



ARGONAUT GOLD

Magino Gold Mine

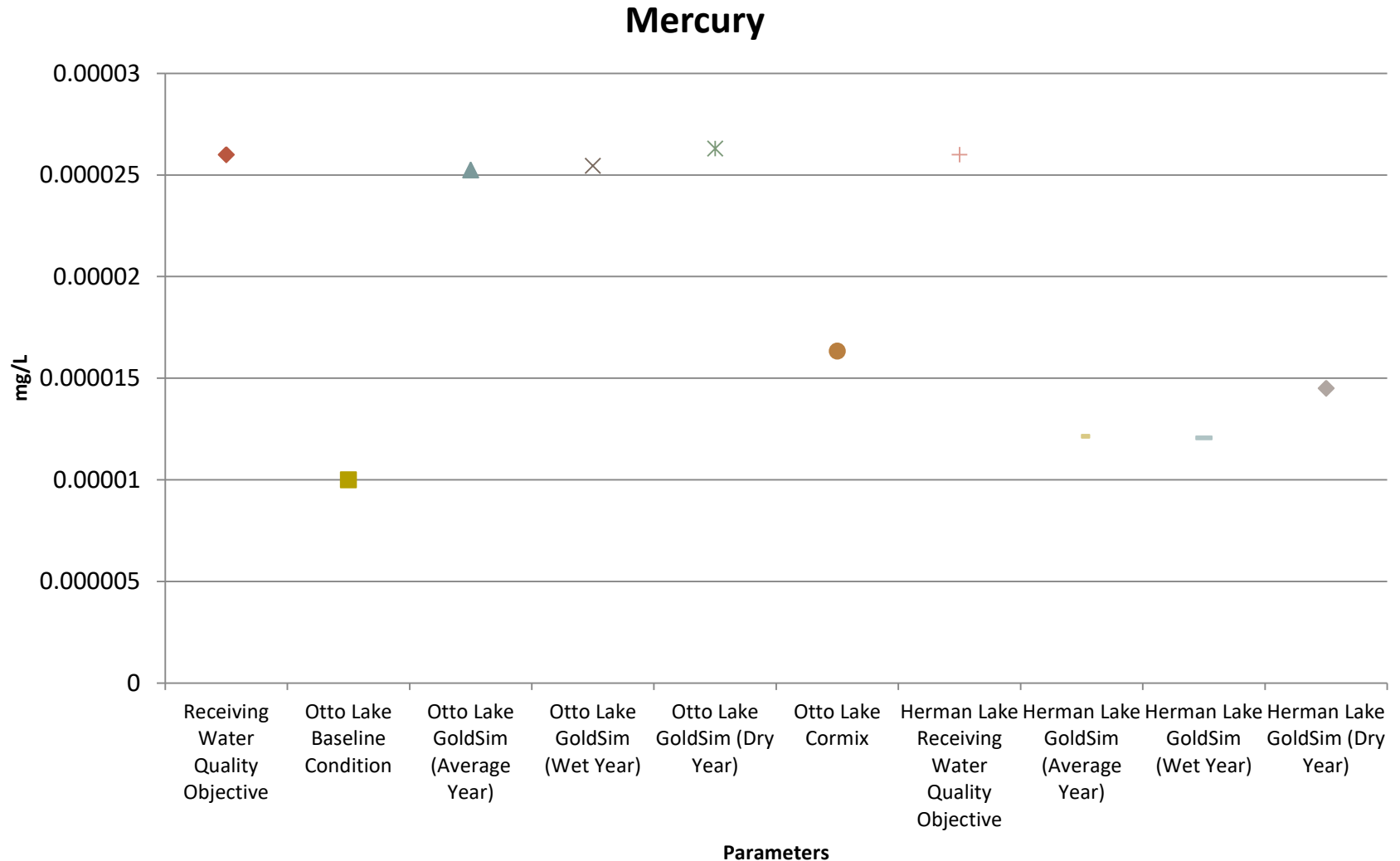
Supplemental Response to MNO EIS Comments

November 23, 2017

PRODIGY

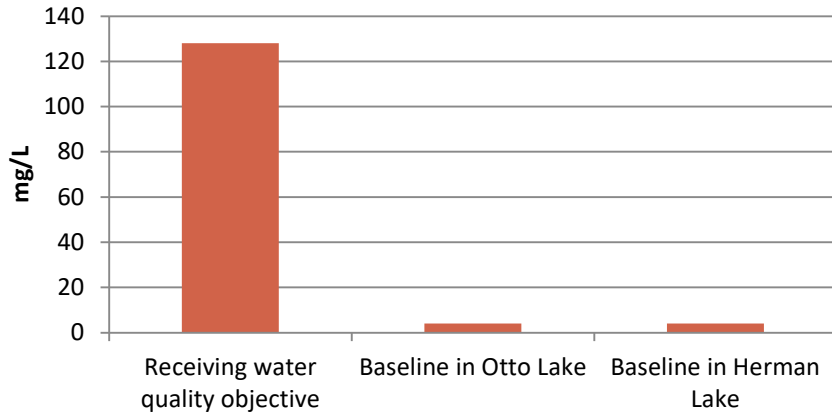
GOLD INCORPORATED

Table 7-78: Water quality modelling results in Otto and Herman Lake during the operations stage under average precipitation conditions

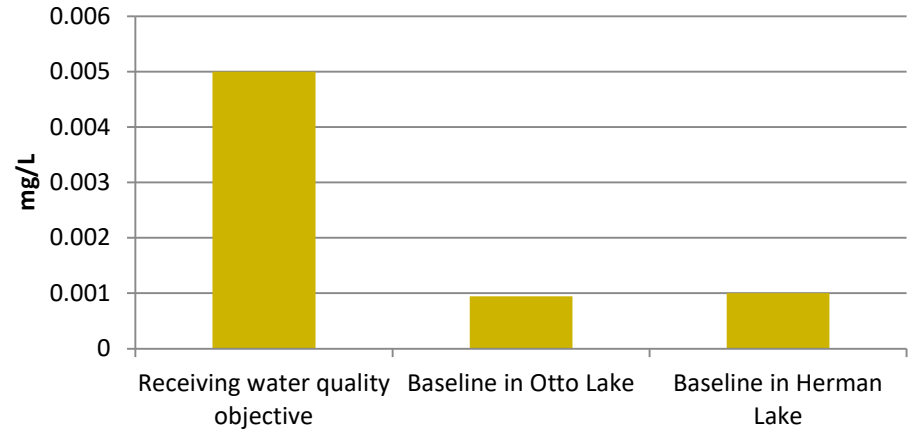


Baseline Conditions Herman and Otto

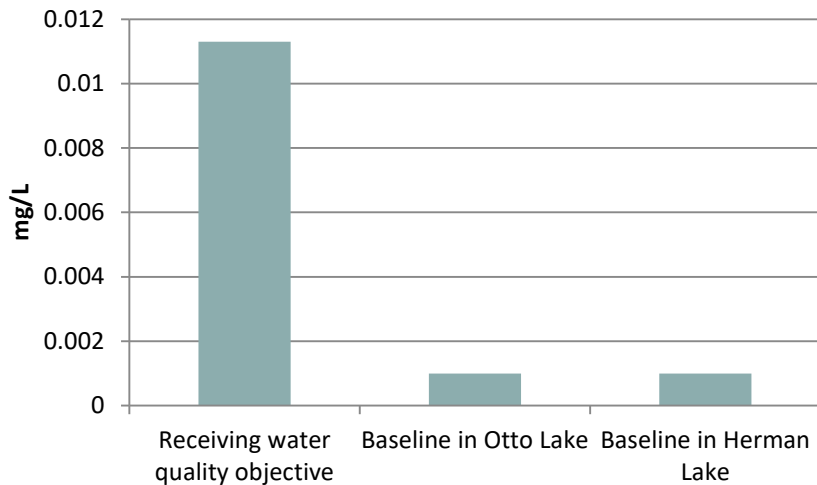
Sulphate



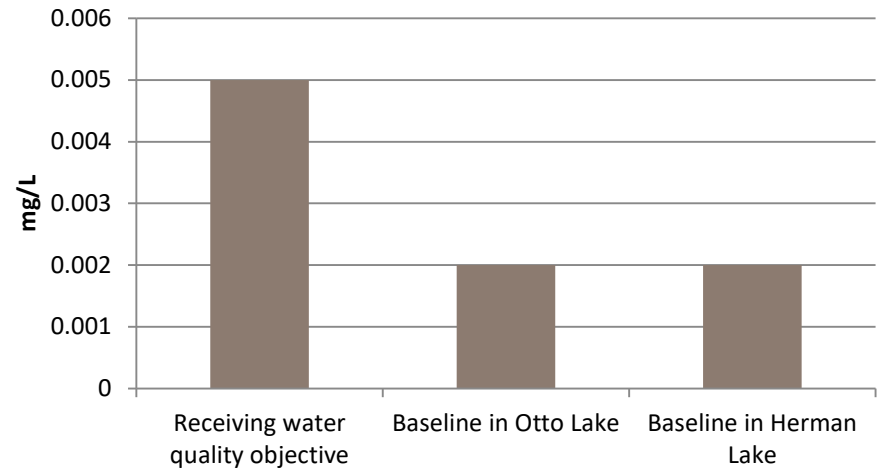
Arsenic



Copper

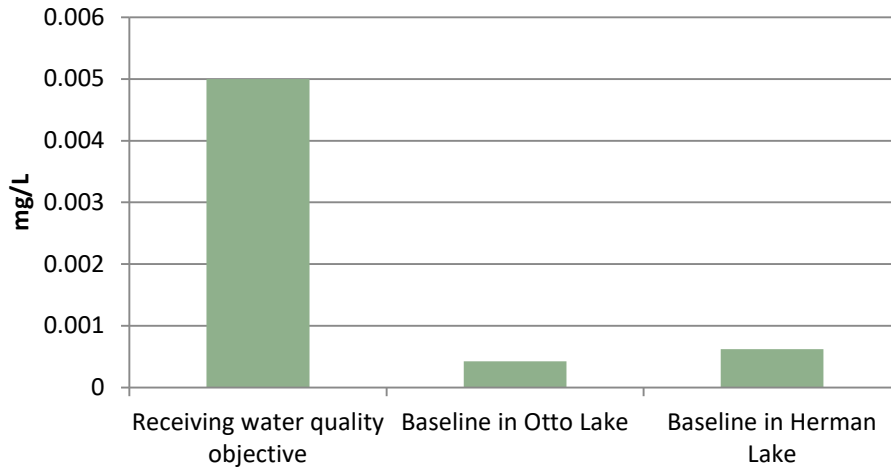


Cyanide

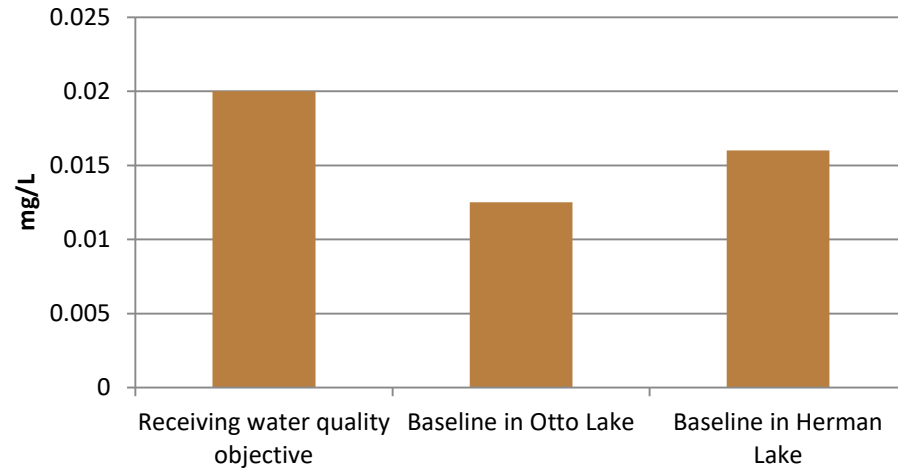


Baseline Conditions Herman and Otto

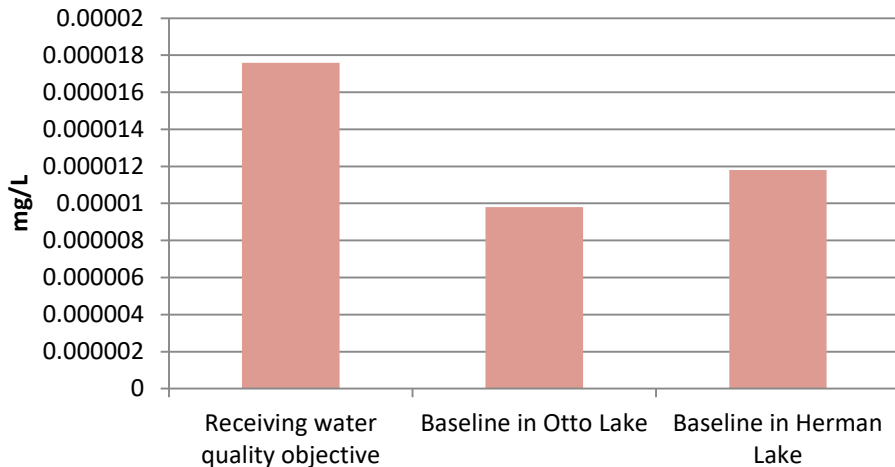
Lead



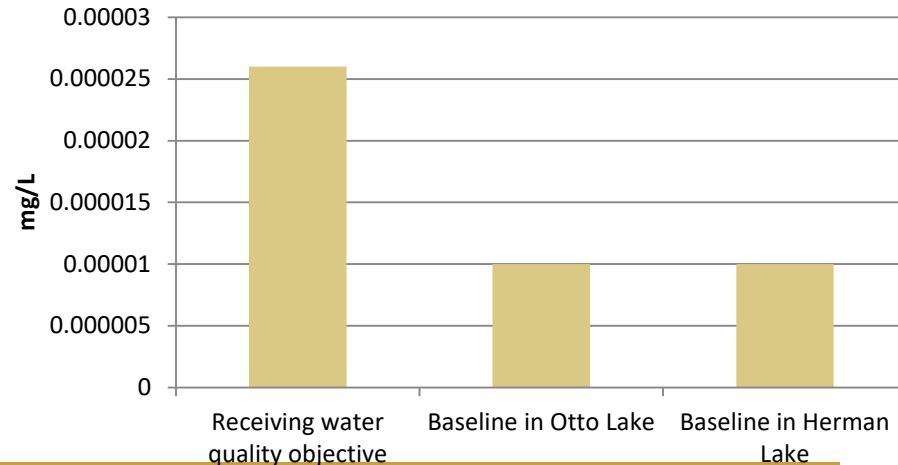
Phosphorus



Cadmium



Mercury



Baseline Conditions Herman and Otto

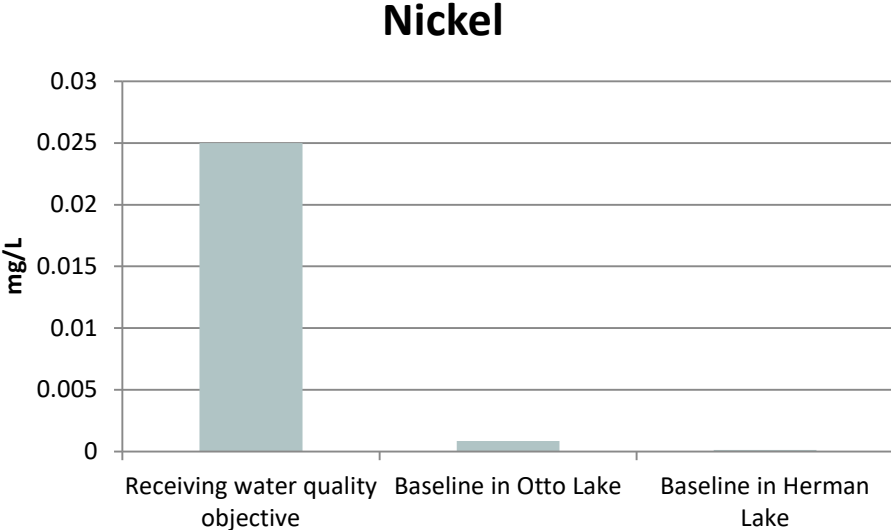


Figure 6-1: Borings and Wells in Relation to Site Geology

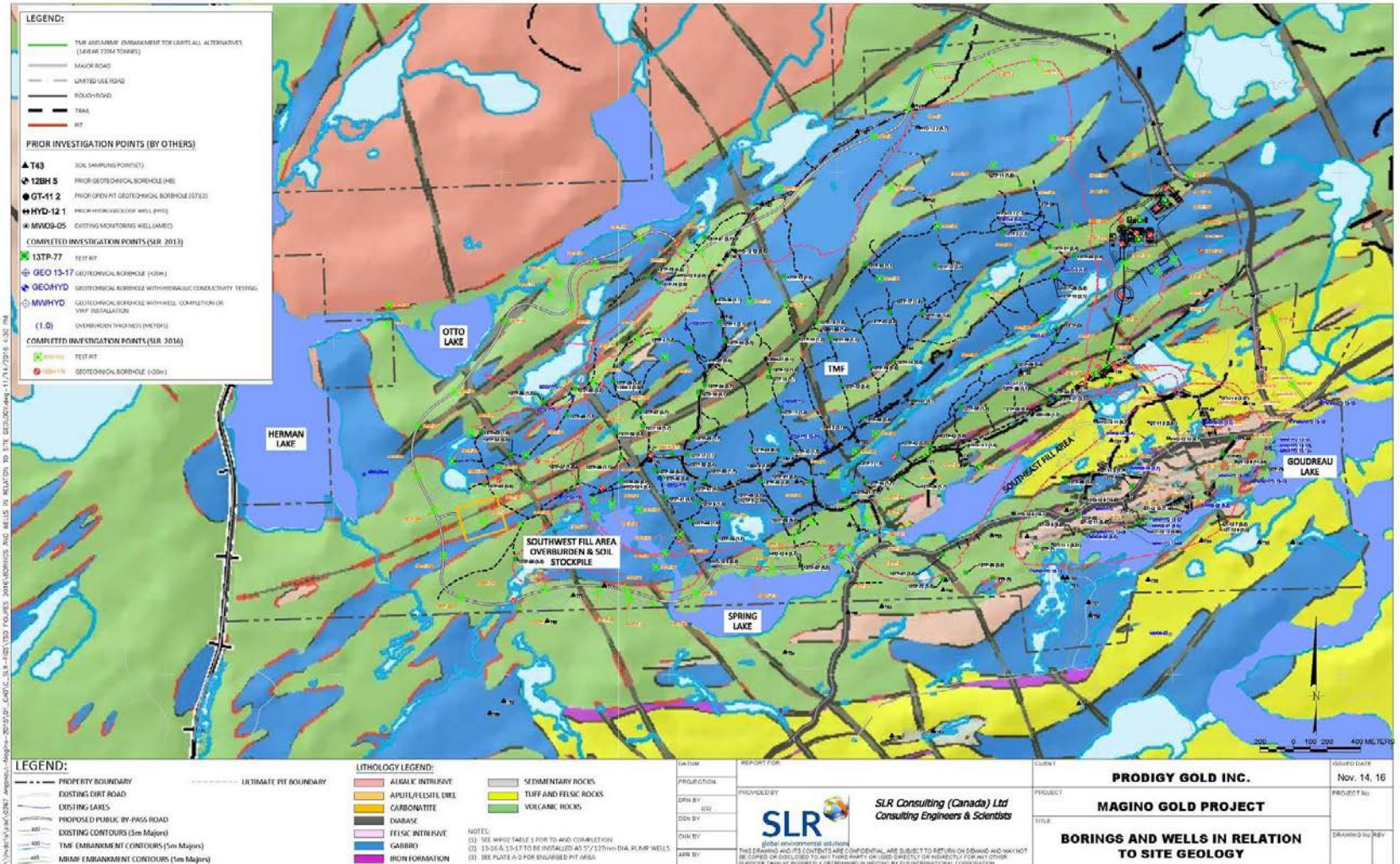


Figure 6-2: Fracture Frequency with Depth TMF/MRMF Area Borings

Note: fractures are filled with intrusive rock, Limited or no aquifers at depth.

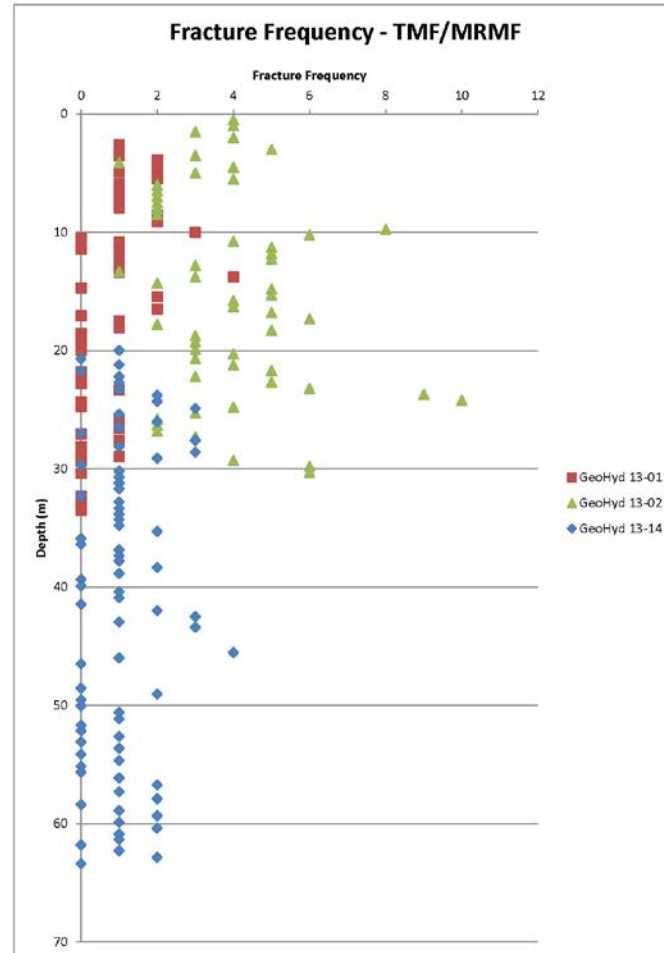


Figure 6-3: Fracture Frequency vs. Depth Pit Area Borings

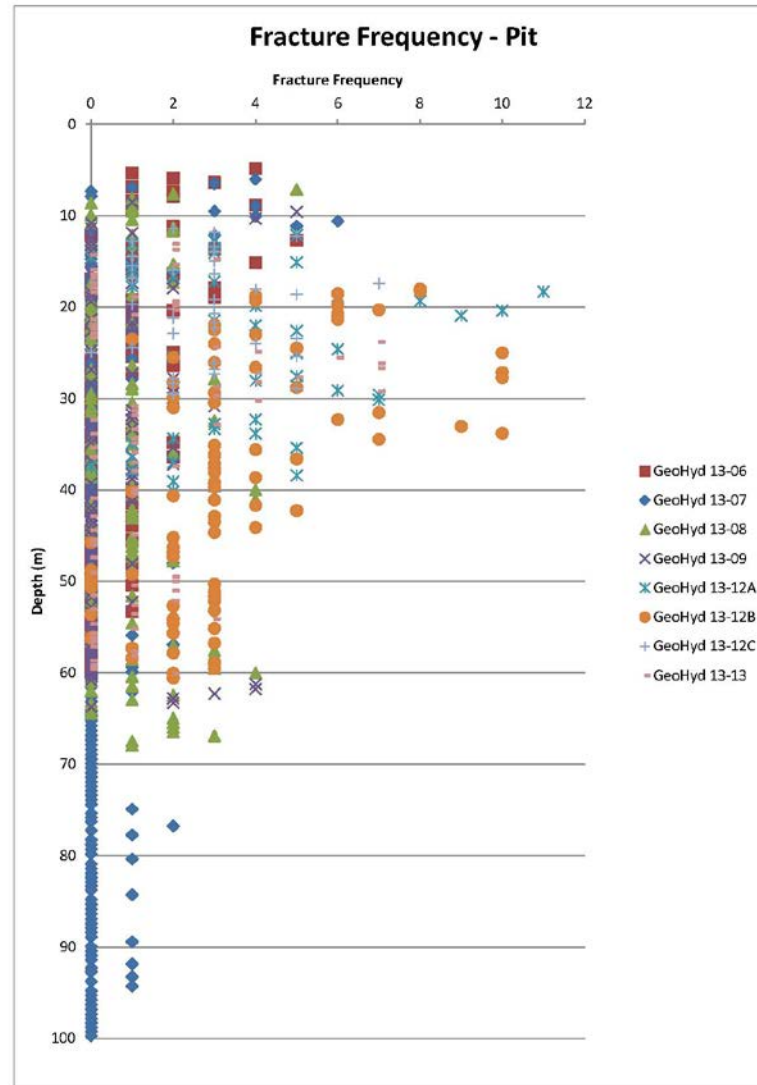
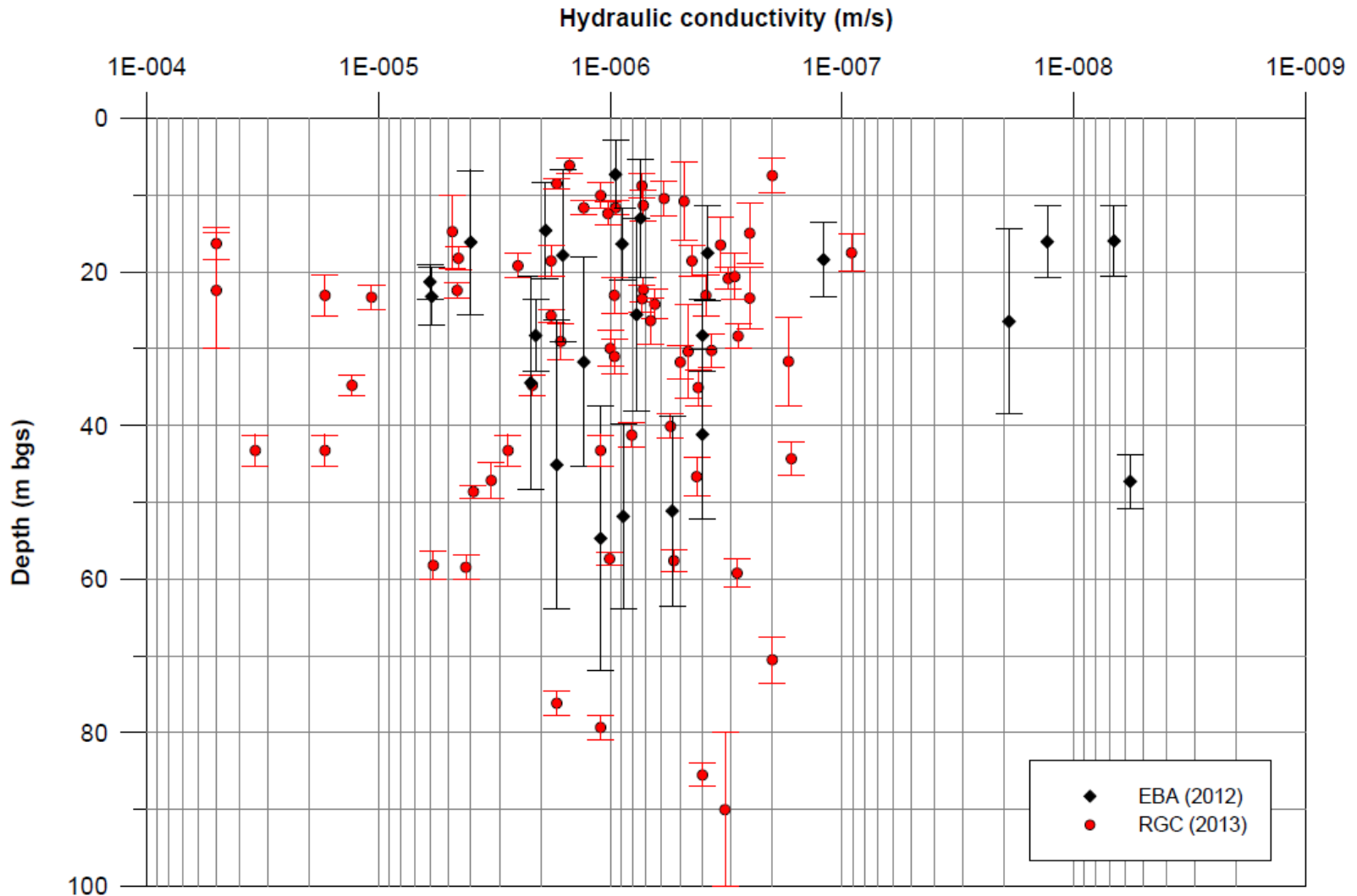


Figure 6-4: Summary of Packer Testing at Discrete Depth Intervals

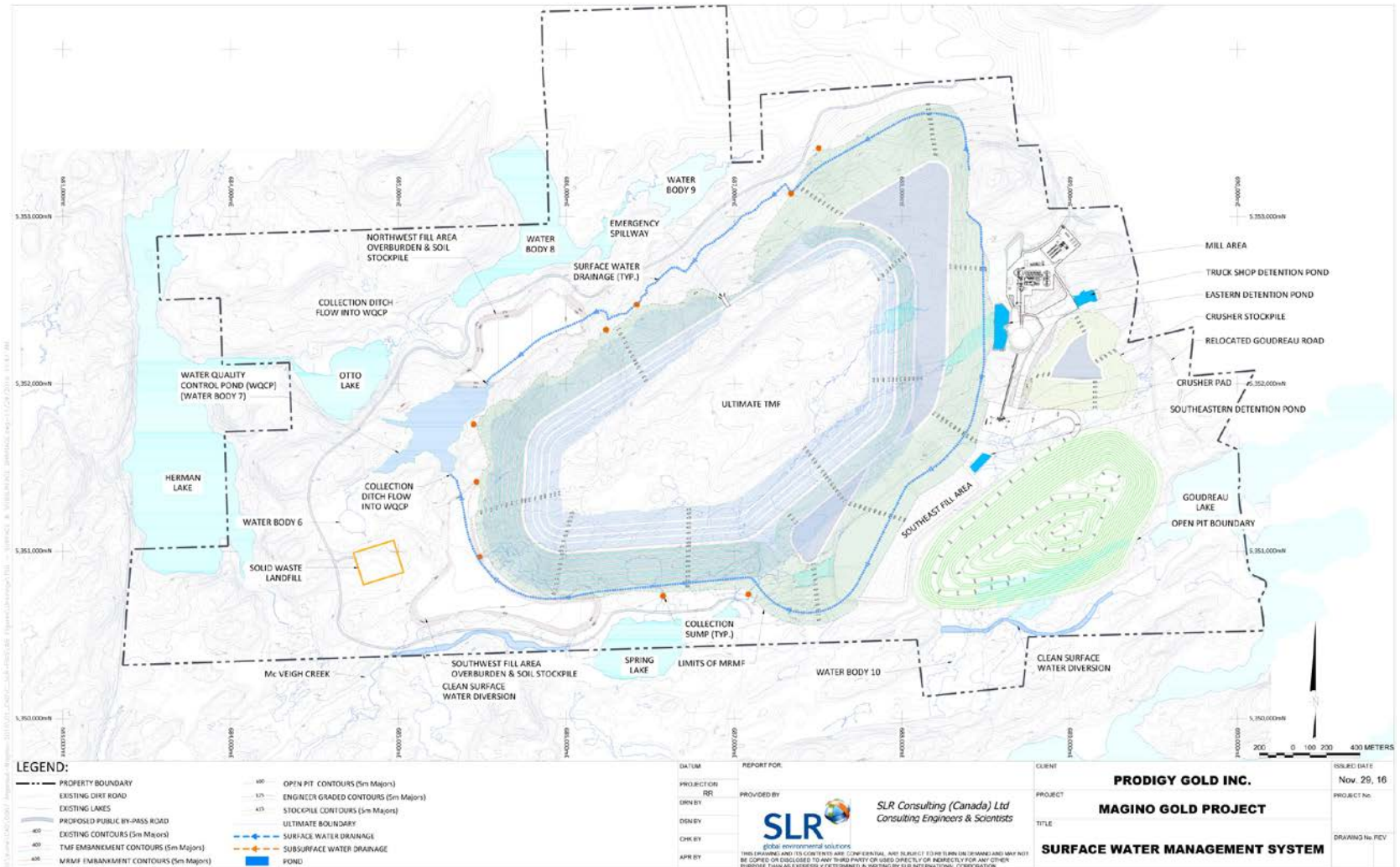


TSD-4

Hydrostratigraphic Units and Hydraulic Parameters, Magino Study Area

Unit	Description	Hydraulic Conductivity K (m/s)	Specific Storage Ss (1/m)	Specific Yield
Overburden				
Glacial Till (T)	silty SAND with gravel	1.0x10 ⁻⁶ to 1.0x10 ⁻⁵	5.0x10 ⁻⁵	0.15
Glaciofluvial Sediments (GF)	poorly graded SAND w/ silt +/- gravel to well graded GRAVEL w/ sand +/- silt	1.8x10 ⁻⁴	5.0x10 ⁻⁵	0.15
Colluvium (Col)	Well-graded silty SAND w/ gravel	1.5x10 ⁻⁵	5.0x10 ⁻⁵	0.15
Shallow Bedrock (0-60m below top of bedrock)				
All lithologies	Moderately fractured bedrock with discrete fracture zones	5.0x10 ⁻⁸ to 2.0x10 ⁻⁵	2.0x10 ⁻⁶	0.01
Deep Bedrock (>60m below top of bedrock)				
All lithologies	Tight bedrock with discrete fracture zones	2.0x10 ⁻⁹ to 2.0x10 ⁻⁷	2.0x10 ⁻⁶	0.01

TSD-7: Figure 4.3 Surface Water Management System



MNO-11: Determination of Affected Fish Habitat

- • **Step 1** Review EIS Figure 4-28 to gain an understanding of the physical area and pay particular attention to the PSA outlined in red, the claim boundary lines outlined in dotted grey, LSA outlined in yellow and the RSA shown in red. If the Reviewer is unfamiliar with the regional topography and landscape, we suggest the Reviewer read the associated text to understand the local topographic features.
- • **Step 2** EIS Figure 4-30 provides a regional perspective and then to TSD Figure 6-1 (Identifies the water bodies to be discussed in the project component section – Chapter 6). This information provides familiarity with the watershed and sub watershed areas found within the existing RSA, LSA and more particularly the PSA.
- • **Step 3** The environmental features overlain by the Project are found in Chapter 6. EIS Chapter 6, Figure 6-3: Magino Project Site Layout shows the project components. Figure 6-4: Impacted Areas on the Magino Site, shows the water bodies and impacted by the Project. TSD 7, Figure 6-3: Lake & Stream Watershed Catchments – Operations, also shows the affected areas.
- • **Step 4** For greater understanding the Project components, they are enlarged in Figure 6-8: Process Plant Site Layout, Figure 6-9: Site Water Management, and Figure 6-12: Site and Pit Development Year -1, which illustrates the extent of the open pit shell.
- • **Step 5** The revised tables above, identifies the EIS section where the affected waterbodies (described in Tables 4-2 and 4-3) are located. A description of the physical features are found in the EIS text - see Sections 4.3.4.3.1, TSD 9 Appendix C - Magino Gold Project Baseline Fisheries and Aquatic Studies Report, EBA, Section 4.4.7-1: Physical environment, pg. 132 (or 861/1925).

Project Permit continuum

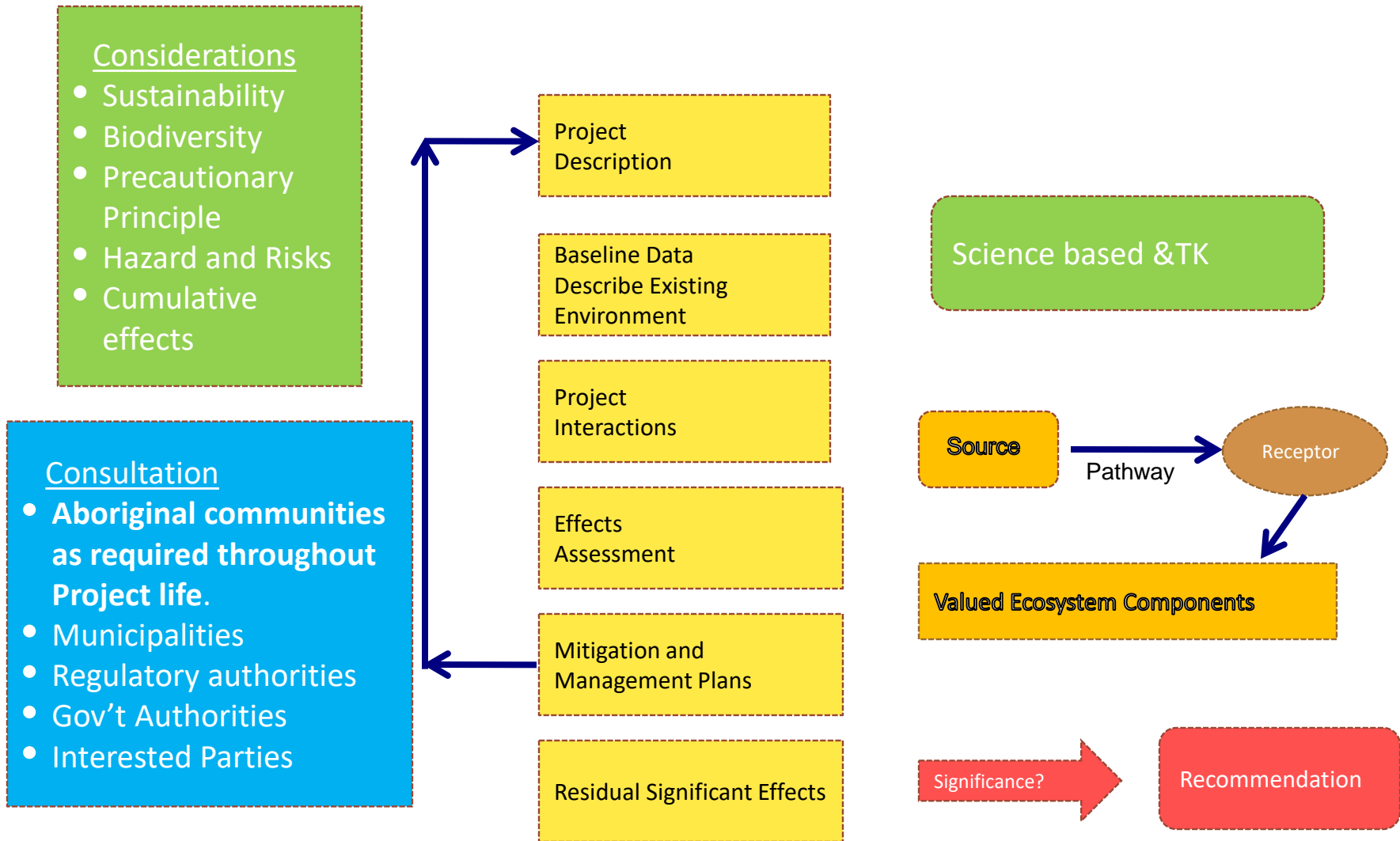
- The permitting of a mine is a multiple stage



MNO Participation

- EAs are conducted early in the planning phase. The specifics of monitoring plans evolve and become more detailed after the environmental assessment process and as the Project weaves through successive phases.
 - EA commitments and obligations included in the EMP
 - Regulatory Guidance
 - Indigenous comments and issues
- The purpose of the EIS is to determine what are the potential effects, what are the mitigation measures, and in particular, what the geographic extent of the effects of the adverse residual effects .

Federal Environmental Assessment



Application and Approvals

Establishment of a LOM Environmental Monitoring Committee whereby MNO participates

EIS Characterization of effects, mitigation, geographical extent and preliminary monitoring plans – EIS review

EIS baseline, EIS Project description, Project interactions, mitigation, &TK

Detailed Engineering

Applications for construction and operations permits – detailed monitoring plans

Source

Pathway

Receptor

Approvals with Monitoring Plans

- Amended Closure plan
- ECA effluent, air, noise
- EEM program
- LRIA
- Water taking permits
- Fisheries habitat validation (FA)

Both effluent and receiving water monitoring is required and governed by authorizations

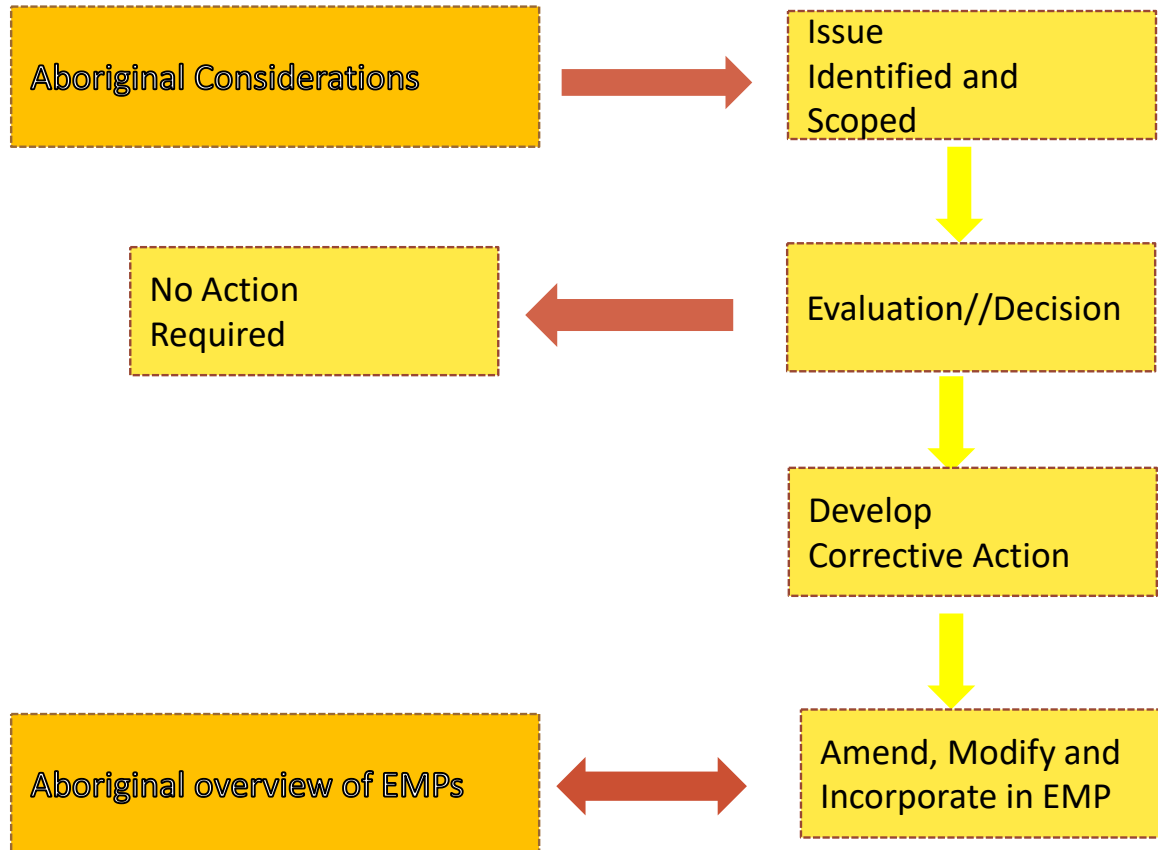
Valued Ecosystem Components

Internal Monitoring programs

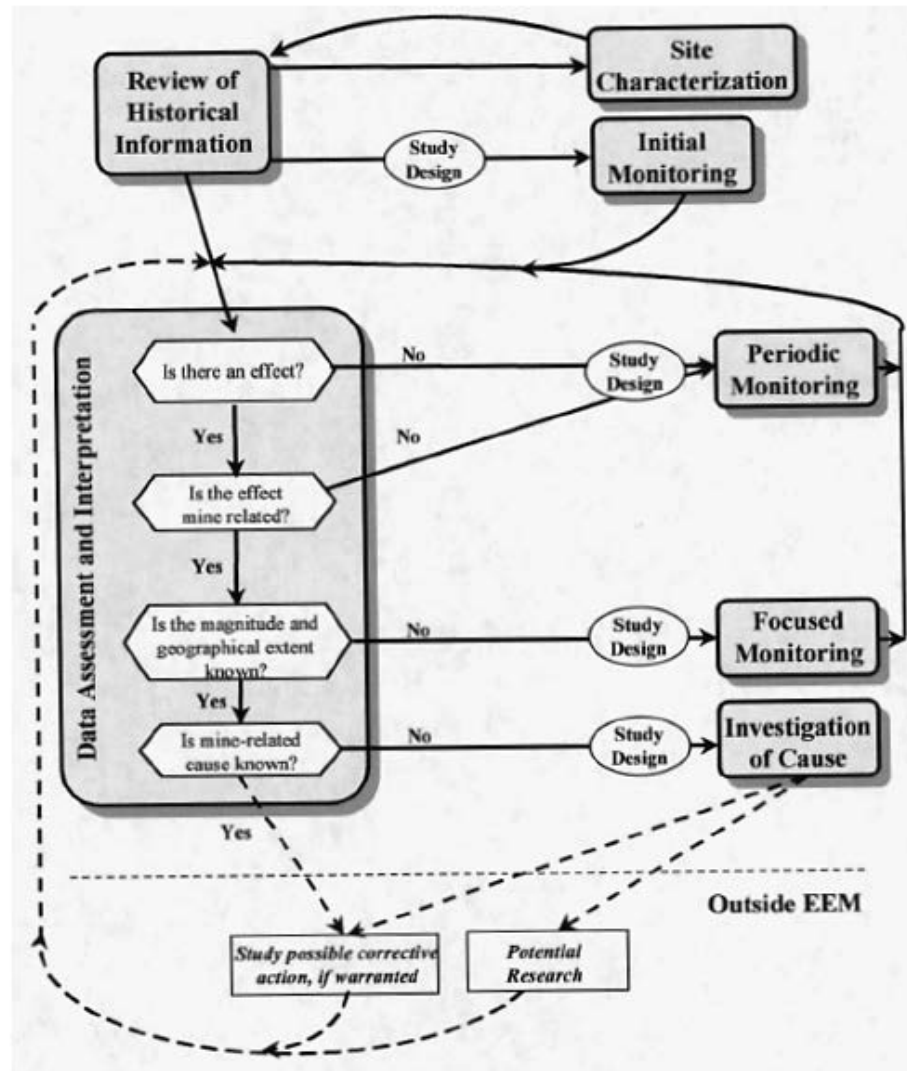
Approval issuance and Compliance

Investigation and Confirmation

Issue-Mitigation during EA and Operations



EEM Effect Identification Process



Regulatory Standards

Regulation	Requirement
MISA	Prescribes frequency, monitoring sites, parameters and standards – set criteria for acute and sub lethal monitoring.
MMERs	Prescribes frequency monitoring sites, parameters and standards – sets criterial for acute and sub lethal endpoints.
Water taking permit	Set monitoring frequency to a specified amount
Potable water	Prescribes frequency, monitoring sites, parameters and standards.
Sewage Treatment	Prescribes frequency, monitoring sites, parameters and standards.
Landfill sites	Outlines monitoring Requirement

Key Provincial Approvals

<p>Closure Plan <i>Application will contain proposed monitoring plan</i></p>	<p>Outlines performance objectives for the dismantling and decommissioning phase (focus of structure stability and water diversion, water quality and surface amelioration. Long term monitoring plan establishes the objectives for successful completion of closure. Note the closer plan and monitoring plans are modified as the operation continues – closure plans are update via a regulatory and EMS schedule.</p>
<p>ECA (tailings and effluent) <i>Application will contain proposed monitoring plan</i></p>	<p>Specifies site specific monitoring sites, locations, and parameter standards for both effluent and receiving water quality.</p>
<p>ECA (air) <i>Application will rerun the air model contain proposed monitoring plan</i></p>	<p>Prescribes frequency, monitoring sites and parameters. – set criteria for substances above the risk thresholds.</p>

Key Federal Approvals

Fishery offset and Fishery compensation <i>Application will contain proposed monitoring and Financial surety</i>	Outlines actions taken to validate program success.
MMER _ EEM <i>Proposed sampling plan submitted before sampling begins.</i>	Specifies various cycles to assess receiving water effects.

MNO Prodigy Environmental Monitoring Committee

- MNO is invited to participate in an Environmental Monitoring Committee
- The outline of the EMC purpose and function is contained in the pending IBA.
- All of Prodigy's commitments will be included in the EMS to ensure action and accountability.

Chapter 4

4.6.5.3.2 Fishing

The MNOTK&LU study identified non-site-specific baitfish and non-commercial fishing areas that include the Magino Project site and surrounding area (SVL, 2014; Figure 19). Fish species that were identified by respondents as using habitat within the Project Site include (SVS, 2014; Pg. 74):

- Pike;
- trout;
- northern pike; and
- pickerel/walleye.

Respondents also identified walleye spawning habitat within the Project Site (SVL, 2014; Pg. 74)⁴⁹.

Chapter 7

7.7.2.5.1.1 Summary of Traditional Hunting Uses

Existing conditions with respect to current hunting by Aboriginal groups are described in Section 4.6.5 of Chapter 4.

In summary, several groups reported that the PSA and LSA are used / were likely used *currently or historically* for hunting activities (MFN, MCFN, MNO, and BFN), or that the PSA and LSA include areas of wildlife habitat. The TKS/TLUS and other reports in most cases did not distinguish between historical or current uses. The hunted species mentioned in the reports included large or small mammals (e.g., moose, bear, rabbit, muskrat) and birds (e.g., geese, grouse).

However, five of the several Aboriginal groups that provided TKS/TLUS and other reports to Prodigy did not report specific *current* hunting activity in the PSA (MFN, BFN, MNO, RSMIN), the LSA or RSA (MFN, BFN, RSMIN).

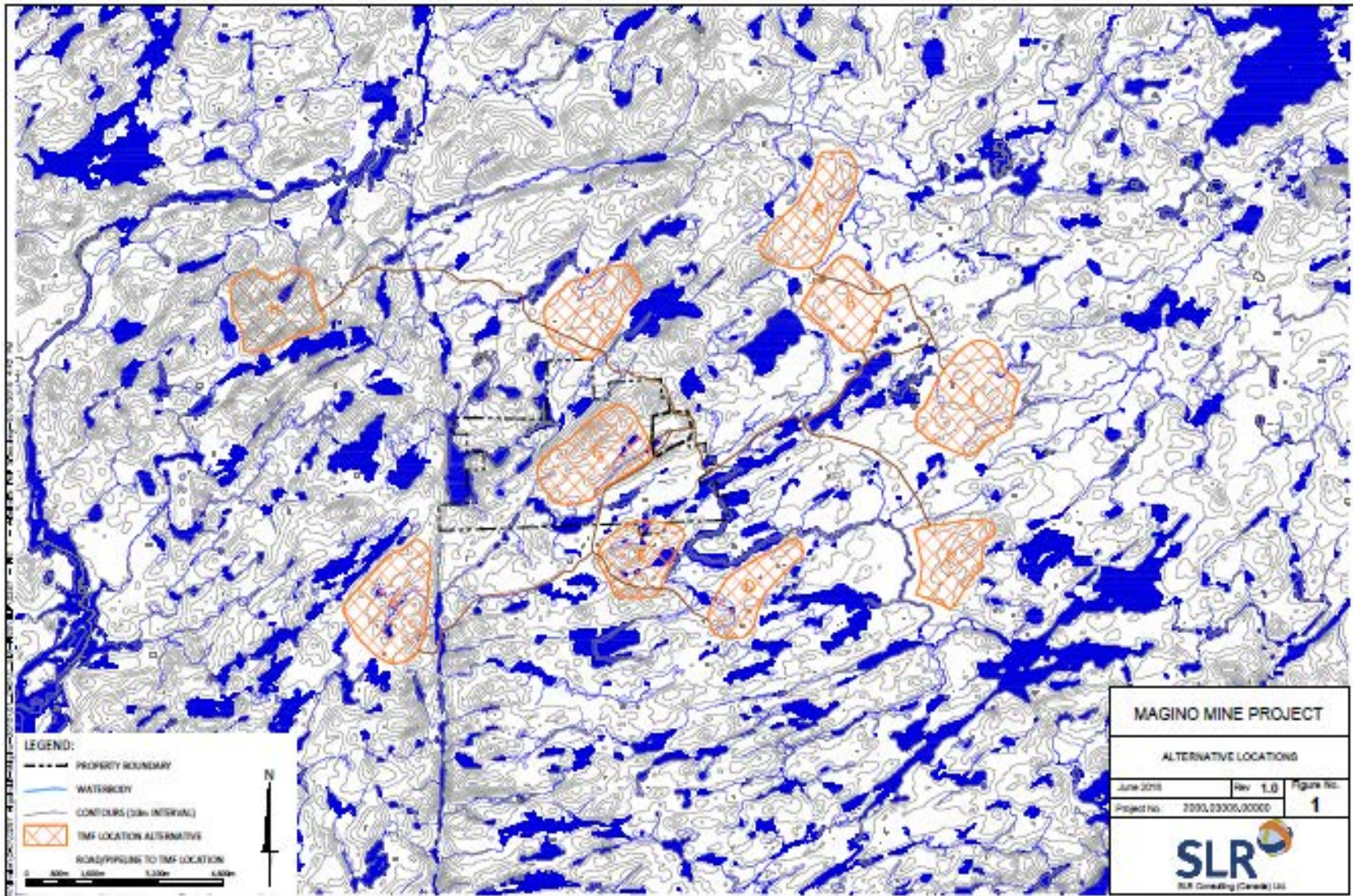
7.7.2.5.1.2 Summary of Fishing Uses

Existing conditions with respect to current fishing by Aboriginal groups are described in Section 4.6.5 of Chapter 4. In summary, several groups reported that the PSA and LSA are used / were likely used *currently or historically* for subsistence fishing activities (MFN, MCFN, MNO). The TKS/TLUS and other reports in most cases did not distinguish between historical or current uses. No commercial fisheries were reported. MNO identified that members identified lakes in the PSA as having pike and pickerel/walleye habitat; a respondent identified walleye spawning habitat in the PSA.

MCFN reported there are fish weirs between Goudreau Lake and Bearpaw and Pine lakes at the border of the LSA/RSA; it is not clear if this is a current or historical use. Mountain Lake (approximately 1 km north of the Project, in the RSA) is also used by MCFN and MNO members; it is known for its trout fishing. MNO also indicated a fish harvesting area at Dreany Lake in the RSA (approximately 2 km north of the Project). Five of the seven Aboriginal groups that provided TKS/TLUS and other reports to Prodigy (MFN, BFN, RSMIN) did not report specific *current* fishing activity in the PSA, the LSA or RSA.

Several groups noted the importance of fishing at Wabatongushi Lake, Lochalsh and Dog Lake (MFN, MCFN, BFN). These lakes are located some distance east (e.g., 20+ km) of the Project, beyond the RSA. Trout Lake was also identified as an important fishing Lake by MCFN; it is located approximately 10 km northeast of the Project, beyond the RSA.

TSD 5: Candidate Tailings sites



MNO Culturally Significant Species.

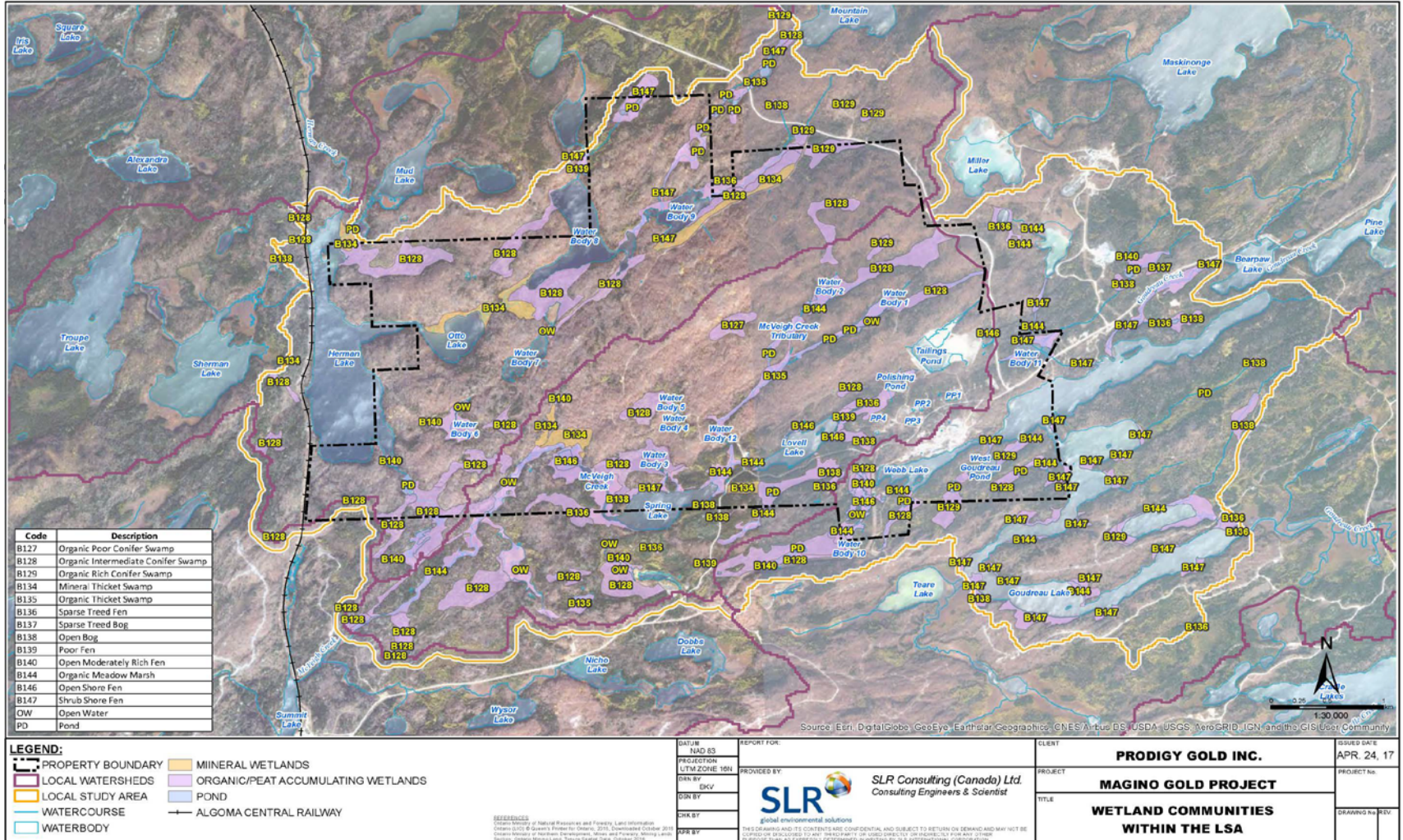
• Sage	• Choke cherries
• Dandelion	• Tamarack
• Yarrow	• Cedar
• Labrador tea	• Birch
• Golden rod	• Blueberry

See Prodigy worksheet.

Vegetation species via ecotype

Growth Form	Common Name	Scientific Name (VASCAN)	# Upland Ecosites	# Rock Barren / Disturbed Habitats	# Wetland Ecosites
Mosses (non-vascular)	Feathermoss	Pleurozium schreberi	8	1	3
Mosses (non-vascular)	Haircap Moss	Polytrichum commune	2	2	0
Mosses (non-vascular)	Moss (generic)		6	2	14
Ferns and their allies	Wood Fern	Dryopteris expansa	5	0	2
Ferns and their allies	Evergreen Wood Fern	Dryopteris intermedia	5	0	2
Ferns and their allies	Oak Fern	Gymnocarpium dryopteris	3	0	2
Ferns and their allies	Shining Clubmoss	Huperzia lucidula	5	0	2
Ferns and their allies	Tree Clubmoss	Lycopodium dendroideum	7	0	1
Ferns and their allies	Interrupted Fern	Osmunda claytoniana	2	0	3
Ferns and their allies	Long Beech Fern	Phegopteris connectilis	2	0	2
Graminoids	Sedge	Carex spp.	8	4	14
Graminoids	Wild Rice	Zizania palustris	0	0	0
Herbaceous Plants	Yarrow	Achillea millefolium	2	5	0
Herbaceous Plants	Wild Sarsaparilla	Aralia nudicaulis	6	1	2
Herbaceous Plants	Sage	Artemesiasp.	1	5	0
Herbaceous Plants	Bladder Sedge	Carex intumescens	1	0	4
Herbaceous Plants	Fireweed	Chamaerion angustifolium	3	5	3
Herbaceous Plants	Bluebead Lily	Clintonia borealis	7	0	1
Herbaceous Plants	Ladyslippers	Cypripedium spp.	2	1	4
Herbaceous Plants	Yellow Trout Lily	Erythronium americanum	1	0	0
Herbaceous Plants	Wild Lily of the Valley	Maianthemum canadense	8	0	2
Herbaceous Plants	False Solomon's Seal	Maianthemum racemosum	3	0	0
Herbaceous Plants	Solomon's Seal	Polygonatum biflorum	2	0	0
Herbaceous Plants	Skunk Currant	Ribes glandulosum	2	0	1
Herbaceous Plants	Goldenrod	Solidagospp.	1	4	4
Herbaceous Plants	Rose Twisted Stalk	Streptopus lanceolatus	5	0	0
Herbaceous Plants	Dandelion	Taraxacum officinale	0	6	0
Herbaceous Plants	Starflower	Trientalis borealis	7	0	2
Herbaceous Plants	Nodding Trillium	Trillium cernuum	2	0	3
Herbaceous Plants	Mushkeygoosh or Swamp Valerian	Valeriana uliginosa	0	0	2
Herbaceous Plants	Violet	Viola sororia	1	0	1
Shrubs	Mountain Maple	Acer spicatum	4	0	0
Shrubs	Serviceberry	Amelanchierspp.	6	1	0
Shrubs	Beaked Hazel	Corylus cornuta	4	0	0
Shrubs	Black Alder Winterberry	Ilex verticillata	2	0	4
Shrubs	Pin Cherry	Prunus pensylvanica	3	2	0
Shrubs	Chokecherry	Prunus virginiana	2	0	2
Shrubs	Labrador tea	Rhododendron labradoricum	3	0	11
Shrubs	Smooth Blackberry	Rubus canadensis	3	0	0
Shrubs	Red Raspberry	Rubus idaeus	8	5	4
Shrubs	Dwarf Raspberry	Rubus pubescens	7	0	5
Shrubs	Willows	Salix spp.	8	0	11
Shrubs	Elderberry	Sambucus pubescens	3	0	1
Shrubs	Canada Yew	Taxus canadensis	2	0	1
Shrubs	Blueberries	Vaccinium spp.	8	1	0
Trees	Sugar Maple	Acer saccharum	2	0	0
Trees	Yellow Birch	Betula alleghaniensis	2	0	0
Trees	Black Birch	Betula lenta	0	0	0
Trees	White Birch	Betula papyrifera	6	1	2
Trees	Tamarack	Larix laricina	2	0	5
Trees	White Spruce	Picea glauca	7	0	0
Trees	Mountain Ash	Sorbus decora	4	0	0
Trees	Eastern White Cedar	Tuja occidentalis	0	0	5

Wetland Eco types



MNO TKLU - Recommendations

The TKLUS report identifies a number of potentially adverse effects on Métis traditional ways of life, land use and/or occupancy in the region, reproduced below in their entirety:

- Direct loss or degradation of high quality traditional Métis hunting and trapping areas within the Project footprint.
- Direct loss or degradation of high quality traditional Métis fishing areas within the Project footprint.
- Changes in known local distributions and migratory patterns of wildlife due to habitat fragmentation created by the by-pass road and Project footprint .
- Direct loss or degradation of cultural site(s) within the Project footprint .
- Changes in known local distributions and migratory patterns of wildlife due to changes in wetland drainage patterns and hydrology from the Project footprint and water management operations.
- Changes in known local distributions and migratory patterns of wildlife due to noise disturbances from construction, blasting/explosive plant and increased road traffic and human disturbances.
- Effects on plants and wildlife from contamination of water by mine effluents, seepage and/or stormwater runoff from tailings, ore stockpiles and waste rock piles.
- Effects on traditional land-use due to major spill(s) or accident(s) causing contaminants to enter surface waters.
- Effects to groundwater and surface water from spills, leaks or ruptures of storage or conveyance systems for tailings, fuels and lubricants, other hazardous chemicals, or seepage or mine contact water pipelines, ditches and/or ponds
- Effects on Métis access to, navigability, and function of traditional hunting routes, trails and water routes from the proposed by-pass road and Project footprint.



Modeling of nutrients

