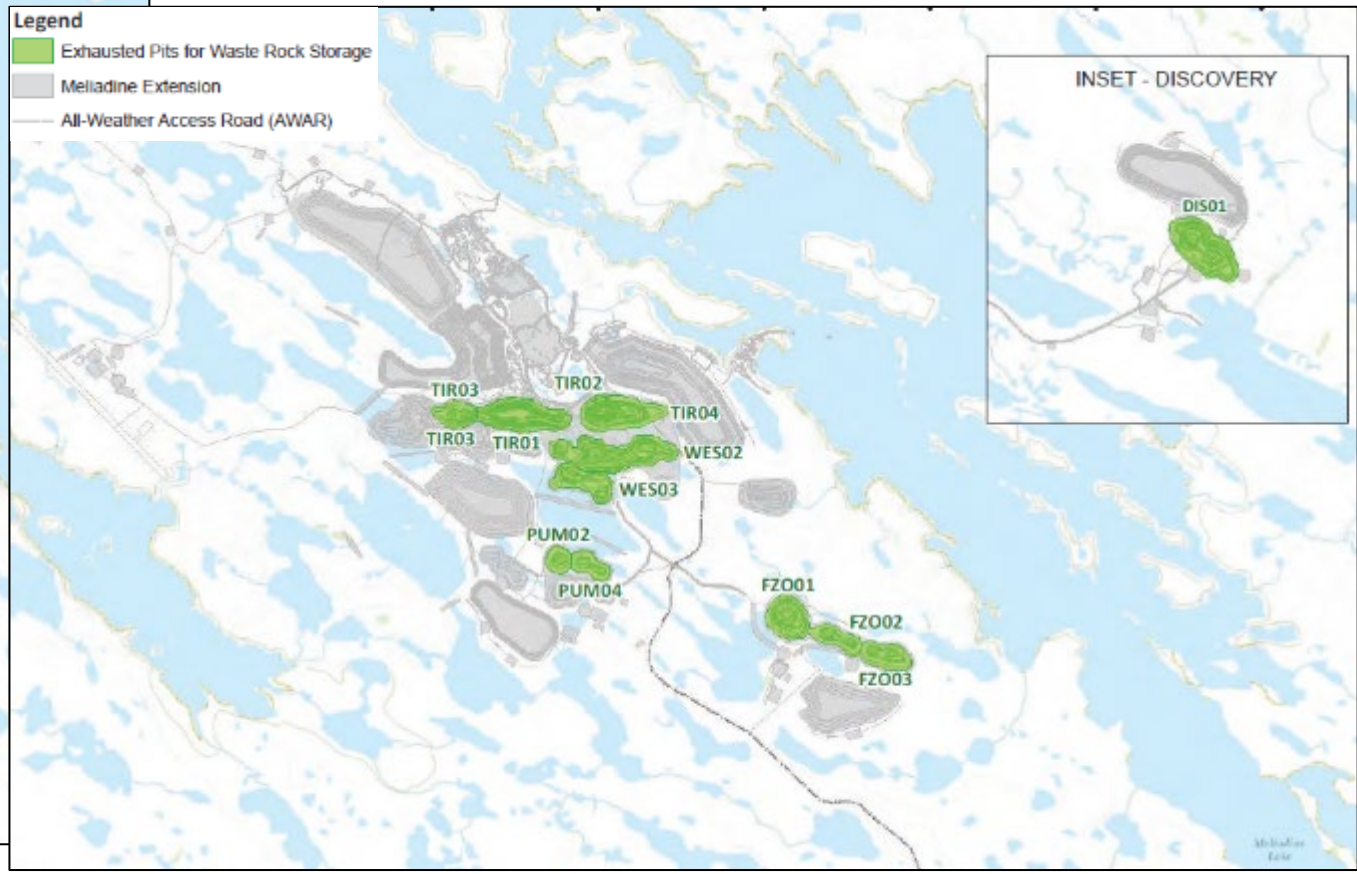


TECHNICAL COMMENT SUMMARY – HEALTH OF MELIADINE LAKE

Agnico Eagle commitment (during the NIRB process):

- After submission of the NWB Annual report, and before annual discharge to Itivia Harbour, meet with KivIA and CIRNAC to:
  - Provide updates and advice on Meliadine Lake, and management of contact and saline water.
  - Review current and forecasted conditions (Meliadine Lake, contact water and saline water).
  - Schedule community open house to present the above information.
- Prior to the first annual meeting, Agnico Eagle shall update the Adaptive Management Plan to include a prioritized discharge strategy
- Based on modelling completed for the NIRB FEIS, monitoring to date, continued comprehensive monitoring, and the above commitment, a cap on the discharge quantity is not required

TECHNICAL COMMENT SUMMARY – IN-PIT DEPOSITION ALTERNATIVE



TECHNICAL COMMENT SUMMARY – IN-PIT DEPOSITION ALTERNATIVE

- Prior to proceeding with this activity, Agnico Eagle would complete various studies such as:
  - Thermal study to assess permafrost within the pit lake.
  - Hydrogeological study to assess groundwater flow to receiving environment.
  - Water balance and water quality model to evaluate pit lake quality.
- In addition, the Water Management Plan, the Waste Management Plan, and the Interim Closure and Reclamation Plan would be updated

TECHNICAL COMMENT SUMMARY – SECURITY

- Per Security Management Agreement discussion with KivIA and CIRNAC following Technical Meeting
- Main changes include:
  - Additional open pits and underground mining
  - Additional waste rock storage facilities
  - Adding Discovery deposit
  - Extended closure period
- Security updates are sequenced based on when mining activities are triggered

	Current Security	Meliadine Extension	Total Meliadine Mine
Grand Total	$69,687,246	$91,458,237	$161,145,486

Conclusions

MELIADINE EXTENSION - CONCLUSIONS

- Seeking approvals and permits to mine deposits not included in the current Water Licence
  - Initiate open pit mining at Pump, F Zone, Wesmeg, and Discovery deposits
  - Initiate underground mining at Pump, F Zone, and Discovery deposits
  - Extend existing underground mining of Tiriganiaq-Wolf
  - Extend the operational window to 2043
- Continue the approved activities
- Use/update existing management and monitoring plans

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Thank you

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WORLD GOLD COUNCIL

AGNICO EAGLE