Rambler Metals and Mining Canada Limited
Tailings Management Facility Expansion, Ming Copper-Gold Mine

Environmental Preview Report
Pursuant to the Newfoundland and Labrador *Environmental Protection Act (Part X)*

Submitted by:
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May 7, 2018

EXECUTIVE SUMMARY

Rambler Metals and Mining Canada Limited (RMM or Rambler) is proposing to expand their Tailing Management Facility at their Nugget Pond Mill site on the Baie Verte Peninsula to accommodate tailings from ongoing mining operations at their Ming Copper-Gold Mine, in production since 2011.

Past and current operation at the Ming Mine has included mining of relatively high-grade copper ore. Future operations will continue with the mining of the higher grade ore in addition to the mining of a new zone, the Lower Footwall Zone, to be blended for an overall higher production rate of 1,250 metric tonnes per day (mtpd).

RMM determined that their existing Tailings Impoundment did not have sufficient volume to contain the tailings generated for the new life of mine plan, approximately 5.6 Mm^3 of tailings over the next 20 years, and therefore undertook to identify another storage facility. The proposed new Tailings Impoundment, to be located in a fishless waterbody within the same watershed, Camp Pond, was selected among several options for its stability, proximity to the Mill and predicted low environmental impact on the surrounding area.

The proposed Project will include the construction of an earthen dam to facilitate the conversion of Camp Pond to a safe and environmentally reliable Tailings Impoundment. Other components of the Project include necessary and associated infrastructure such as a tailings slurry pipeline, an effluent decant line, a small pump house, primary and backup pumps, a powerline to Camp Pond, outflow stream maintenance and improvements to an existing exploration road. The proposed Project does not require that any additional infrastructure relative to the mill or mining operations be constructed. Given the natural features of Camp Pond, the Project provides a technically feasible and environmentally responsible means of accommodating increased tailings storage from ongoing operations. The commissioning of the Camp Pond Tailings Impoundment will ensure critical production targets are achieved, thus extending the life of mine and ensuring ongoing economic benefits to the region and the provincial economy.

RMM originally submitted a Registration document describing this proposed undertaking to the Environmental Assessment Division (EAD) on December 13, 2017. The Minister of the Newfoundland and Labrador Department of Municipal Affairs and Environment (NLDMAE) advised RMM on January 25, 2018 that an Environmental Preview Report (EPR) would be required and indicated that,

> "The EPR is necessary to provide information concerning the potential effects of the undertaking on the surrounding environment. Additional information requirements shall include, but are not limited to:
>
> - Impacts on the watershed downstream from Camp Pond;

- Identification of the dam consequence classification as per the Canadian Dam Association, Dam Safety Guidelines and associated Bulletins;

- Instrumentation incorporated into the design of the proposed tailings dam and reservoir for monitoring during the operational and closure phases;

- Rehabilitation, closure and maintenance of the dam in perpetuity; and

- Submission of a tailings storage facility alternatives study which addresses an approximate 20 year life of mine."

RMM met with the EPR Committee on February 19, 2018 to obtain clarification on the information requirements indicated above, and this document presents a description of the proposed Project and reflects the additional information requested by the Committee and the EPR Guidelines provided to RMM on March 21, 2018.

RMM does not anticipate any significant adverse effects of the proposed Project on the following environmental and social components:

- Vegetation and Wetlands;
- Wildlife, including Species at Risk;
- Avifauna, including Species at Risk;
- Aquatic Species and Habitat;
- Water Resources;
- Historic and Heritage Resources; and
- Communities and Economy.

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LIST OF ABBREVIATIONS AND TERMINOLOGY

%	Percent
AAQS	Ambient Air Quality Standard
ACOA	Atlantic Canada Opportunities Agency
ARD	Acid Rock Drainage
CAC	Criteria Air Contaminants
Cadna A	Computer Aided Noise Abatement
CCME	Canadian Council of Ministers of the Environment
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
dBA	A-weighted decibels
DFO	Department of Fisheries and Oceans
DMS	Dense media separation
EA	Environmental assessment
ECCC	Environment and Climate Change Canada
EEM	Environmental Effects Monitoring
EML	Exempt Mineral Land

EMP	Environmental Management Plan
EPP	Environmental Protection Plan
ERCP	Emergency Response and Contingency Plans
GHD	GHD Limited
GHG	Greenhouse Gases
GHGRP	Greenhouse Gas Emissions Reporting Program
GLC	Ground level concentration
LFZ	Lower Footwall Zone
LT-50	Acute Lethality Toxicity
masl	Metres above sea level
ML	Mineral lease
MMER	Metal Mining Effluent Regulations
MMS	Ming Massive Sulphides
mtpd	Metric tonnes per day
NH_3	Ammonia
NL	Newfoundland and Labrador
NLCDC	Newfoundland and Labrador Conservation Data Centre
NLDFLR	Newfoundland and Labrador Department of Fisheries and Land Resources
NLDMAE	Newfoundland and Labrador Department of Municipal Affairs and Environment
NLDNR	Newfoundland and Labrador Department of Natural Resources
NLTCII	Newfoundland and Labrador Department of Tourism, Culture, Industry and Innovation
N_2O	Nitrous oxide

NOC	National Occupation Classification
O_3	Ozone
oz/t	Ounces per tonne
PAA	Protected Areas Association
PAG	Potentially acid-generating
RISS	Regulatory Information Submission System
RMM	Rambler Metals and Mining Canada Ltd.
SARA	*Species at Risk Act*
SO_x	Sulphur oxide
SO_2	Sulphur dioxide
TMF	Tailings Management Facility
TSP	Total suspended particulate
VOC	Volatile organic compounds
WEP	Women's Employment Plan
WMP	Waste Management Plan
WWTP	Waste water treatment plant

1.0 NAME OF UNDERTAKING

Project Name: Tailings Management Facility Expansion, Ming Copper-Gold Mine

2.0 PROPONENT

RMM is a mining company that has 100% ownership of the Ming Copper-Gold Mine on the Baie Verte Peninsula in Newfoundland and Labrador (NL).

Name of Corporate Body:	Rambler Metals and Mining Canada Limited
Corporate Address:	P.O Box 610 Baie Verte, NL A0K 1B0
Chief Executive Officer:	Mr. Norman Williams President and CEO P.O. Box 610 Baie Verte, NL A0K 1B0 Telephone: 709-800-1929 Fax: 709-800-1921 Email: nwilliams@ramblermines.com
Principal Contact Person for the Purpose of EA:	Mr. Peter Mercer Vice President, Corporate Secretary P.O. Box 610 Baie Verte, NL A0K 1B0 Telephone: 709-800-1929 ext 500 Fax: 709-800-1921 Email: pmercer@ramblermines.com

3.0 THE UNDERTAKING

Rambler Metals and Mining Canada Limited (RMM) has been operating a fully approved/permitted mine (Ming Copper-Gold Mine), milling operation (Nugget Pond Mill) and shipping operation (Goodyear's Cove) on the Baie Verte Peninsula in north central Newfoundland and Labrador (NL) (Figure 1) since 2011.

RMM has determined that the existing Tailings Management Facility (TMF) located at the Nugget Pond Mill site (Mill), does not have sufficient capacity to contain the tailings generated from the new mine plan. As a result, RMM identified potential locations that could accommodate such tailings and planned and executed baseline studies to support the required expansion of the existing TMF. Based on the results of those studies, and in consultation with federal and provincial regulators, RMM is currently proposing to develop a second tailings impoundment at Camp Pond to accommodate future tailings deposition. The currently proposed expansion will meet the near term tailings storage requirements, allowing RMM to complete further assessment of the Life of Mine (LOM) storage requirements, as well as potential tailings management alternatives and opportunities as further described in this document.

The proposed TMF Expansion (the Project) will involve the following components:

- Upgrading an existing exploration road to access the outlet of Camp Pond for dam construction;
- Construction of an earthen dam at the natural outflow of Camp Pond to increase water elevations and storage capacity, and to control and manage tailings, water, and effluent in the basin;
- An emergency spillway will be constructed to address potentially significant flood events;
- Re-location and extension of the existing tailings slurry delivery pipeline (HDPE pipe) to Camp Pond;
- Installation of a powerline along the proposed access road corridor from the Mill to Camp Pond, two pumps, a pumphouse, and a pipeline to pump effluent from Camp Pond back to the existing Tailings Impoundment; and
- Installation of a small, clean water supply system to maintain water flow to the outflow tributary of Camp Pond.

This Environmental Preview Report (EPR) has been prepared in response to a decision from the Minister of NLDMAE that additional information was needed prior to making a decision on this proposed Project. This EPR has been prepared with assistance from GEMTEC Consulting Engineers and Scientists (GEMTEC), and the document format follows the EPR Guidelines

issued by the NLDMAE on March 21, 2018. RMM and their consultants met with the NLDMAE appointed EPR Committee for the Project on February 19, 2018, and also requested written clarification regarding several comments in the Guidelines prior to submission of the EPR.

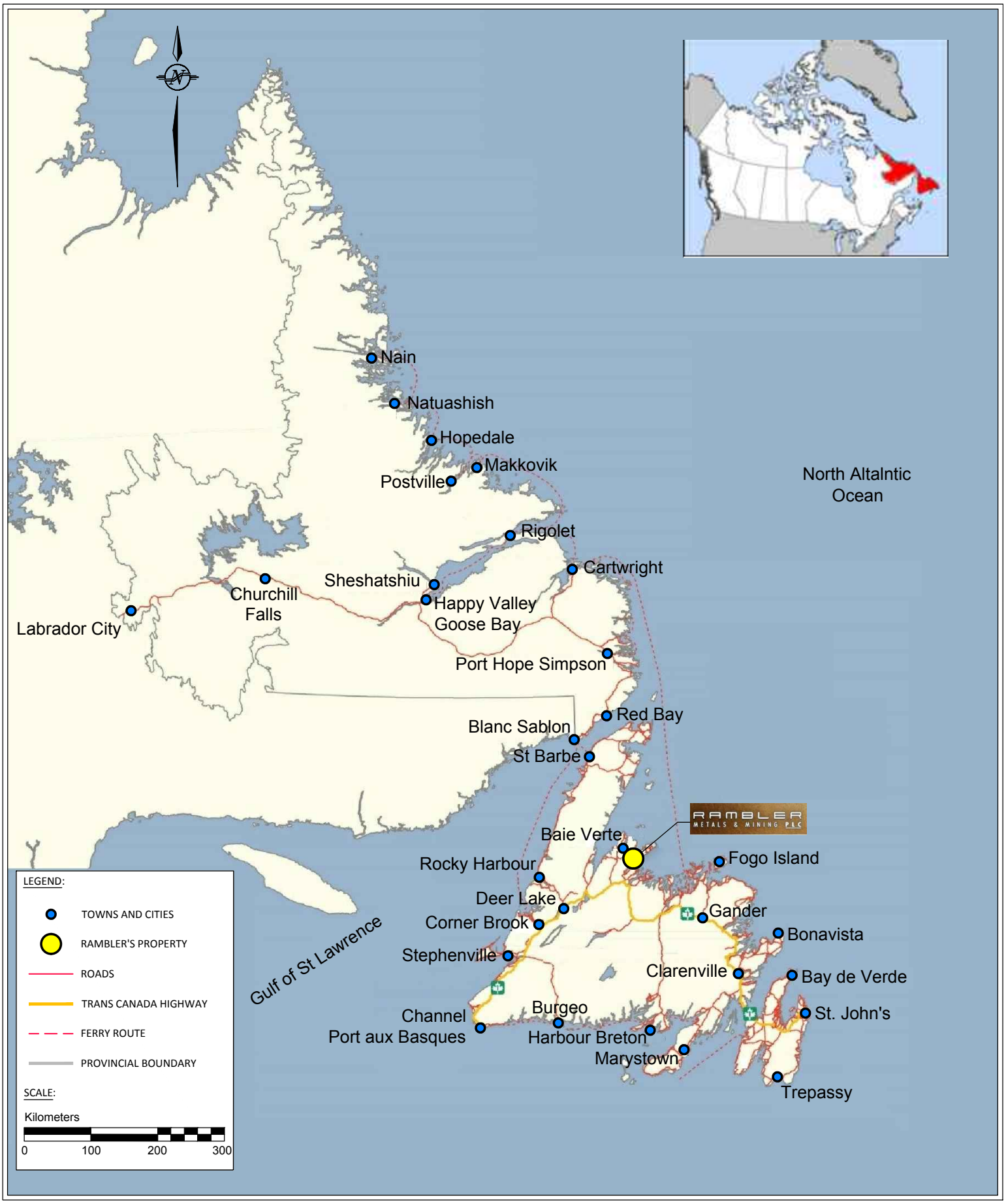

Figure 1: Rambler Property Location on the Baie Verte Peninsula

4.0 DESCRIPTION OF THE UNDERTAKING

Under previous owners and operators, the underground Ming Mine produced 2.1 million tonnes of ore at 3.5 percent (%) copper and 0.07 ounces/tonnes (oz/t) gold. Production ceased in 1982 when the deposit reached a neighboring property boundary. In 2004, RMM purchased the Ming Mine and the adjacent property, developed and permitted a new mining plan, and commenced commercial production in November 2012.

In October 2009, RMM purchased the Nugget Pond Mill, an operational gold hydrometallurgical mill with a fully-permitted TMF located 6 km from the community of Snook's Arm, NL, and approximately 40 km from the Ming Mine (Figure 2). RMM expanded the mill in 2012 to allow processing of massive sulphides (copper ore) from the mine to produce a copper concentrate with gold and silver as by-products.

The proposed Project involves permitting, construction, operations, and closure and rehabilitation activities relative to an expansion of the existing TMF at the Nugget Pond Mill site.

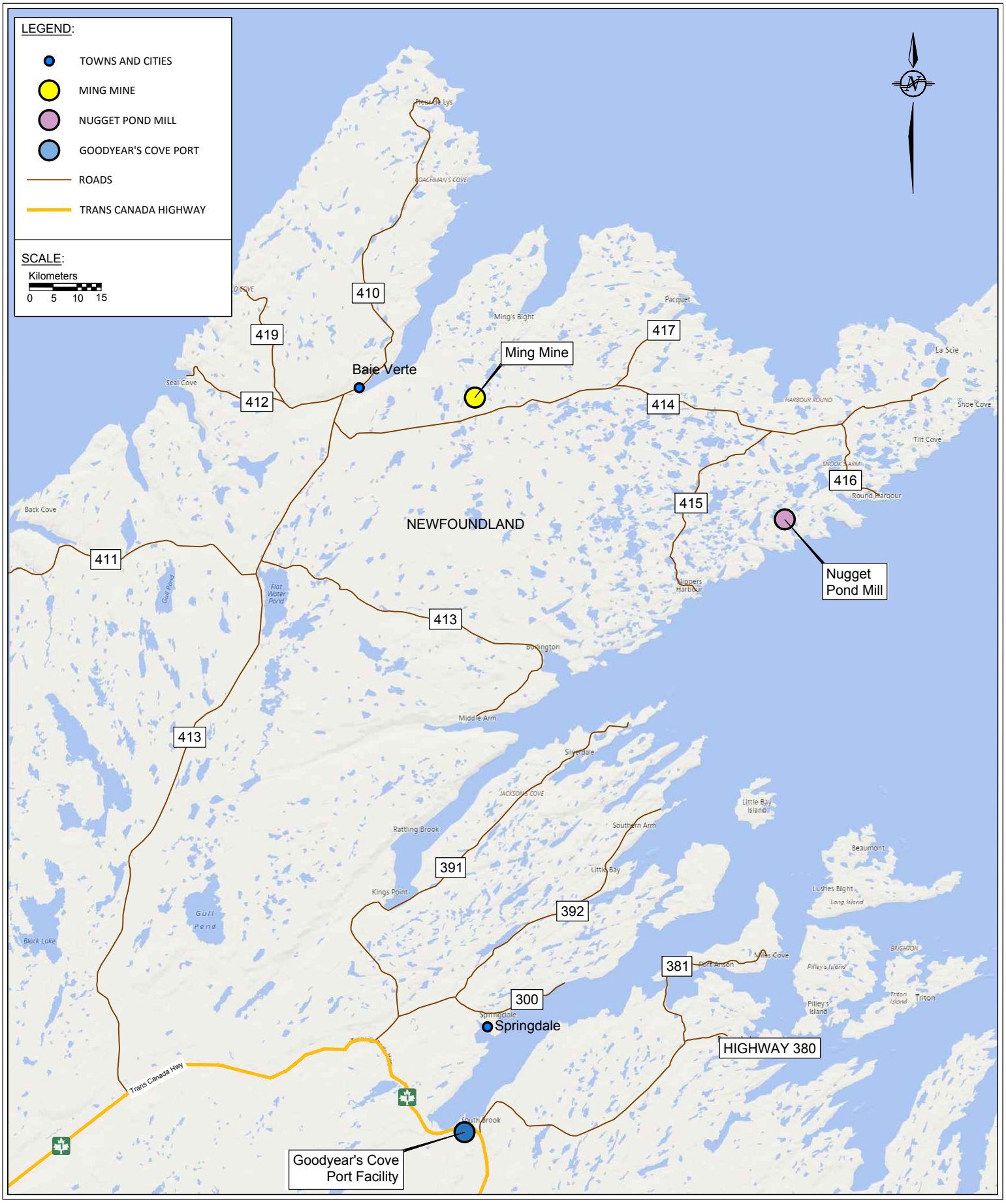

Figure 2: Rambler Property Component Locations

4.1 Existing Environment and Project Components

The following sections describe the Project's geographic setting, existing infrastructure, land tenure, as well as the biophysical and human environments.

4.1.1 Geographic Location

Access to the Baie Verte Peninsula is provided via the Dorset Trail (Route 410) off the TransCanada Highway and the Nugget Pond Mill site can be accessed via the La Scie Highway (Route 414) and then via Route 416 to Snook's Arm. The Baie Verte Peninsula is serviced by the Deer Lake airport, located approximately 160 km southwest of Baie Verte (Figure 1).

The Baie Verte Peninsula has a long history related to mining. Numerous historical mines have been operated on the Peninsula, and there are two predominant abandoned mines (former Baie Verte Advocate Asbestos Mine, and the former Consolidated Copper Mine). In addition to RMM's current operations in the area, Anaconda Mining Inc. is in commercial production at its Point Rousse gold mine operation (3 km northeast of Baie Verte) and its Stog'er Tight Operations. Mining and mining supported businesses comprise the largest source of employment on the Baie Verte Peninsula.

The Mill, located adjacent to the proposed Project, occupies approximately ten (10) hectares of Crown land and RMM holds the surface rights for the Mill through a lease with the Crown. The Mill and the proposed Project are both located within the Fly Pond-Bobby's Cove watershed, which encompasses an area of approximately 7.4 km^2. The existing TMF drains south into the head of Bobby's Cove via the Polishing Pond and Horseshoe Pond. There are four main ponds, i.e., the existing Tailings Impoundment (formerly Fly Pond), the Polishing Pond (formerly Rocky Pond), Horseshoe Pond and Bobby's Cove Pond, and approximately 10 unnamed ponds located within the watershed.

The approximate coordinates for the proposed Tailings Impoundment at Camp Pond are 49.5023°N, 55.4619°W at an elevation of approximately 130 metres above sea level (MASL). All components of the existing TMF are located within the same watershed (Figure 3), and the proposed tailings expansion facility will also be contained within this same watershed.

Legend

MAIN DRAINAGE

WATERSHED BOUNDARY 1

Note

1. Base mapping, aerial photo, and contours provided by Rambler Metals and Mining.
2. Coordinate system is NAD83(CSRS) UTM zone 21.
3. NTS map sheet 02/E13.
4. Contours are shown in metres (1m interval).

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Date

APRIL 2018

Project

RAMBLER METALS AND MINING
BAIE VERTE TAILINGS MANAGEMENT
FACILITY EXPANSION

Drawing

EXISTING TMF AND CAMP POND
WATERSHED

Scale

1:25000

0 0.5 1.0 1.5km

File No.	Drawing	Revision No.
800020209	FIGURE 3	0

GEMTEC
CONSULTING ENGINEERS AND SCIENTISTS

N:\DRAWINGS\80000\80002.02\800020209 - CAMP POND SITE PLAN - ENV DEPT FIGURES.DWG

4.1.2 Existing Infrastructure

RMM's current infrastructure relative to the existing TMF includes the Tailings Impoundment and Polishing Pond which cover an area of approximately 25 hectares (Figure 3). Components of RMM's existing TMF include:

- Dams associated with the existing Tailings Impoundment;
- All pipelines and pumps; and
- A Final Discharge Point established under the Metal Mine Effluent Regulations (MMER) where regular water quality monitoring occurs.

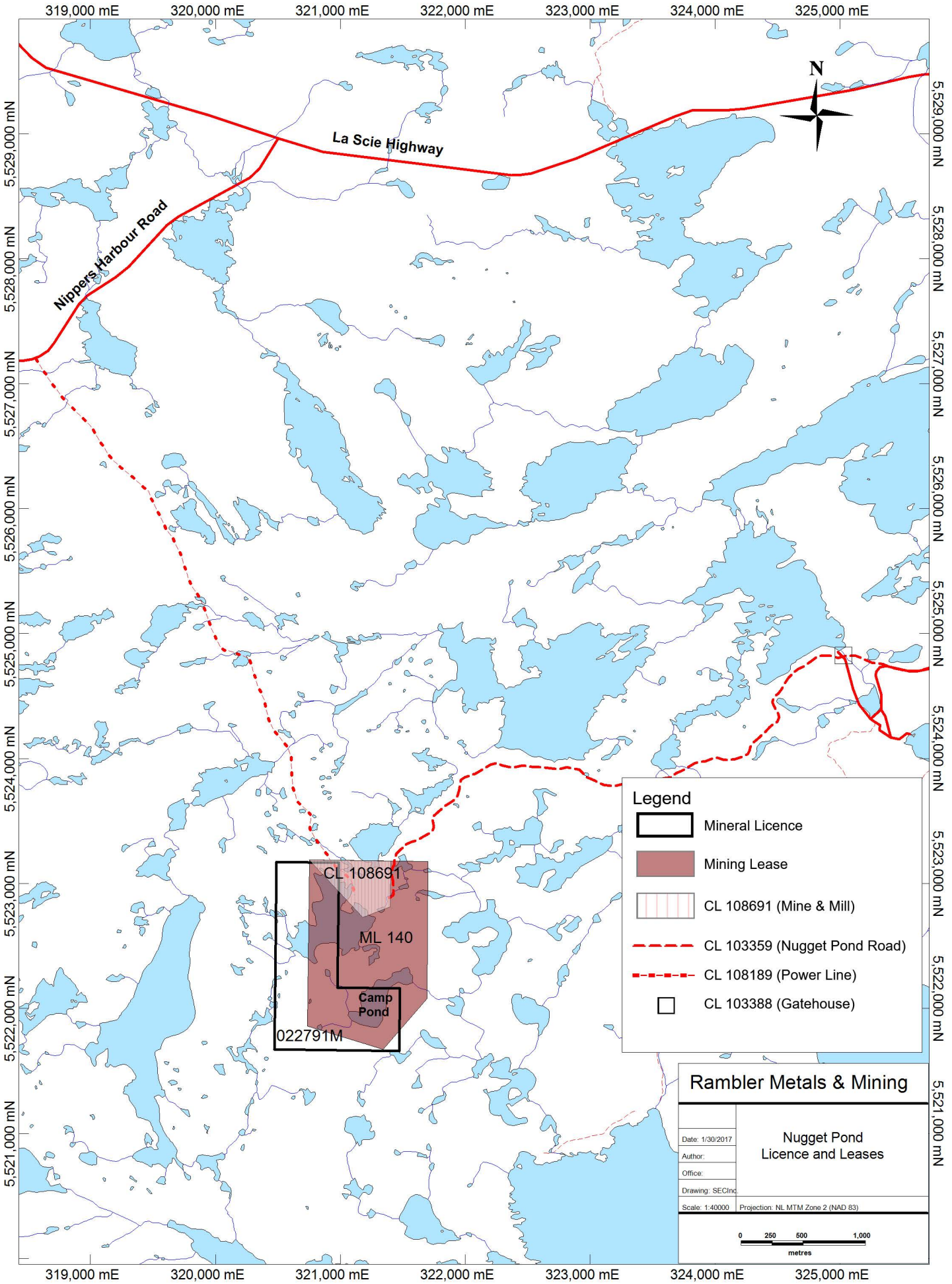
RMM operates their TMF in accordance with the MMER and provincial requirements. RMM has conducted Environmental Effects Monitoring (EEM) Studies at the mill site since 2009 when RMM purchased the mill and began effluent testing from the final discharge points (i.e., the Polishing Pond). The next EEM report for the mill area will be submitted to Environment and Climate Change Canada (ECCC) for review in 2018. Surface water quality monitoring as per the provincial Certificate of Approval (C of A) is ongoing.

4.1.3 Land Tenure

The proposed Project site is located directly south of RMM's existing Nugget Pond Mill and occurs on crown land that is underlain by an existing mining lease (Mining Lease 140) which was issued to RMM in 2009 (Figure 4).

Following a recommendation from Newfoundland and Labrador Department of Natural Resources (NLDNR) during the Registration review phase for this proposed Project, RMM will surrender their existing Crown Lands lease (108691) and request a single surface lease under Section 33 of the Mineral Act to cover all existing infrastructure, as well as the proposed Camp Pond Tailings Impoundment Area. As indicated by NLDNR, this approach will bring the Nugget Pond Mill site in line with other processing mills in the province whereby all infrastructure and tailings facilities are covered by surface leases issued under the Mineral Act.

RMM is unaware of any restrictions associated with this approach and will follow this advice as issued by NLDNR.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ML 140
Camp Pond
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Mineral Licence
Mining Lease
CL 108691 (Mine & Mill)
CL 103359 (Nugget Pond Road)
CL 108189 (Power Line)
CL 103388 (Gatehouse)
Rambler Metals & Mining
Nugget Pond
Licence and Leases
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Author:
Office:
Drawing: SECInc
Scale: 1:40000
Projection: NL MTM Zone 2 (NAD 83)
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4.1.4 Biophysical Environment

The area surrounding the proposed Camp Pond Tailings Impoundment is an area that has been affected by mining activities since the 1980s. Although RMM purchased the Mill site in 2009 and began operations in 2011, other mining companies operated in the area prior to RMM. A number of components of the natural environment have been affected to varying degrees by previous activity in this area.

4.1.4.1 Climate

The proposed Project occurs in the North Shore Forest Ecoregion, which has the warmest summers of any coastal area in Newfoundland and also the driest. Total annual rainfall is 1002 mm (Table 1) but moisture deficiencies are common in summer. As a result, the water table in this region is typically lower than in other regions of the province. Average winter snowfall is 31.1 cm. The mean summer temperature is 14.1°C and mean winter temperature is -3.6°C.

Table 1 Sop's Arm, White Bay - Climate Normals (1981-2010)

Parameter	Unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Rainfall	mm	15.7	11.6	22.8	39.1	70.5	79.4	85.8	97.4	99.7	100.6	68.4	31.2	722.0
Snow	cm	69.0	61.4	43.0	24.4	2.1	0.0	0.0	0.0	0.0	1.8	23.9	54.7	280.4
Precip	mm	84.7	72.0	65.8	63.5	72.6	79.4	85.8	97.4	99.7	102.4	92.4	85.9	1002
Average Temp	°C	-7.8	-8.1	-4.1	1.3	6.0	10.9	15.5	15.9	11.8	6.2	1.1	-3.9	na

Source: Environment and Climate Change Canada

http://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnProv&lstProvince=NL&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongMin=0&txtCentralLongSec=0&stnID=6734&dispBack=0

4.1.4.2 Geology, Soils and Topography

The proposed Project is located on the east side of the Baie Verte Peninsula in the Dunnage geologic zone which is comprised of shales, sandstones, conglomerates, and volcanic rocks formed 430 to 550 million years ago. The coastline of Betts Cove-Tilt Cove area is bounded by sheer cliffs rising to a plateau level of approximately 150 MASL. The shoreline is indented by many fjord-like coves and inlets, the largest of which, Snook's Arm, is 3 km long.

The surficial geology within the area consists of granites, granitic gneiss and schists. Soils forming on these parent materials in the vicinity of Project are described as generally shallow over

undulating bedrock and rock outcrops are common. Drainage varies dramatically based on slope and landscape position.

4.1.4.3 Vegetation and Wetlands

Land cover types at the Nugget Pond Mill site were identified through a desktop review of available data, as well as a field study conducted August 17-20, 2016 (GHD 2016). The study area for the terrestrial work in 2016 included Camp Pond, the Mill site, Horseshoe Pond and The Steady (Figure 5).

The Nugget Pond Mill site and surrounding area consists of four main land cover types: disturbed areas, mixed coniferous forest, rocky barrens, and small wetlands.

The existing exploration road, i.e., disturbed area, leading to Camp Pond from the Mill is primarily unvegetated. The common plant species found along the roadway includes heart-leaved birch (*Betula cordifolia*) saplings, black spruce (*Picea mariana*), and speckled alder (*Alnus viridis*) as well as flat topped aster (*Doellingeria umbellata*), fireweed (*Chamerion angustifolium*), pearly everlasting (*Anaphalis margaritacea*), wild raspberry (*Rubus idaeus*), yellow hawkweed (*Hieracium vulgatum*), coltsfoot (*Tussilago fafara*), northern bracken fern (*Pteridium aquilinum*), field horsetail (*Equisetum arvense*), Canada burnet (*Sanguisorba canadensis*), Canada bluejoint (*Calamagrostis canadensis*), and downy goldenrod (*Solidago puberula*). The plant species present are generally tolerant of disturbed conditions or are early successional species that colonize disturbed areas (GHD 2016).

Mixed coniferous forest occurs in areas of the proposed Project area along the hill slopes, hill tops and valleys where soil conditions and moisture favor forest development. The forested canopy varies in density and height depending of soil conditions and exposure. Areas with thinner soils generally support thinner and somewhat stunted tree communities while areas with thicker soils support more fully developed forest communities. The dominant species present in the mixed coniferous forest include black spruce, balsam fir (*Abies balsamea*), heart leaved birch, sweet gale (*Myrica gale*) speckled alder, bunchberry (*Cornus canadensis*), northern bracken fern, cinnamon fern (*Osmunda cinnamomea*), Solomon's Seal (*Maianthemum racemosum*), and creeping snowberry (*Gaultheria hispidula*) (GHD 2016). A talus slope occurs along the western side of Camp Pond and this area has no soil development, is dominated by boulders, is not stable and thus lacks significant vegetation (GHD 2016).

Wetlands in the Study Area, including the environs of Camp Pond, consist of streamside and slope fens, forested swamps, and smaller raised bogs. The majority of the wetlands in the Study Area are peatlands and are classified depending on their vegetation cover type and whether they receive their wetland hydrology solely from nutrient poor rainwater and snowmelt or from nutrient rich ground or surface water. Some wetlands associated with ponds occur around the perimeter of Camp Pond. Other wetlands occur along the stream valleys between Camp Pond and The

Steady and smaller tributaries to these ponds. These land cover types are not rare or limited in extent in the area (GHD 2016).

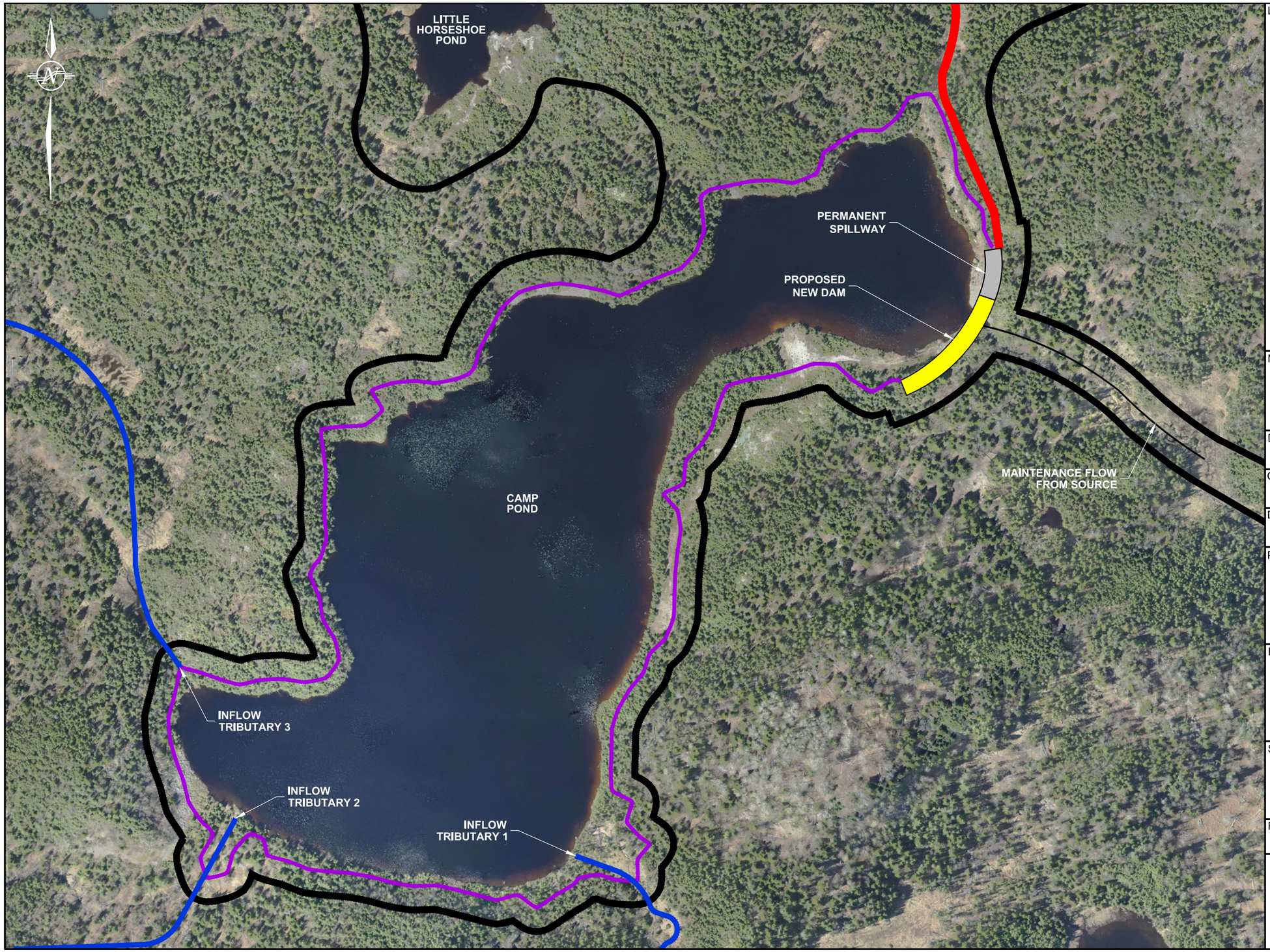
Common wetland plant species present around Camp Pond includes sphagnum moss (*Sphagnum* spp.) woolgrass (*Scirpus cyperinus*), Canada bluejoint (*Calamagrostis canadensis*), Canada burnet, roundleaf sundew (*Drosera rotundifolia*), pitcher plant (*Sarracenia purpurea*), seven angled pipewort (*Eriocaulon aquaticum*), horned bladderwort (*Utricularia cornuta*), and cottongrass (*Eriphorum* sp.) (GHD 2016).

Common plant species occurring in the forested wetlands include black spruce, balsam poplar, speckled alder (*Alnus viridis*), sweetgale, northern bracken fern, Solomon's seal, creeping snowberry, bunchberry, bristly sarsaparilla (*Aralia hispida),* sphagnum mosses, and Canada burnet (GHD 2016).

The vegetation in the emergent fens and bogs was dominated by speckled alder, a variety of sedges (Carex spp.), sphagnum moss, cotton grass, shrubby cinquefoil (*Dasiphora fruticosa),* purple stemmed aster (*Symphyotrichum puniceum*) (GHD 2016).

The NL CDC database indicates there are six rare plant records within 5 km of the Mill site, an area that encompasses the proposed Camp Pond Tailings Impoundment (Table 2): common yarrow, cutleaf anemone, encrusted saxifrage, bristleleaf sedge (2 occurrences) and smooth whitlow grass. These plants are not listed provincially or federally and are not considered globally rare. Expert Opinion Maps suggest Boreal Felt Lichen (Special Concern under *Species at Risk Act [SARA]* and Vulnerable under the NL *Endangered Species Act*) is possible, but unlikely within 5 km of the Mill site. No rare plants were observed in the proposed Project footprint during the 2016 field studies.

The additional footprint for the Camp Pond Tailings Impoundment is estimated to be 2.1 ha (Figure 5) when the dam is fully constructed and the Tailings Impoundment is at full capacity. The land cover types to be affected by the flooding is not limited in the region and given the absence of rare plants there, the Project is not expected to result in residual adverse environmental effects to vegetation or wetlands.



Legend

- MAX. WATER ELEVATION (103m MASL)
- 2016 FIELD STUDY AREA
- EXISTING ROAD

Note

1. Base mapping, aerial photo, and contours provided by Rambler Metals and Mining.
2. Coordinate system is NAD83(CSRS) UTM zone 21.
3. NTS map sheet 02/E13.
4. Contours are shown in metres (1m interval).

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Date: APRIL 2018

Project: RAMBLER METALS AND MINING
BAIE VERTE TAILINGS MANAGEMENT FACILITY EXPANSION

Drawing: STUDY AREA AND FLOODED ZONE

Scale: 1:2500

0 50 100 150m

File No.	Drawing	Revision No.
800020209	FIGURE 5	0

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Consulting Engineers and Scientists

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Table 2 Rare Flora Species identified within five km of the Nugget Pond Mill Site (2016)

Species	Provincial Status	Habitat
Common Yarrow, *Achillea millefolium*	Not Applicable	Disturbed habitats and less often on barrens and limestone barrens
Cutleaf Anemone, *Anemone multifidi*	Vulnerable	Calcareous cliffs and barrens
Encrusted Saxifrage, *Saxifraga paniculata*	Vulnerable/Apparently Secure	Calcareous gravels, ledges and cliffs
Bristleleaf Sedge, *Carex eburnea* - 2 occurrences	Vulnerable	Calcareous ledges and cliffs
Smooth Whitlow Grass, *Draba glabella*	Apparently Secure	Calcareous gravels, ledges and cliffs

4.1.4.4 Wildlife and Species at Risk

The potential for wildlife and wildlife Species at Risk around the Mill site was assessed through a combination of desktop review and field study (GHD 2016). GHD consulted with the Newfoundland and Labrador Conservation Data Centre (NL CDC), a node of the Atlantic Canada Conservation Data Centre (AC CDC), to obtain a list of known elements of occurrence for Species at Risk for the Study Area. The NL CDC data also included an expert opinion on Species at Risk that could possibly occur within the Study Area. The study area for GHD's terrestrial work in 2016 included Camp Pond, the Mill site, Horseshoe Pond and The Steady (Figure 5).

Mammals commonly found in the region include moose, snowshoe hare, mink, red fox, black bear, meadow vole, otter, beaver, and the little brown bat. The red squirrel, lynx, and muskrat can also occur (PAA 2008). The nearest population of caribou (*Rangifer tarandus*) (i.e., the Hampden herd) occurs to the southwest of the area in the Hampden Downs Caribou Management Area (NLDECC 2014), approximately 50 km from the Nugget Pond Mill site. No mammal species were observed during the field study.

The habitats present onsite were also assessed to determine if they could potentially support Species at Risk (SAR) identified as potentially occurring in the Study Area. The NL CDC indicates there are no rare animal records within 5 km of the Mill site, an area that encompasses the proposed Camp Pond Tailings Impoundment location. Expert Opinion Maps do suggest Polar Bears (Special Concern under *SARA* and Vulnerable under NL *Endangered Species Act*) and Newfoundland Marten are possible but unlikely within 5 km of the Mill site. The forested areas

surrounding the Mill contain suitable structure and cover preferred by Newfoundland Marten and thus could potentially provide habitat, though none were observed during field studies in 2016.

The Project is not expected to result in residual adverse environmental effects to wildlife. RMM has a Wildlife Encounter Contingency Plan within the EPP which includes procedures to follow and mitigation measures to implement in the event of a wildlife sighting.

4.1.4.5 Avifauna and Species at Risk

The habitats in the Study Area, including the area surrounding Camp Pond, were also assessed for their suitability to provide important habitats for migratory and other bird species. The existing Tailings Impoundment area has limited habitat value due to the tailings lining on the bottom of the pond and the disturbance associated with the ongoing tailings disposal operations. No waterfowl were observed on Camp Pond, Horseshoe Pond or The Steady during the 2016 field study.

The mixed coniferous forest habitat is generally important habitat for a variety of forest dwelling passerine species, including those that specialize in coniferous forests and large forest tracts. Mixed coniferous forest habitats are also stopover and resting habitats for many migratory passerine species. The forests surrounding the Mill site, including the Camp Pond environs, likely serve as migratory habitat for passerine species. However, this habitat type is not rare or limited in extent in the area.

The existing exploration road to Camp Pond is mostly vegetated with herbaceous species and does provide foraging habitat for passerine species that utilize edge habitats and open field habitats. Roadside habitats however are not rare or unique in the surrounding areas.

One bird species, Slate-colored Junco, was documented during the 2016 field study. The NL CDC indicated there are no rare bird species records within 5 km of the Mill and proposed Project footprint. Expert Opinion Maps suggest Red Crossbills (Endangered under *SARA* and Endangered under *NL Endangered Species Act*) and Rusty Blackbirds (Special Concern under SARA and Vulnerable under NL Endangered Species Act) are possible, and Short-eared Owls (Special Concern under *SARA* and Vulnerable under NL *Endangered Species Act*) are possible but unlikely, within 5 km of the Mill and proposed Project footprint. Expert Opinion Maps also suggest Ivory Gulls (Endangered under *SARA* and Endangered under NL *Endangered Species Act*) are possible within 5 km of the Mill. The Mill and proposed Project footprint occurs within the range for Barrow's Goldeneye (Special Concern under *SARA* and Vulnerable under NL *Endangered Species Act*).

The Project will involve the construction of a small earthen dam at the outlet of Camp Pond and will also include flooding of approximately 2.1 ha for the Tailings Impoundment. Though the surrounding habitat may be suitable for avifauna, it is not rare or limited in the area. The Project is not expected to result in residual adverse environmental effects to avifauna.

4.1.4.6 Aquatic Species and Habitat

The NL CDC indicates that there are no rare fish records within 5 km of the Mill site, including within the proposed Project footprint. Expert Opinion Maps suggest Banded Killifish (Special Concern under *SARA* and Vulnerable under NL *Endangered Species Act*) are possible within 5 km of the Mill site.

Environmental Effect Monitoring Studies

EEM studies at the Nugget Pond Mill site found Brook Trout in Horseshoe Pond Brook, Bobby's Cove Pond and Bobby's Cove Brook (both downstream of Horseshoe Pond). In addition, Arctic Char were captured in Horseshoe Pond and Horseshoe Pond Brook. No rare fish were documented in the fish studies conducted to date. Effluent from the final discharge point, i.e., Polishing Pond, must pass the LT-50 test (acute lethality test) on fish. To date, the mill effluent has never failed an LT-50 test related to the discharge from the Polishing Pond. RMM will continue to monitor the potential effects of milling activities on fish and fish habitat via EEM studies in accordance with MMER and provincial requirements.

Aquatic Field Studies- 2016 and 2017

Prior to proposing Camp Pond as a potential Tailings Impoundment, RMM undertook investigations over two field seasons in order to evaluate the status of the Pond, its tributaries and the waterbodies directly connected downstream of it. Camp Pond itself is a headwater pond with three steep inflow streams (Figures 6-8). This feature makes the inflow streams very unlikely fish habitat.

Figure 6 Inflow Tributary 1

Figure 7: Inflow Tributary 2

Figure 8 Inflow Tributary 3

In 2016, the aquatics program targeted three ponds and consisted of a fish habitat assessment, fish community presence/absence, benthic macroinvertebrate community monitoring, and surface water quality and sediment monitoring and sampling. The three ponds studied included Camp Pond, Horseshoe Pond, The Steady and the main inflow and outflow tributaries of each pond. This work was conducted over a period of 5 days, with 2 days spent focused on Camp Pond.

Minnow traps were used in shallow areas around the edges of each pond to target any baitfish species present. The initial sampling protocol included a sampling effort per pond of up to six fyke nets and ten minnow traps set for approximately a 16-18 hour period. Where no fish were caught, nets were reset for an additional period and/or an angling effort was added to assist in confirmation of the results.

Observations of fish habitat in the ponds and tributaries included general observations of substrate, channel dimensions (i.e., depths, widths), morphology, topography, forest cover, shoreline and aquatic vegetation, instream cover, and human use. Some electrofishing occurred and fish were observed in The Steady, Horseshoe Pond and in lower reaches of the Camp Pond outflow tributary.

This initial baseline aquatic monitoring program conducted by GHD in August 2016 did not find any evidence of fish within Camp Pond but did in the lower reaches of the outflow tributary (GHD, 2016).

Based on the apparent absence of fish in Camp Pond indicated by the 2016 sampling program, the 2017 program focused on Camp Pond only. In consultation with the federal Department of Fisheries and Oceans (DFO) in May 2017, RMM undertook a field sampling program using methods intended to lead to defensible conclusions concerning the presence or absence of fish in Camp Pond. Those consultations, including general correspondence and a face-to-face meeting with DFO, occurred primarily in May 2017.

In order to conclude that a natural water body is not frequented by fish, it needs to be demonstrated, via industry standard sampling procedures and through a demonstrated high level of fishing effort, that no finfish are present. The following guidance provided by DFO was implemented and followed in the design and execution of the 2017 aquatics sampling program that was designed to supplement and further inform results obtained from the 2016 report:

- Schedule the 2017 field sampling for a period with higher flows than those encountered during the 2016 sampling regime, e.g., mid-June;
- Ensure unbaited fyke nets with wings are used;
- Ensure fyke nets are not submerged rather set as close to the surface as possible;
- Use beach seines in all littoral zones around the pond;
- Use an electro fisher in shallow pond areas. A visual survey of any fish observed was carried out;
- Multi-panel gill nets that are constantly monitored and used in progressive timeline/duration is recommended, including for an overnight period;

- If any fish are caught, fork length measurements are to be recorded vs total length; and
- Confirm via traditional ecological knowledge (TEK) whether any fish have been caught in Camp Pond over the years.

The 2017 follow-up fisheries monitoring program targeted Camp Pond earlier in the season than the 2016 program in an attempt to target fish in different habitat types. The five-day 2017 monitoring program expanded the 2016 fisheries assessment methods to include more varied fyke netting scenarios, gill netting, seining, electrofishing and angling. The pond was extensively covered through a combination of these methods.

Five fyke nets were installed within Camp Pond, ranging in depth from approximately 0.75 to 1.5 m deep and were left in place for a total of approximately four days (average - 93 hours). Nets were checked daily but no fish were captured and no signs of fish were observed during sampling. Twelve (12) gill net sets, reaching depths up to 7.8 m, were installed in Camp Pond, and monitored progressively for four days. Two gill net sets extended overnight yet no fish were captured and no signs of fish were observed during the sampling effort.

Seine netting was conducted in shallow areas of the Pond and nine seine pulls were completed in four areas of the pond with no fish observed or captured.

Electrofishing of appropriate habitat was conducted on days when water clarity was excellent in littoral habitat areas. No fish were seen evading the electric field during the effort. All inflow and outflow tributaries were also electrofished within representative reaches with no fish observed or captured within the sampled reaches at the time of the survey. Habitat providing the most potential for viable fish habitat was contained within the electrofished reaches.

Habitats sampled included the littoral zone, through fyke netting, electrofishing and seine netting, as well as gill netting in depths ranging to 7.8 m. Angling (i.e., trawling) was used to sample the deepest bottom habitats. No fish were captured via any of these methods and no fish were observed during the five-day monitoring program.

RMM's consultants also confirmed that no one locally had recalled ever catching any fish in Camp Pond.

Given this high level of fishing effort and the absence of any observations or fish captures, RMM concludes that this proposed Project is not expected to result in adverse environmental effects to fish and fish habitat relative to Camp Pond.

Further, RMM consulted with DFO and ECCC regarding the results of these aquatics programs relative to Camp Pond and subsequently requested a determination as to the status of Camp Pond with respect to fish presence/absence and the requirement for a Schedule 2 amendment of MMER. On November 7, 2017, RMM was advised by ECCC that DFO/ECCC were in agreement

that no fish are present in Camp Pond and as such, would not require listing under Schedule 2 of the MMER for use as a tailings impoundment.

Field studies did indicate the presence of fish in lower reaches of the outflow tributary and in both the Steady and Horseshoe Pond. In order to ensure no adverse effects on these waterbodies as a result of converting Camp Pond to a Tailings Impoundment, RMM intends to supply water to the outflow tributary once the Camp Pond dam is under construction. This will require determining water quality and quantity parameters of the outflow tributary prior to the start of any construction associated with the Project. This work is being done in consultation with regulatory authorities and in this way, RMM will minimize any potentially adverse effects to fish and fish habitat downstream of the Camp Pond Tailings Impoundment. At closure of the proposed Tailings Impoundment, and once water quality within the pond is considered acceptable to regulators, water will be permitted to permanently discharge through the closure spillway adjacent to the dam to the original downstream tributary.

4.1.4.7 Water Resources

As previously indicated, there are four main ponds in this watershed and the main drainage from this watershed tends south to Bobby's Cove via the Polishing Pond and Horseshoe Pond (Figure 3). RMM's existing TMF is operated in accordance with the MMER and provincial requirements. RMM has conducted EEM studies at the mill site since 2009 when RMM purchased the mill and began effluent testing from the final discharge points, i.e., the Polishing Pond. The next EEM report for the mill will be submitted to ECCC for review in 2018. Surface water quality monitoring as per the provincial Certificate of Approval (C of A) is ongoing.

As discussed above and in Section 4.1.4.6, RMM has carried out extensive water quality testing within the target watershed. Preliminary field data has been collected with a view to quantifying the outflow tributary's contribution to the downstream environment of Camp Pond. In consultation with appropriate regulators, additional field investigations are planned to better inform this key baseline. Direct flow measurements, the installation of depth gauges in key locations and the establishment of a real time water quality and water quantity monitoring station will be used to ensure the water resources are well understood prior to the start of any construction activities.

4.1.5 Human Environment

There are no federal or provincial parks or protected areas on the Baie Verte Peninsula (NLDECC 2010). There is one private campground, Flatwater Pond, located 25 km from Baie Verte. The Project is located within Moose and Black Bear Management Area 14: Baie Verte (NLDFLR2017). The Project is northeast of Caribou Management Area 78: Hampden Downs (NLDFLR2017) and caribou are not hunted in the region.

4.1.5.1 Historic and Heritage Resources

Multiple recorded archaeological sites exist on the Baie Verte Peninsula and coastlines that provide evidence of Palaeoeskimo, Maritime Archaic Indian, and early European presence (NLBTCRD 2016). There are no recorded archaeological sites at the Mill property however, and no sites have been discovered to date. The Provincial Archaeology Office (PAO) indicated there is low potential for historic or heritage resources to be found within the proposed Project footprint.

4.1.5.2 Socioeconomic Considerations

The Baie Verte Peninsula includes 21 communities that are organized into two areas: Local Area 58, White Bay South and Local Area 69, Burlington. Area 58 consists of Baie Verte, Brent's Cove, Coachman's Cove, Fleur de Lys, Harbour Round, La Scie, Ming's Bight, Pacquet, Purbeck's Cove, Seal Cove, Tilt Cove, Westport, Wild Cove, and Woodstock. Area 69 consists of Burlington, Middle Arm, Nipper's Harbour, Round Harbour, Shoe Cove, Smith's Harbour, and Snook's Arm.

The Baie Verte Peninsula is characterized by a declining population, out-migration and high unemployment. The 2016 Census population for White Bay South (local area 58) was 4,185, representing a decline of 4.8 % since 2011. The 2016 Census population for Burlington (local area 69) was 1,180, a decline of 6.0 % since 2011. Over the same period, the province experienced a population increase of 1.0 %. During the reference week of the 2011 National Household Survey (May 1-7, 2011), the unemployment rate for White Bay South was 21.5 %, higher than the provincial unemployment rate of 14.6% (NL Statistics Agency 2017).

The main areas of employment in White Bay South are trades, transport and equipment operators, natural resources, agriculture and production and sales and service. Employment data is not available for Burlington (NL Statistics Agency 2016). Major employers on the Baie Verte Peninsula include, Service Canada, Government of Newfoundland and Labrador, Royal Canadian Mounted Police, senior and child care services, Anaconda Mining Inc. and RMM. In more recent years there have been a significant number of individuals who work outside the province on a rotation schedule but still maintain their main place of residence on the island (Central Health 2013).

RMM currently employs 195 people and it is not anticipated that the proposed Project will require any additional operations personnel, and a suitable, safe, and economic tailings disposal impoundment is required to ensure RMM's operations are able to continue. During construction however, some temporary positions, approximately 10, will be created. The Project will have a positive impact on employment and the economy in the region.

4.1.6 Project Components

The proposed Project includes the following physical components (Figure 9):

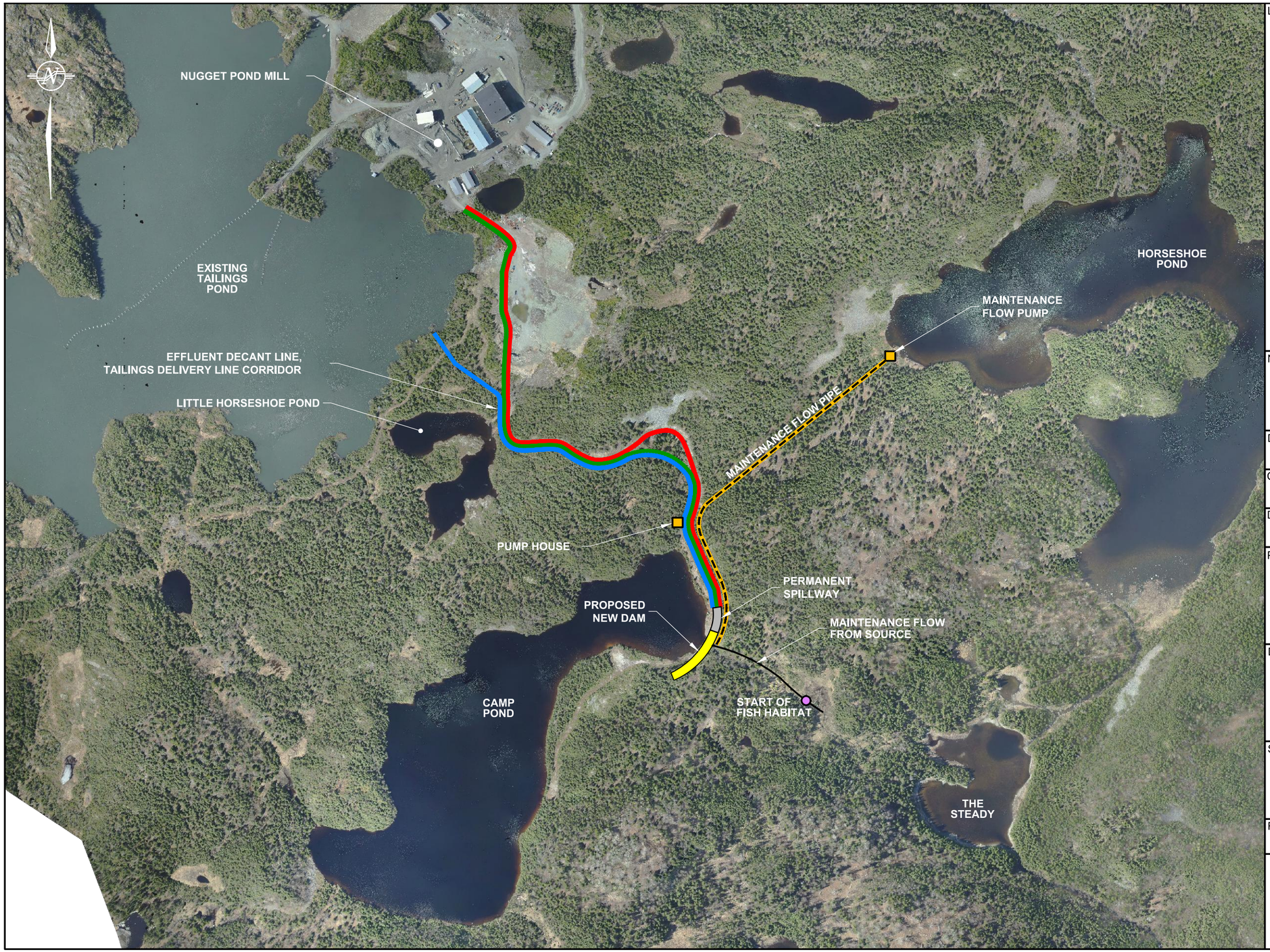
- Upgrading of an existing exploration road to the proposed dam location for Camp Pond (at the only outflow tributary from the pond).
- Construction of an earthen dam at the outflow tributary from Camp Pond. The dam is currently planned to be constructed primarily of rockfill with a geosynthetic liner. An emergency spillway will be constructed adjacent to the dam to convey severe flooding events to ensure the safety of the dam structure.
- The following supporting infrastructure will be generally constructed along the proposed access road corridor:
    - An HDPE tailings delivery pipeline from the Mill to Camp Pond;
    - An HDPE effluent pipeline, primary and secondary pumps, and small pumphouse to transfer effluent from Camp Pond back to the existing Tailings Impoundment; and
    - A small powerline that will supply power from the Mill to the pumps/pump house.
- Installation of a small, clean water supply system to maintain water flow to the outflow tributary of Camp Pond. This will include a HDPE water pipeline, primary and secondary pumps, and small pumphouse to transfer water from Horseshoe Pond to the outflow location of Camp Pond.

4.1.6.1 Access Road

An existing exploration road of approximately 0.7 km connects the Mill area to Camp Pond. The existing road is traversable by tracked machinery and will require minor widening, grading and surfacing to be made safe and suitable for dam construction equipment. It is currently planned to extend the south end of RMM's existing, permitted quarry to connect to the existing exploration road as this will eliminate some grading requirements and the rock blasted to extend the pit will be used in the access road and dam construction.

4.1.6.2 Powerline

A small powerline, run on wooden poles, will be installed from the Mill to the Camp Pond dam. The powerline will follow the access road corridor and will provide power to the effluent decant pumps and pumphouse.



Legend

- EFFLUENT DECANT LINE
- TAILINGS DELIVERY LINE
- EXISTING ROAD POWER LINE CORRIDOR
- MAINTENANCE FLOW PIPELINE
- START OF FISH HABITAT

Note

1. Base mapping, aerial photo, and contours provided by Rambler Metals and Mining.
2. Coordinate system is NAD83(CSRS) UTM zone 21.
3. NTS map sheet 02/E13.
4. Contours are shown in metres (1m interval).

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Date: APRIL 2018

Project: RAMBLER METALS AND MINING
BAIE VERTE TAILINGS MANAGEMENT
FACILITY EXPANSION

Drawing: CAMP POND
PROJECT COMPONENTS

Scale: 1:5000

0 100 200 300m

File No.	Drawing	Revision No.
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4.1.6.3 Effluent Decant Line and Pumps

An HDPE pipeline will transport effluent from the proposed Camp Pond Tailings Impoundment to the existing Tailings Impoundment, to allow retention and eventual discharge via the existing Polishing Pond. The effluent decant line will generally be installed in the access road corridor to minimize surface disturbance. The pipeline will deviate from the access road near the existing Tailings Impoundment as shown in Figure 9. The decant line will be a small diameter, i.e., 100 to 150 mm, HDPE pipeline supported on small wooden supports.

Two small pumps and pumphouse will be installed at Camp Pond to decant effluent from the pond and deliver it, via the pipeline, to the existing Tailings Impoundment. The pump will be sized to safely deliver all tailings effluent and additional environmental water inflow to the existing Tailings Impoundment to ensure that operational water levels are maintained in the Camp Pond Tailings Impoundment. Decanting will also ensure that no effluent is discharged through the Camp Pond emergency spillway except in the event of an extreme flood event. The pumps, decant system and a small pumphouse will constructed at the north end of Camp Pond, above the designed flood level within the impoundment, and will be accessible from the access road (Figure 9). The pump will be powered via a powerline connecting to the Mill. Due to limited overburden thickness, the pipeline will likely require insulation and/or heat tracing.

4.1.6.4 Tailings Slurry Delivery Pipeline

The tailings delivery pipeline, a 150 mm HDPE pipeline, will be extended from the Mill to Camp Pond via the access road corridor. In order to discharge subaqueously in specific areas of the pond, a floating tailings line will be placed in the new impoundment and moved around the pond using a small boat.

4.1.6.5 Outflow Tributary Maintenance

The outflow tributary of Camp Pond is supplied by three sources: 1) Camp Pond surface drainage (including the upstream watershed); 2) direct surface runoff from the contributing portion of the watershed; and 3) anticipated groundwater recharge to the wetland (possible fen) through which the tributary flows on its route to the Steady. The construction of the dam at the outflow of Camp Pond will eliminate the contribution from the Camp Pond surface drainage, and therefore it is this water volume that needs to be maintained to supply the downstream tributary.

Observation of the outflow of Camp Pond over a number of years indicates the outflow volume can be quite low to essentially non-existent during dry periods in the summer and fall. Based on a desktop assessment, the average outflow from Camp Pond is 0.0174 m^3/s or approximately 62 m^3/hr. Based on measurements taken in early mid-November 2017, the flow at that time was determined to be 0.0053 m^3/s, or approximately 19 m^3/hr.

To determine the most appropriate means of maintaining flow in the outflow tributary, RMM is undertaking a number of field studies to better understand the hydrology of the outflow stream.

Hydrological information collected to date has provided initial estimates of flow and additional information will be collected during spring and summer of 2018 in order to ascertain seasonal details relative to the outflow stream hydrology. In addition, the outflow tributary is known to be ephemeral at certain times of the year.

Additional fieldwork, ongoing regulatory consultation and hydrological assessment will confirm the variables, e.g., pump size, necessary for the proposed system.

As noted above, the dam proposed at the existing outflow of Camp Pond will cut off water flow to the small downstream tributary. Based on the aquatics field work conducted in 2016 (GHD, 2016), the outflow tributary was determined to be fish habitat below the steep grade exiting Camp Pond, i.e., approximately 100 m downstream and at the upstream end of a small wetland area (Figure 10). In order to maintain a flow to the outflow tributary, and thus maintain the existing fish habitat and productivity downstream, RMM is working closely with DFO to ensure that a system for providing appropriate flow and quality of water is in place prior to the disruption of the natural outflow by the dam construction. It may be possible as well to determine to what extent the wetlands located below the steep incline from the outflow are contributing to the overall water balance of the Camp Pond outflow tributary.

RMM considered several options relative to sourcing an appropriate volume and quality of water to the outflow tributary. In consideration of the overall watershed dynamics and fieldwork results, and based on consultation with regulators, Horseshoe Pond is the best option from which to source water for the maintenance flow once the Camp Pond Tailings Impoundment is commissioned. Horseshoe Pond is located in close proximity to Camp Pond, is in the same watershed as the existing Tailings Impoundment and has similar water quality characteristics as the outflow tributary (Table 3). Through continued consultation with DFO, DFO has indicated that other sources should also be considered and RMM has committed to consultation with DFO to confirm a suitable water source.

Figure 10 Camp Pond Outflow

4.1.6.6 Water Quality Comparison

Water quality samples were collected from Camp Pond on August 15, 2016, and from Horseshoe Pond on August 21, 2016. In-situ water quality measurements were taken using a Horiba water quality meter and detailed laboratory analyses were also carried out by Maxxam Analytics.

To compare the water quality in Camp Pond and Horseshoe Pond, six parameters were considered: dissolved oxygen, pH, conductivity, temperature, turbidity, and light penetration / water clarity. The rationale and classification system for each is discussed below.

CCME Water Quality Guidelines for the Protection of Freshwater Aquatic Life (FWAL) have been used as indicators of water quality. The CCME FWAL guidelines were chosen because they are good indicators of common water quality problems, e.g., eutrophication, salinization, acidification, and organic pollution. Conductivity is not included in the CCME FWAL Guidelines; therefore, ECCC's Freshwater Quality in a Global Context Target was used for comparison purposes. The three applicable targets are listed below:

- Dissolved Oxygen: greater than 6 mg/L;
- pH: 6.5 – 9; and
- Conductivity: less than 500 µS/cm (EC, 2016).

Many fish species have a distinct thermal optima; therefore, water temperature is an important factor in determining the habitat quality for fish survival and production. Salmonids are sensitive to warm water and tend to avoid areas of water with temperatures greater than 20°C (DFO, 2008). To classify the water temperature in these two ponds, the DFO classification system for Brook Trout (*Salvelinus fontinalis*) was used:

- Cool: < 16.5°C as ideal;
- Intermediate: 16.5°C to 18.9°C as marginal; and,
- Warm: ≥ 19°C as unsuitable.

Brook Trout were used as an indicator species as it was observed and captured during the 2016 aquatic field studies in the outflow tributary and has also been documented in Horseshoe Pond via EEM Studies.

Temperature, conductivity, dissolved oxygen and pH were measured at both Ponds over two days in August 2016. Water quality readings were taken at a depth of one metre as this allowed for a submerged probe that didn't rest on the bottom in most areas of the pond. Complete water quality results from the 2016 aquatic field study are presented in the 2016 GHD report.

Increased stream sedimentation can smother eggs in spawning sites, in-fill deep holding areas for larger salmonids, and reduce insect production. The CCME defines a high turbidity, with the ability to negatively affect fish health and populations at 30 – 60 NTUs. Normal turbidity is 0 – 20 NTUs.

A Secchi disc (a weighted circular disc with alternating black and white quadrats) was used to measure the light penetration / water clarity in both ponds. The Secchi disc was lowered slowly into the ponds along a transect and was attached to a measuring tape to allow for the recording of the depth to which the disc could no longer be seen from the boat. The results of the Secchi disc monitoring shows that the water is very clear in both ponds and that light can penetrate the majority of the ponds.

Since water quality parameters are not significantly different between Camp Pond and Horseshoe Pond (Table 3), it is anticipated that an artificially maintained flow in the Camp Pond outflow tributary using water pumped from Horseshoe Pond will not negatively affect fish or fish habitat downstream of Camp Pond.

Table 3 Comparison of Water Quality Data - Camp and Horseshoe Ponds (GHD 2016)

Parameter	Guideline/ Recommended	Camp Pond	Horseshoe Pond
pH	6.5-9 (CCME)	7.22	7.30
Dissolved Oxygen	> 6 mg/L (EC, 2016)	13.89	6.57
Conductivity	< 500 µS/cm (EC, 2016)	52	206
Temperature (1 m below surface)	< 19 C (DFO)	19.82	18.81

Turbidity (NTU)	0-20 NTU (CCME)	1.0	0
Light Penetration (secchi depth)	> 0.5 m	3.3 m	4.7 m

4.1.6.7 Outflow Tributary Maintenance Components

Based on sourcing the required water from Horseshoe Pond, the maintenance flow system will consist of two small pumps (one primary and one backup) and pumphouse installation on the western end of Horseshoe Pond, a generator, a small diameter HDPE pipeline and an associated trail from the pumphouse to the proposed dam at the outflow of Camp Pond. The proposed routing of the pipeline from Horseshoe Pond to the outflow tributary is shown in Figure 9. The system construction will require minimal tree clearing and ground disturbance as small construction equipment will be employed for this Project component.

Construction and installation of the clean water supply system for the outflow tributary will be staged. Prior to the commencement of tailings deposition in Camp Pond, clean water for outflow tributary maintenance will be sourced from Camp Pond. RMM may also investigate, in consultation with DFO and other regulators, the feasibility of providing clean water from Little Horseshoe Pond via a gravity feed or siphon.

RMM is also considering establishing a groundwater well in close proximity to the outflow location as a means of delivering a secondary flow of water to the outflow tributary to mimic the natural flow rate. This option will only be pursued as a contingency in the event there are operational challenges associated with sourcing water from Horseshoe Pond or Little Horseshoe Pond. Should this option be pursued, water quality testing will be carried out to ensure the groundwater quality parameters are similar to the water quality parameters of Camp Pond, in conjunction with appropriate consultation with government regulators.

Final operational details will be confirmed prior to the commissioning of the new Tailings Impoundment area. RMM is confident the approach outlined above will ensure the existing flow from the outflow tributary is adequately understood in order to artificially maintain the outflow tributary flow during all construction and operations activities.

4.1.6.8 Camp Pond Dam

A small dam will be required at the existing outflow of Camp Pond in order to control tailings effluent and to provide additional tailings storage capacity within the basin. Please refer to section 4.3 below for a detailed discussion on its proposed design and construction.

4.2 Dam Design and Construction

Based on preliminary assessment and design, the earthen dam to be built at the existing outflow of Camp Pond to control tailings effluent and to provide additional tailings storage capacity within

the basin is expected to be 5 m in height and approximately 80 m in length based on the surrounding topography. The dam will be constructed slightly upstream of the existing outflow in order to take advantage of the natural 'bowl' created by the surrounding bedrock ridges (see photos below) and to avoid the steep downhill grade immediately downstream of the existing outflow. Figures 11-13 present the conditions at Camp Pond.

Figure 11 Photo of Camp Pond Looking Southwest

Figure 12 Photo of Camp Pond Looking Northeast

Figure 13 Photo of Camp Pond Outlet

4.2.1 Dam Classification

It is understood that the detailed design of the proposed TMF expansion must be approved by NLDMAE and that the construction will require an approval under Section 48 of the *Water Resources Act*. It is also understood that the detailed dam design must also be submitted with the *Mining Act* submissions also required for overall Project approval. RMM will ensure the dam design meets the current requirements of the Canadian Dam Association (CDA), *Dam Safety Guidelines* and associated Bulletins, and as such, design requirements are based on the CDA dam classification system.

The dam classification system under the CDA guidelines is ranked based on the potential consequences of a theoretical dam failure. In other words, the classification considers the potential downstream impacts if, in the worst case, the dam were to suddenly fail. This assumed or theoretical failure is not based on the assumed design or construction quality of the dam, however the classification ultimately guides the design and construction requirements. For example, the classification dictates the return period (design) precipitation event the spillway must be sized to handle.

The CDA dam classification is based on an assessment of the population at risk, the potential for loss of life, the downstream environmental and cultural values at risk, and the infrastructure and economics at risk, based on a theoretical failure event. The following is a preliminary assessment of the Camp Pond Impoundment dam classification.

- Population at Risk and Loss of Life: For the Camp Pond dam, there are no permanent populations at risk along the downstream inundation path (Figure 14). Temporary

populations in the area may include people partaking in recreational activities such as hiking, hunting, fishing, or snowmobiling. According to the CDA Guidelines, this potential for a temporary population results in a 'Significant' dam classification. However, as the inundation path is generally confined by relatively steep topography surrounding the downstream ponds and streams, and the lack of upstream contributing watershed, only a moderate rise in water levels in the downstream waterbodies is expected. As such, the potential for loss of life is essentially zero, which corresponds to a "Low" dam classification.

- Environmental and Cultural Values: There are no significant or rare, fish or wildlife habitat along the potential inundation path. The potential for tailings release must be considered, and based on a preliminary assessment of this potential, it is noted that most of the tailings, an estimated 85 to 90% that will be stored in the Camp Pond impoundment will be stored within the 'bedrock bowl', and could not be released even under catastrophic dam failure, as shown in Figure 15. It is currently anticipated that if any tailings were released, they would generally be confined to the downstream wetland and The Steady, with only finer tailings transported further downstream and likely settling out in either the larger downstream pond, or the marine environment. As shown in Figure 14, the estimated inundation zone/path indicates that increased water levels will occur downstream of the area indicated. As the tailings are considered potentially acid generating, the materials deposited downstream would require clean-up, which should be generally achievable with time. The finer materials potentially carried beyond The Steady are likely to settle in deeper areas of a downstream pond or possibly, the marine environment where they will not be capable of generating acid drainage. In general, based on an assumed dam failure, the environmental impacts are considered to fall within the "Significant" category.

- Infrastructure and Economics: There is no mine related or other infrastructure located within the potential downstream inundation zone, therefore there are no infrastructure or economic losses expected associated with a potential failure of the Camp Pond dam. According to the CDA Guidelines, this falls under a 'Low' dam classification.

Based on this preliminary assessment of an assumed/theoretical dam failure, the proposed Camp Pond dam will be classified as "Significant" in accordance with the CDA guidelines. This assessment will be further reviewed, and either confirmed or changed, once a complete hydrotechnical analysis, and accompanying inundation assessment are completed as part of the detailed design phase of the project. Ultimately, the dam classification dictates the minimum factors of safety for dam stability, as well as the hydrotechnical parameters for the design of the associated water management infrastructure.

Legend

- WATERSHED BOUNDARY 1
- DIRECTION OF INUNDATION
- ESTIMATED INUNDATION LEVEL

Note

1. Base mapping, aerial photo, and contours provided by Rambler Metals and Mining.
2. Coordinate system is NAD83(CSRS) UTM zone 21.
3. NTS map sheet 02/E13.
4. Contours are shown in metres (1m interval).

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Calculations By	**Checked By**
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Date: APRIL 2018

Project: RAMBLER METALS AND MINING
BAIE VERTE TAILINGS MANAGEMENT FACILITY EXPANSION

Drawing: CONCEPTUAL INUNDATION MAP

Scale: 1:15000

0 300 600 900m

File No.	Drawing	Revision No.
800020209	FIGURE 14	0

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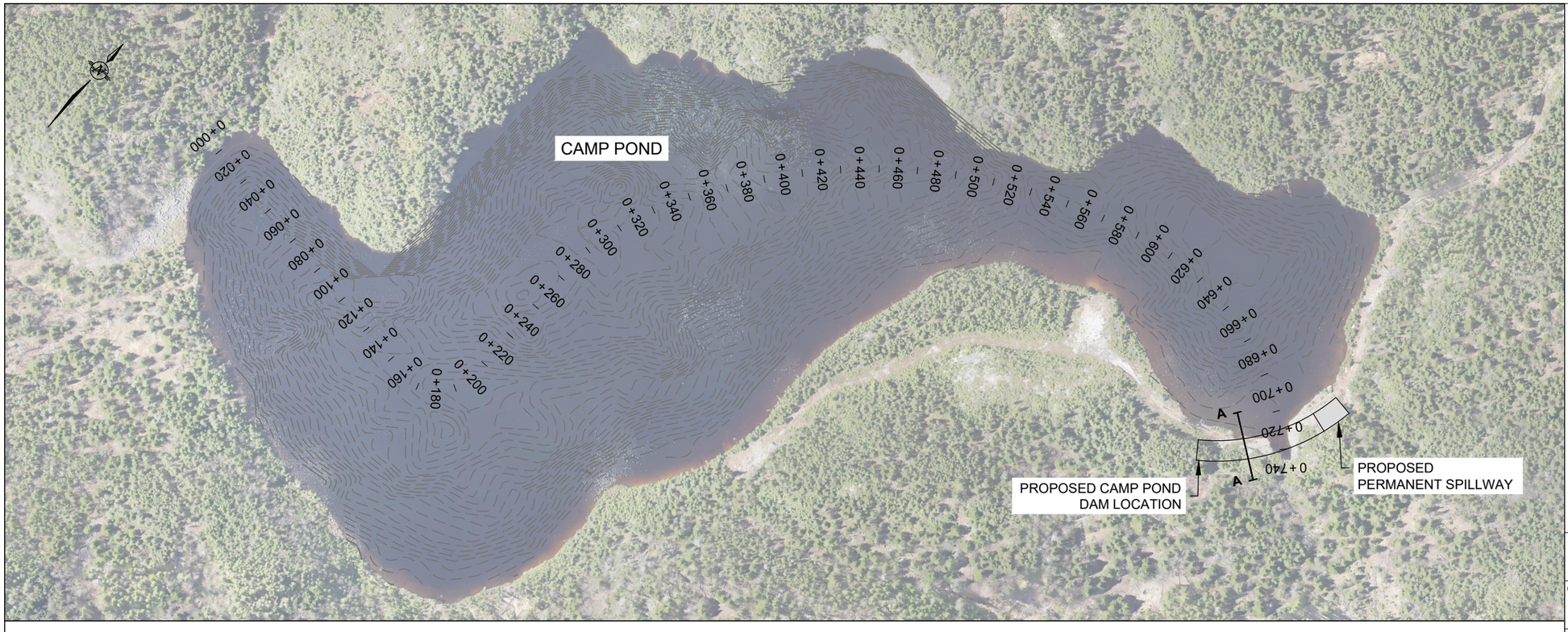

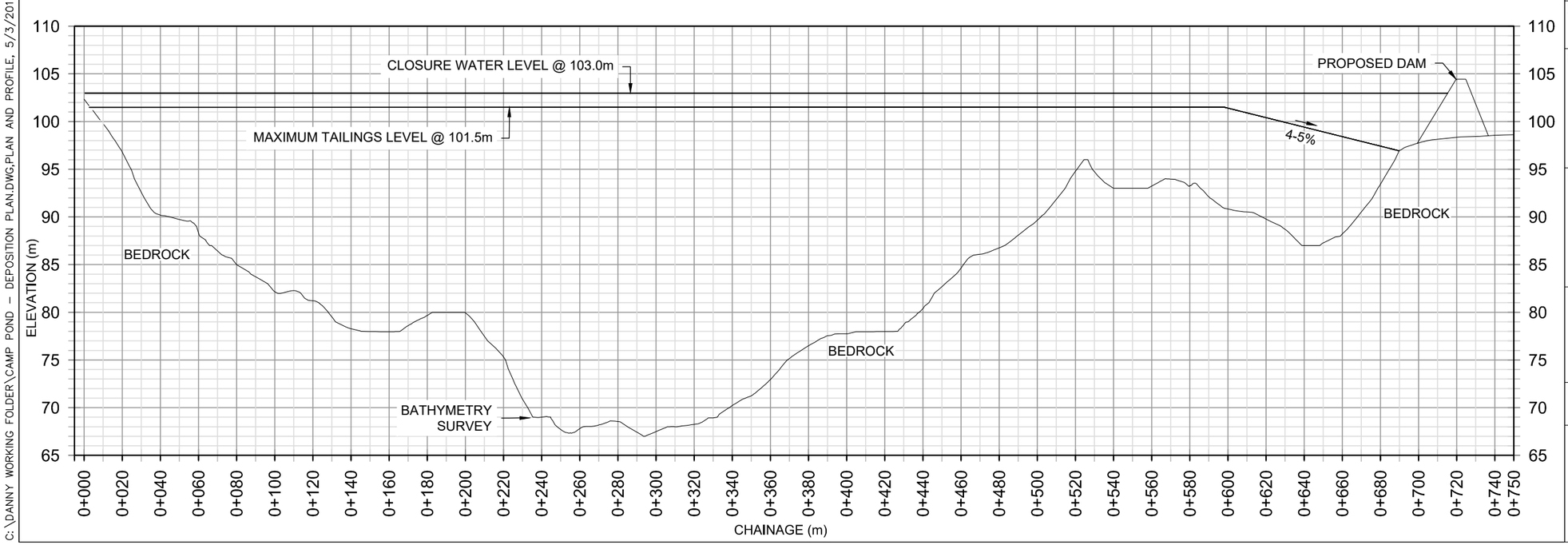

LEGEND

NOTES:
1. Base mapping, aerial photo and bathymetry provided by Rambler Metals and Mining.
2. DEM provided by Terrane Geosciences.
3. Coordinate system is NAD83(CSRS) UTM zone 21.
4. NTS map sheet 02/E13.
5. Contours are shown in metres (1m interval).

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DGH	LS
Calculations By	Checked By

Date: MAY 2018

Project:
RAMBLER METALS AND MINING
BAIE VERTE TAILINGS MANAGEMENT
FACILITY EXPANSION

Drawing:
PROPOSED CAMP POND
TAILINGS IMPOUNDMENT PLAN
AND SECTION AT CAPACITY

Scale: 1:2500
0 50 100 150m

File No.	Drawing	Revision No.
8000204	FIGURE 15	0

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C:\DANNY WORKING FOLDER\CAMP POND – DEPOSITION PLAN.DWG,PLAN AND PROFILE, 5/3/2018 8:58:03 AM

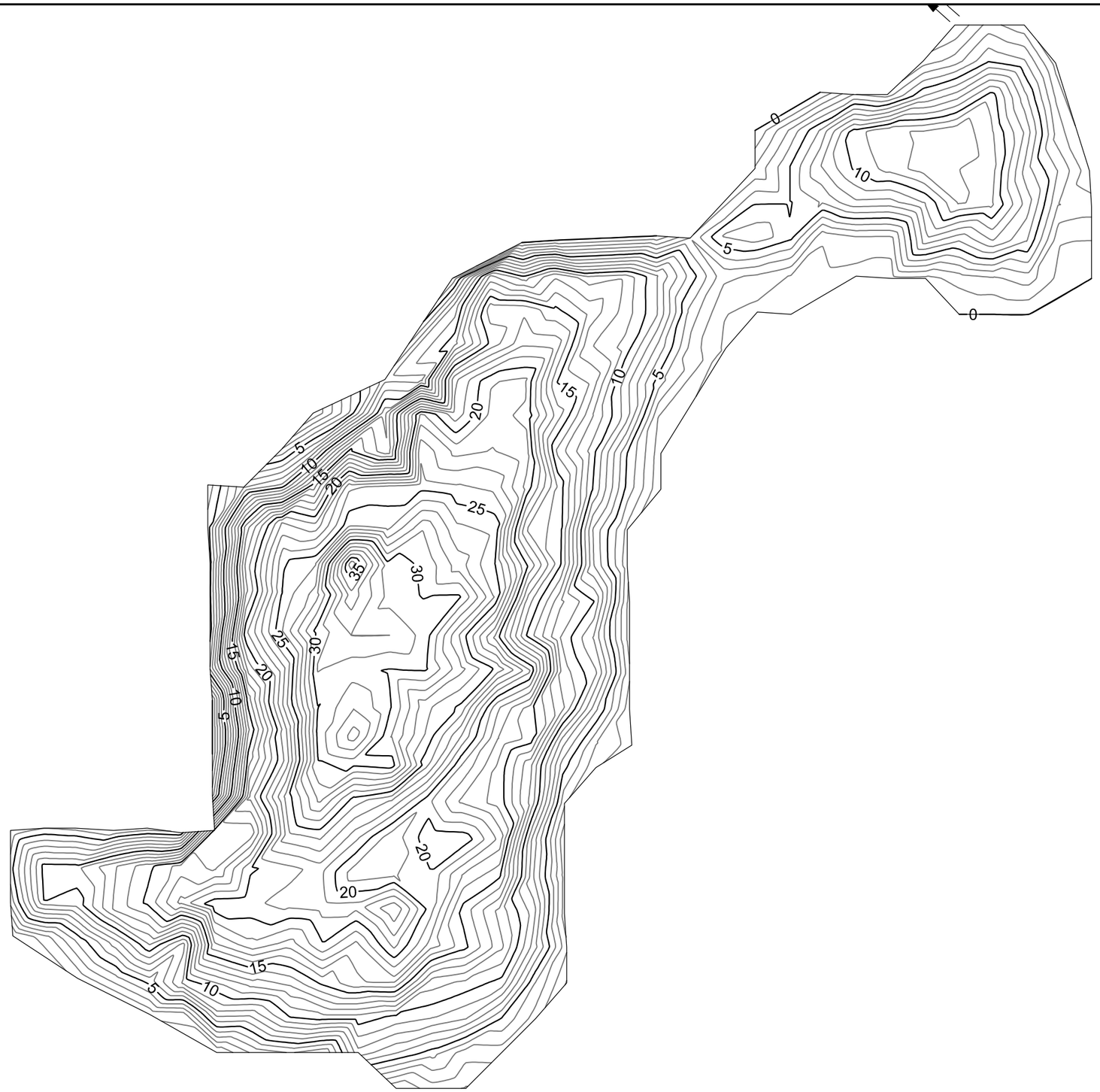
4.2.2 Dam Design

It is currently anticipated that the dam will be constructed in two phases, in terms of crest elevation, and this will be confirmed during detailed engineering. As the naturally deep pond (Figure 16) allows for considerable tailings storage, the initial phase of dam construction will see a raise of approximately 2 to 2.5 m in height. This raise is only required for effluent management, i.e., to stop effluent from discharging through the existing outflow. A second construction phase to bring the dam to the full 4 to 5 m height would only be necessary after year 2 in order to increase tailings storage capacity to the planned elevation (Table 4). Figures 17 through 19 show the proposed conceptual plan view and Phase I and II sections.

Table 4 Preliminary Dam Design Summary

Dam Design Component	Dimension/Description	Approximate Elevation
Height	4 to 5 m	104.5 m
Length	80 m	n/a
Crest Width	6 m	n/a
Upstream Slope	2.5 to 3.0 Horizontal : 1 Vertical	n/a
Downstream Slope	2 Horizontal : 1 Vertical	n/a
Water Cover (over tailings) during operations	1 m minimum	Variable
Water Cover (over tailings) post-closure	1.5 m (see note 1)	101.5 m – max tailings level 103.0 m – closure water level
Emergency Spillway (not in dam)	To be determined	103.0 m

Note 1: Further study required to determine final water cover requirements.



LEGEND

20 CONTOURS REPRESENTING DEPTHS IM METERS AT TIME OF SURVEY (16/05/09).

NOTES:
1. Base mapping, aerial photo, and contours provided by Rambler Metals and Mining.
2. Coordinate system is NAD83(CSRS) UTM zone 21.
3. NTS map sheet 02/E13.
4. Contours are shown in metres (1m interval).

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Calculations By	Checked By

Date
AUGUST, 2017

Project
RAMBLER METALS AND MINING BAIE VERTE TAILINGS MANAGEMENT FACILITY EXPANSION

Drawing
CAMP POND BATHYMETRY

Scale
1:2000
0 40 80 120m

File No.	Drawing	Revision No.
800020207	FIGURE 16	0

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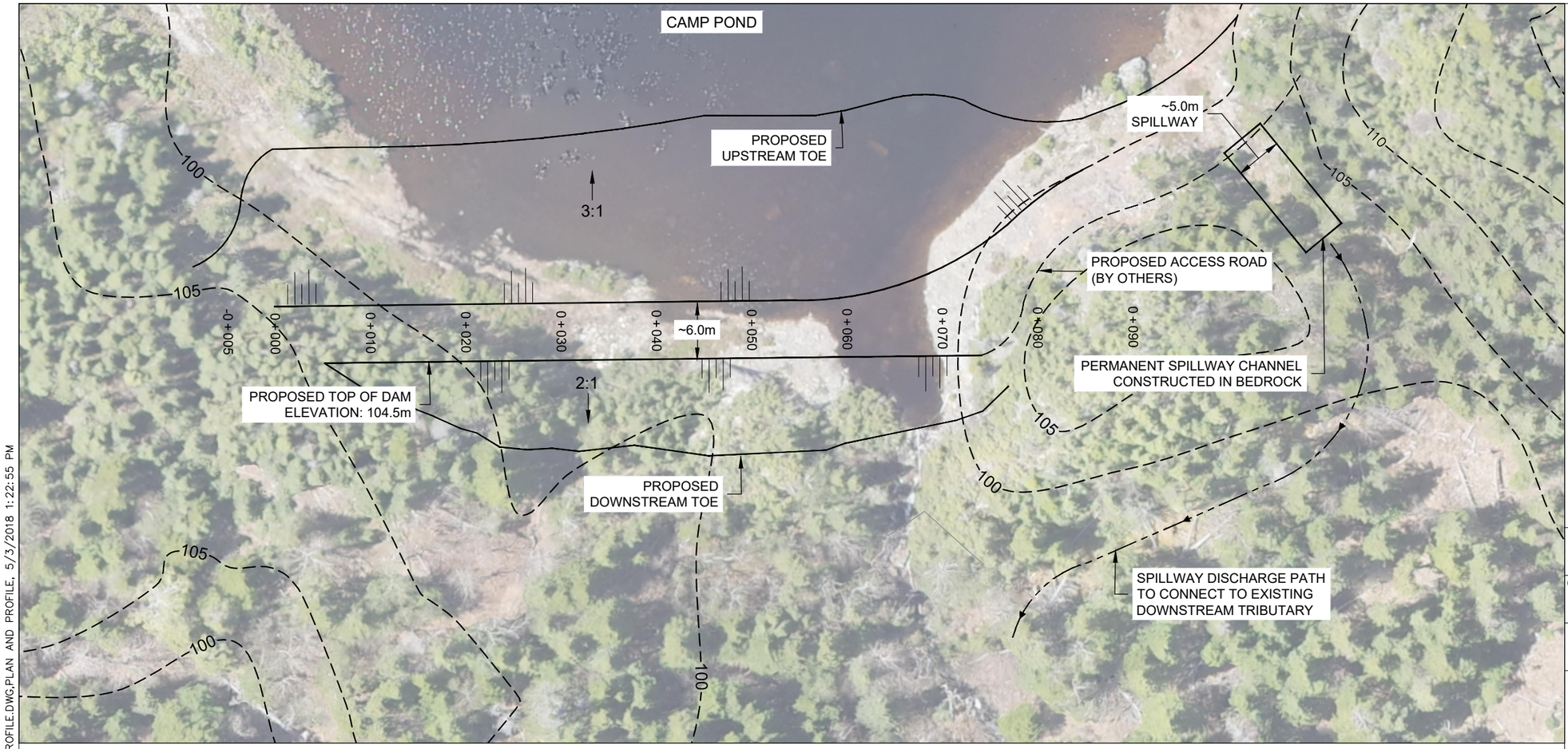

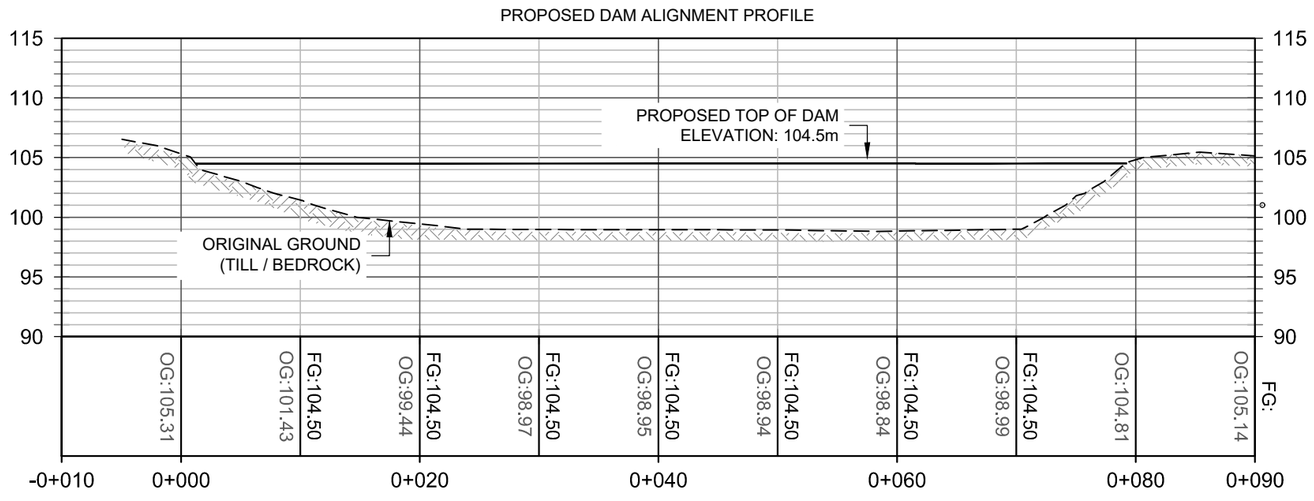

LEGEND

NOTES:

1. Base mapping, aerial photo and bathymetry provided by Rambler Metals and Mining.
2. DEM provided by Terrane Geosciences.
3. Coordinate system is NAD83(CSRS) UTM zone 21.
4. NTS map sheet 02/E13.
5. Contours are shown in metres (1m interval).
5. Base data for these drawings was collected by UAV at a regional scale (km2) and not intended for detailed engineering design. As such, the contour data form this survey was delivered at a resolution of 1 m with a positional accuracy of approximately 50 cm in un-vegetated areas and up to 1.5 m in areas of heavy vegetation.

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Calculations By	Checked By

Date: MAY 2018

Project: RAMBLER METALS AND MINING BAIE VERTE TAILINGS MANAGEMENT FACILITY EXPANSION

Drawing: CAMP POND CONCEPTUAL DAM PLAN AND PROFILE

Scale: 1:500

0 10 20 30m

File No.	Drawing	Revision No.
800020407	FIGURE 17	0

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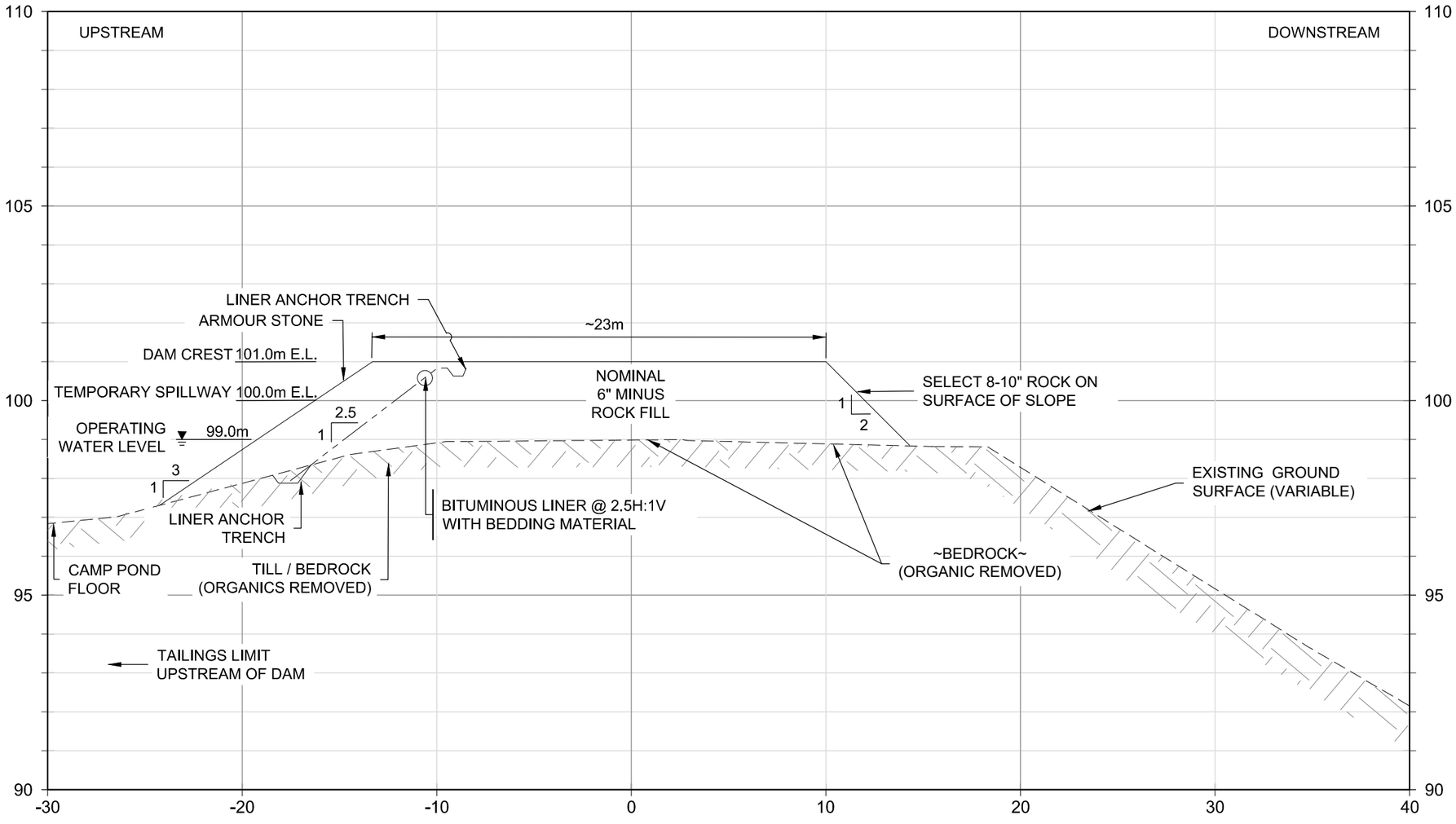
C:\DANNY WORKING FOLDER\CAMP POND CONCEPTUAL DAM PLAN AND PROFILE.DWG,PLAN AND PROFILE, 5/3/2018 1:22:55 PM

CONCEPTUAL CROSS SECTION PHASE I



LEGEND

- – – – – EXISTING GROUND SURFACE
- ——— DAM FINISHED GRADE
- — - - — BITUMINOUS LINER

NOTES:

1. Base mapping, aerial photo and bathymetry provided by Rambler Metals and Mining.
2. DEM provided by Terrane Geosciences.
3. Coordinate system is NAD83(CSRS) UTM zone 21.
4. NTS map sheet 02/E13.
5. Contours are shown in metres (1m interval).
5. Base data for these drawings was collected by UAV at a regional scale (km2) and not intended for detailed engineering design. As such, the contour data form this survey was delivered at a resolution of 1 m with a positional accuracy of approximately 50 cm in un-vegetated areas and up to 1.5 m in areas of heavy vegetation.

Drawn By	Checked By
DGH	LS
Calculations By	Checked By

Date: MAY 2018

Project: RAMBLER METALS AND MINING BAIE VERTE TAILINGS MANAGEMENT FACILITY EXPANSION

Drawing: CONCEPTUAL CAMP POND CROSS SECTION PHASE I

Scale: 1:250

0 5 10 15m

File No.	Drawing	Revision No.
8000204	FIGURE 18	0

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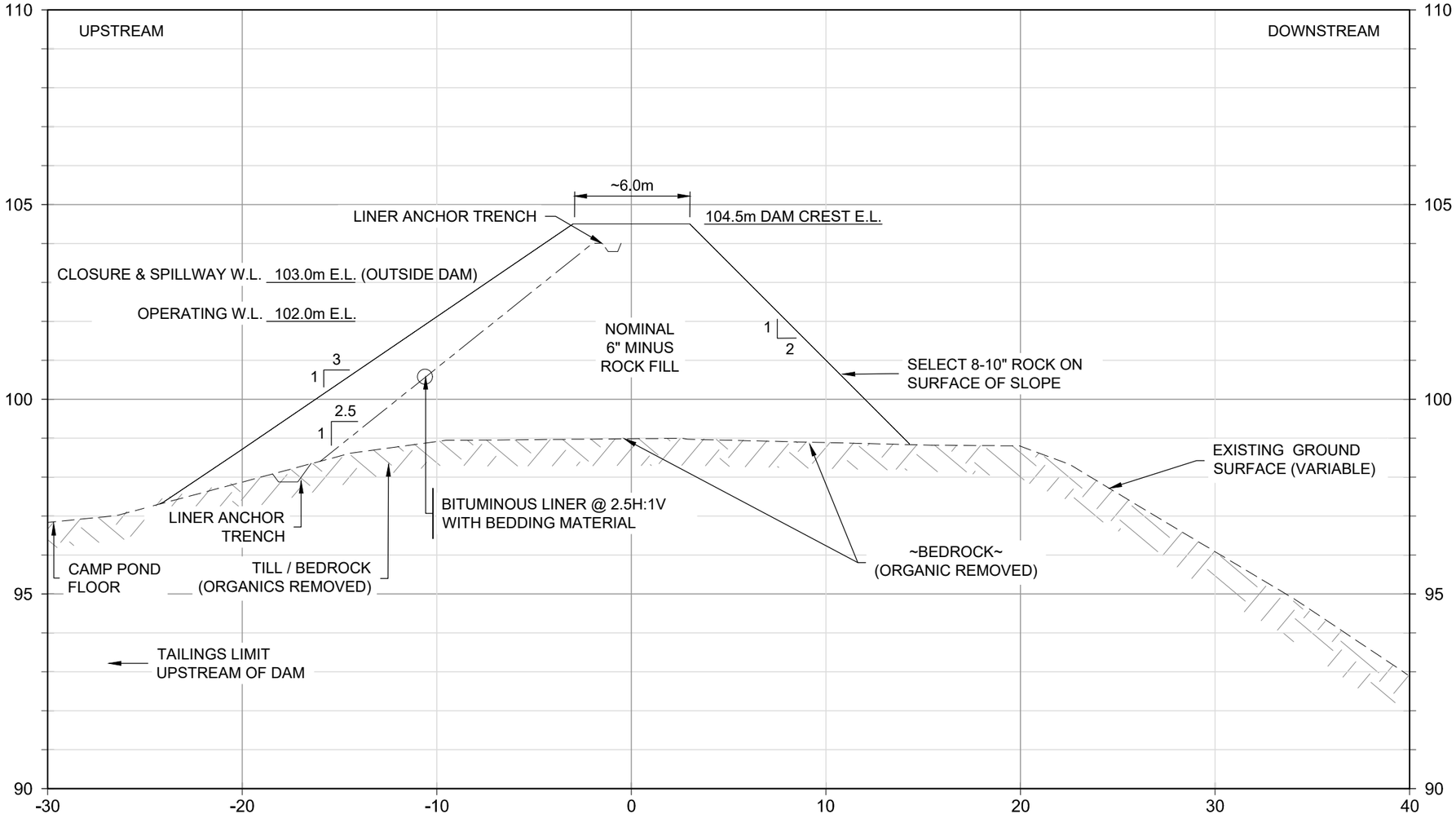
C:\DANNY WORKING FOLDER\CAMP POND – CONCEPTUAL.DWG,PHASE 1, 5/2/2018 4:30:48 PM

CONCEPTUAL CROSS SECTION PHASE II



LEGEND

- – – – – EXISTING GROUND SURFACE
- ——— DAM FINISHED GRADE
- — – – — BITUMINOUS LINER

NOTES:

1. Base mapping, aerial photo and bathymetry provided by Rambler Metals and Mining.
2. DEM provided by Terrane Geosciences.
3. Coordinate system is NAD83(CSRS) UTM zone 21.
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5. Contours are shown in metres (1m interval).
5. Base data for these drawings was collected by UAV at a regional scale (km2) and not intended for detailed engineering design. As such, the contour data form this survey was delivered at a resolution of 1 m with a positional accuracy of approximately 50 cm in un-vegetated areas and up to 1.5 m in areas of heavy vegetation.

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Calculations By	Checked By

Date: MAY 2018

Project: RAMBLER METALS AND MINING BAIE VERTE TAILINGS MANAGEMENT FACILITY EXPANSION

Drawing: CONCEPTUAL CAMP POND CROSS SECTION PHASE II

Scale: 1:250

0 5 10 15m

File No.	Drawing	Revision No.
8000204	FIGURE 19	0

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C:\DANNY WORKING FOLDER\CAMP POND – CONCEPTUAL.DWG,PHASE 2, 5/3/2018 8:38:18 AM

Based on a general lack of overburden in the area, and the availability of good quality rock in RMM's existing quarry south of the mill and northwest of Camp Pond, it is currently planned to construct the dam from blasted rockfill and use a geosynthetic liner. Rockfill will be blasted and crushed at the quarry to a nominal gradation of 200 mm minus, and finer material will be crushed as bedding material for the liner system and for topping of the dam crest. Oversize rockfill particles, in the range of 300 to 600 mm will be screened out and saved for use as armour stone on the slopes to prevent erosion of the slope surface due to precipitation and wave action. The size of the armour stone required to prevent wave action erosion on the upstream face of the dam will be confirmed during detailed design. The liner system to be built into the dam to form the 'impermeable barrier' will be keyed into the underlying soils and/or bedrock using trenches and channeling with grout as required. Glacial till may be incorporated into the design of the dam if sufficient material can be located in practical proximity to the site.

The dam will be sufficiently wide at the crest, approximately 6 m, to drive vehicles and equipment across for inspections, monitoring and maintenance as required. The crest will be tied into the access road to complete the access, as shown in Figure 17. If the dam is constructed in stages, there may be a temporary emergency spillway constructed through the crest of the dam until the permanent spillway is constructed outside the dam footprint.

Piezometers will be installed within the dam in order to monitor water levels within the dam, however this type of monitoring is generally not considered critical for a rockfill type dam. As is typically required under the TMF operational Certificate of Approval, monitor wells will be installed downstream of the dam to monitor groundwater quality.

4.2.3 Water and Effluent Management

In order to pump effluent from the proposed Camp Pond Impoundment to the existing Tailings Impoundment, pumps will be installed in a small pumphouse located above the maximum waterline of the proposed impoundment, accessible from the access road (Figure 9). The pumps will be powered via a small powerline connecting to the Mill.

Two pumps will be installed in the pumphouse, each individually sized to safely deliver the tailings effluent inflow and any additional environmental water inflow to the existing Tailings Impoundment to ensure that operational water levels are maintained in the Camp Pond Tailings Impoundment. One pump will be the primary operating pump, and the second will be a backup pump in the event the primary pump malfunctions or requires maintenance. Additionally, a backup generator at the site will be capable of supplying power to the decant pump in the event of a power outage. The pumps will be inspected and maintained regularly.

The emergency spillway is currently planned to be constructed just north of the north abutment of the dam in a small, natural depression in the elevation of the surrounding bedrock ridge (Figure 17). Some hydraulic busting, or possibly minor blasting of the bedrock may be required in order to achieve the spillway dimensions required to convey the minimum design storm as per the CDA

guidelines. This location for the spillway will safely convey water downstream over a natural slope to connect with the existing, i.e., natural, drainage from Camp Pond. Based on the preliminary dam classification, the design of the spillway will be based on a return period of 1:100 to 1:1000 for operations and 1/3 between 1:1000 and the Probable Maximum Flood for closure.

The detailed hydrotechnical assessment that will be completed as part of the detailed design will address climate change projections and extreme weather events in conjunction with design criteria in the COA guidelines. One of the key selection criteria considered in the selection of Camp Pond for this Project is that it is a headwater pond in a relatively small sub-watershed, and therefore the potential impacts from climate change and extreme weather events are minimized.

4.2.4 Design Considerations for Closure

Designing for closure is a requirement for the proposed facility. The key considerations include the long term stability of the earth dam, safe conveyance of significant runoff events, and minimizing the potential for a release of tailings in the event of a dam failure.

The design of the physical dam structure has and will consider the long term environmental effects on the dam that can lead to a failure of the dam. A rockfill gravity dam structure with the proposed slopes is one of the most efficient and stable methods of dam construction. The design currently considers a bituminous liner system embedded within the dam. A bituminous liner is very durable and resistant to tearing and cracking relative to plastic liners, and embedding it within engineered bedding material inside the dam shell further protects the liner from environmental degradation from ice, UV rays, etc. Natural rock armour stone will be used to stabilize the dam surface or shell.

With the spillway constructed in bedrock outside the footprint of the dam, significant runoff events can be safely conveyed around the dam without risk of erosion of the dam embankment. Even if the dam is raised in the future, the bedrock ‘bowl’ created by the bedrock topography around Camp Pond is anticipated to provide the same opportunity to construct an off-set spillway away from the dam.

RMM will consider, and employ where reasonable, additional opportunities to further reduce the risk of a potential tailings release in the unlikely event of a future dam failure. Tailings deposition contouring to limit or avoid tailings deposition against the dam, and tailings beach stabilization are some of the potential considerations for additional long term stability.

4.2.5 Potential Dam Raises at Existing TMF

A discussion of the potential requirement for a future dam raise at the proposed Camp Pond Tailings Impoundment and/or existing TMF is presented in Section 5 of this document.

4.2.6 Construction

It is tentatively planned that construction of the dam and associated infrastructure can commence in late Q3 of 2018, pending EA release and the other required permitting as further discussed in Section 10 of this report. RMM understands that the timelines for the various approvals and permits is difficult to estimate, so there is no specific date targeted for initial construction.

Based on the potential timing of the construction, and other factors, it is currently anticipated that the dam will be constructed in two phases, the initial phase being construction to a height of approximately 2 to 3 m in late 2018, and the second phase completing the dam to approximately 5 m in total height, likely in 2020. This potential phasing of dam construction will be further assessed during detailed design, however for the purpose of describing the construction schedule and components, the dam construction is assumed to be phased.

The preliminary construction activities and their estimated timelines are presented in Table 5. The materials and associated design components currently known are described above.

Table 5: Preliminary Project Construction Schedule

Component	Weeks (Phase 1)														Weeks (Phase 2)							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	2	3	4	5	6	7	8
Pre-Construction Activities (Assumed Complete)																						
Detailed Design																						
Surface Lease Approval																						
Consultation and Approval of Downstream Flow Maintenance (DFO & DMAE)																						
DNR/DMAE Design Report Approval																						
DNR Approval of Development/Rehabilitation and Closure Plan Amendment																						
Certificate of Approval Update																						
Govt Department Review and Approval of Other Permits																						
Tender Preparation, Review, and Award																						
Construction - Phase 1																						
Mobilization																						
Clearing																						
Install Power Lines to Pumphouse and Flow Maintenance System																						
Install Flow Maintenance System																						
Construct Access Road & Drill/blast Rockfill at Pit																						
Construct Cofferdam and Dewater																						
Pumphouse and Intake Construction																						
Prepare Dam Foundation and Upstream Liner Trench																						
Install Pipelines for Tailings Delivery & Decant																						
Mass Dam Construction																						
Liner Placement and Temporary Spillway Installation																						
Liner Cover and Armour Stone Placement																						
Commissioning																						
Test Tailings Delivery System																						
Test Water Reclaim System																						
Construction - Phase 2																						
Mobilization																						
Clearing																						
Prepare Upstream Liner for Extension																						
Mass Dam Construction																						
Liner Placement, Cover, and Armour Stone Placement																						
Install Permanent Spillway																						

RMM has reviewed comments provided by the Environmental Assessment Committee relative to the Registration review of the Project for activities related to the construction phase of the Project. In particular RMM notes suggested mitigations provided by the Occupational Health and Safety (OHS) Branch of Service NL. RMM has carefully reviewed the guidance provided by the OHS Branch, included in the "Quarry Operations" factsheet and in the compiled comments provided by the EA Division and this, and any future guidance, will be incorporated into the construction safety plans for the Project.

Construction activities will commence upon receipt of all required permits and approvals. In addition to Release from the environmental assessment review process, other regulatory approvals and permits are required prior to the start of construction activities. RMM will ensure those approvals and permits are complete and submitted to the appropriate regulators as soon as possible prior to the start of the construction phase.

4.3 Operation and Maintenance

Once constructed, the Camp Pond Tailings Impoundment will be commissioned, tailings deposition will commence and effluent will be pumped via the pump, and decant pipeline system back to the existing Tailings Impoundment. As no change in chemistry is anticipated, effluent will be treated as it is for the current operation, i.e., through retention in the Tailings Impoundment, then the Polishing Pond and eventual release to the receiving environment. Effluent monitoring will also continue as per the current protocols and regulatory requirements and commitments.

The pumping system that will deliver tailings effluent from the Camp Pond Tailings Impoundment to the existing Tailings Impoundment will include a primary and backup pump to address the potential issue of a pump failure. Further, each pump will be designed to pump the normal maximum effluent volumes, i.e., tailings effluent flow plus 1:100 year return storm, that may occur and, if necessary, the second pump can be used to further increase pumping rates. A backup generator located at the mill site will be capable of running the decant pump in the event of a power failure. In addition, the operating water levels within the impoundment will be designed to permit effluent management to address higher than normal average runoff during the spring freshet and storm events. The flood storage volume that will be maintained in the impoundment will be capable of storing the Environmental Design Flood Event, i.e., up to the 1:1000 return period, in combination with the pumping capacity. These layers of redundancy will aid in minimizing the risk of a potential, unplanned effluent release. In the event that a significant storm event, i.e., exceeding the IDF of 1:1000 return period, occurs and the capacity of the pumps and reserved volume within the impoundment are insufficient to manage the runoff, the emergency spillway will convey the full flow resulting from the minimum design storm, as required under the CDA guidelines. As previously described, the emergency spillway is planned to be constructed outside of the dam footprint to eliminate the risk of dam erosion or over-topping as a result of a flood event.

Note that the control of water levels within a tailings impoundment using pumps has been successfully employed at other TMF operations, including Teck's Duck Pond Mine operation in central NL where a similar system was permitted and successfully operated for approximately 7 years.

Tailings deposition within the new Tailings Impoundment will utilize deeper areas of the impoundment during late fall and early spring months when moving the tailings line is difficult under the freezing conditions, and will take advantage of relatively shallow areas of the impoundment during other seasons when moving the tailings line is relatively easy. Bathymetry surveys will be completed annually to ensure the tailings deposition is optimized and that sufficient water cover is maintained over the tailings to prevent acid drainage.

With the addition of the estimated 5 m high dam, this new impoundment will have sufficient storage capacity for approximately 6 years of tailings deposition at RMM's planned production level. The ultimate raise in the water level within Camp Pond, based on the currently designed dam configuration, of approximately 4 m, will increase the lateral extent of the pond by approximately 2.1 ha, or a surface area increase of approximately 23% (Figure 5). Regular maintenance of the tailings slurry pipeline will be carried out year round and operations during winter months are not anticipated to create any new or substantial challenges for the new impoundment.

RMM will update all operational plans that may be impacted by this proposed Project, including, but not limited to, the existing Emergency Response and Preparedness Plan (ERPP) and their Operation, Maintenance and Surveillance (OMS) Manual.

4.3.1 Water Quality and Quantity Monitoring

RMM recognizes that maintaining the baseline water quality and quantity conditions in the outflow tributary is key to minimizing adverse environmental effects of this Project. Baseline water quality data was collected from Camp Pond, Horseshoe Pond, the Steady and the Camp Pond outflow tributary over two seasons, 2016 and 2017. RMM has committed to ongoing water quality and quantity monitoring as the Project evolves, in all water bodies that could be potentially affected by the Project. RMM has consulted with DFO regarding the requirements for flow measurements and maintenance of flow to the outflow tributary. RMM is committed to taking additional flow measurements, designing the maintenance flow system, and carrying out water flow and water quantity monitoring in consultation with DFO and the NLDMAE and will follow their recommendations to ensure the downstream fish habitat is maintained. The required details will be discussed and approved prior to the start of any construction related activities. In addition, prior to interrupting flow from the Camp Pond outflow tributary, RMM will formally request and obtain an Authorization or Letter of advice from DFO to that effect.

Further to meetings with the EPR Committee on February 19, 2018, RMM undertook to identify suitable locations for the establishment of a real time water quality and quantity monitoring station

downstream of Camp Pond. There are natural physical constraints in the area immediately downstream of the Camp Pond outflow and as there are periods during the year when the outflow is ephemeral at this location, this is not a suitable location to install a monitoring station. RMM proposes two possible locations (Figure 20) for the establishment of a real time water quality/quantity monitoring station:

- Immediately downstream of the steep outflow section;
- At the outflow location of The Steady.

It is understood that both of these locations will be investigated by the Water Resources Management Division (WRMD) staff of NLDMAE to ensure conditions there are suitable for the installation of a monitoring station.

RMM operates their TMF in accordance with the MMER and provincial requirements. RMM has conducted EEM studies at the mill site since 2009 when RMM purchased the mill and began effluent testing from the final discharge points, i.e., the Polishing Pond. The next EEM report for the mill will be submitted to ECCC for review in 2018. Surface water quality monitoring as per the provincial Certificate of Approval (C of A) is ongoing.

Legend

WQ — PROPOSED REAL TIME WATER QUALITY / QUANTITY MONITORING LOCATIONS

MAIN DRAINAGE

WATERSHED BOUNDARY 1

Note

1. Base mapping, aerial photo, and contours provided by Rambler Metals and Mining.
2. Coordinate system is NAD83(CSRS) UTM zone 21.
3. NTS map sheet 02/E13.
4. Contours are shown in metres (1m interval).

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Calculations By	**Checked By**
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Date: APRIL 2018

Project: RAMBLER METALS AND MINING
BAIE VERTE TAILINGS MANAGEMENT
FACILITY EXPANSION

Drawing: PROPOSED REAL TIME
WATER QUALITY / QUANTITY
MONITORING LOCATIONS

Scale: 1:20000

0 400 800 1200m

File No.	Drawing	Revision No.
800020209	FIGURE 20	0

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N:\DRAWINGS\80000\80002.02\800020209 - CAMP POND SITE PLAN - ENV DEPT FIGURES.DWG

5.0 ALTERNATIVES TO THE PROJECT

As previously noted, RMM's existing TMF does not have sufficient capacity to store the currently estimated LOM tailings production, approximately 20 years, based on the updated mine plan. As a result, RMM commissioned a review of possible tailings disposal location options and alternatives to satisfy the estimated LOM tailings production volume. The following sections present the potential tailings storage location options and design alternatives that RMM has considered in determining that Camp Pond is the best available location for expansion of the TMF at Nugget Pond.

5.1 Site Selection and Design Considerations

5.1.1 General Design Considerations

The following general design factors have been considered in review of the potential tailings storage options for RMM:

- Efficient tailings containment and dam volumes rely on proper use of topographical relief.
- Minimizing the footprint.
- Minimizing the upstream watershed area to reduce the volume of effluent treatment and released, as well as the risks associated with significant precipitation events.
- Minimizing distance and elevation from the Mill to the disposal area reduces cost and the likelihood of adverse impacts to the environment, e.g., pipeline ruptures, required infrastructure, footprint etc.
- Ability to increase disposal capacity via dam raises for future storage requirements.
- Avoiding areas of natural hazards such as rockfalls and landslides.
- Proximity to potential construction materials.
- Accessibility of the site and the disposal area
- Site should not be located on potential zones of mineralization, i.e., sterilization.
- Minimizing potential impacts on wetlands, waterbodies, flora and fauna.
- Minimizing cost and final closure requirements.

5.1.2 Project Specific TMF Design Considerations

In addition to considering the factors listed above, specific issues related to RMM's operations and the potential sites around Nugget Pond will impact the options and alternatives review, as follows:

- Tailings generated from the Mine Mine/Nugget Pond Mill operation are potentially acid-generating and therefore must be deposited subaqueously.
- Freeze and thaw conditions in the early and late winter periods create safety and mill operational continuity issues associated with moving the tailings discharge line around the impoundment. To minimize these issues, RMM has used deeper zones, i.e., generally

greater than 8 m, within their existing impoundment in order to deposit in a single location during freezing and thawing periods. As the existing impoundment is nearing its capacity, there is a need to have deeper tailings depositional areas to minimize safety risks and the potential for operational interruptions.

- The Nugget Pond Mill is already constructed and has been operating since 1998. RMM is not currently considering moving this mill facility, and since it is not feasible to consider this option in the short term, the TMF expansion alternative chosen must be located in proximity to the existing Mill. This approach will minimize the capital and operating costs, ensure the minimum possible footprint for associated infrastructure, e.g., roads, pipelines, pumps, etc., and presents the least potential for adverse environmental issues associated with pipeline ruptures, pipeline draining during maintenance and power outages, etc.

5.1.3 Additional TMF Design Considerations

Increasing awareness and scrutiny regarding dam safety and climate change have led to changes in dam design philosophy relative to operational design and closure of tailings management facilities. While provincial regulation and guidance have not formally adapted to some issues, the NLDNR and the WRMD of the NLDMAE have required further consideration of these factors in the design and/or modification of tailings dams in the province. A number of design factors are being considered by RMM in the design of the proposed TMF expansion and is based on our current understanding of the province's latest guidance:

- Avoidance, where possible, of a tailings effluent discharge structure or arrangement that requires a pipe or culvert constructed through the dam.
- For TMF operations, and even more importantly for closure, avoidance of spillway construction through an earth dam.
- The long term stability of the dam post-closure must be considered in the design. Inspection and maintenance "in perpetuity" is required, or where possible breaching the dam to eliminate the liability associated with the long term stability of the dam. Other concepts may include measures to stabilize the dam and tailings by creating a stable "landform", or eliminating and minimizing the risk of a tailings release in the event of a dam failure.

Intuitively, an approach that minimizes the potential for dam failure, and ultimately a potential tailings release is preferred. In evaluating the potential environmental impacts of dam and TMF designs, regulators should consider that in order to achieve low risk dams and tailings management facilities, there will be obvious adverse environmental consequences, e.g., facility footprint, deposition in waterbodies, impacts to wetlands. In other words, it is necessary to weigh the immediate and relatively short term environmental impacts against minimizing the long term potential risks associated with dam failure and tailings release.

5.1.4 LOM Tailings Storage Volume Considerations

A key consideration in the selection of the optimum TMF expansion design, or staging of the expansion, is the volume of tailings that is required to be stored. Based on the current mine plan, a total of 5.6 million m^3 of tailings will be produced over the next 20 years, and will require deposition in an impoundment associated with the Nugget Pond Mill. This volume of tailings will require large dams (in the order of 10 to 12 m) on the existing TMF and Camp Pond, or smaller dams (in the order of 5 m) on the existing TMF, Camp Pond, as well as Horseshoe Pond and The Steady. RMM has, and will continue to, review options to reduce the current tailings storage requirements as further described below.

RMM requires tailings to produce paste backfill for the continuing Ming Mine operation. RMM is currently completing studies to determine an adequate tailings source to be used for this project. If tailings from RMM's Nugget Pond Mill production are selected, this material would need to be dewatered and backhauled to the mine site, thus potentially reducing the long term storage requirements of the TMF at Nugget Pond. Based on the current mine plan, an estimated 4.45 million tonnes of paste backfill will be required in the Ming Mine over the next 20 years, which will require approximately 2.8 million m^3 of tailings, all of which could potentially be diverted from the Nugget Pond TMF. It is important to note that the use of potentially acid generating tailings, from any source, as paste backfill in an underground mine will ensure that these materials are permanently encapsulated and will never generate poor quality effluent.

RMM is transitioning its production from the Ming Mine to include a blend of both massive sulphides (MMS zone) and stringer sulphides (Lower Footwall Zone or LFZ). The acid rock drainage (ARD) potential of the LFZ has not been fully evaluated, however RMM is presently treating all tailings produced over the LOM as ARD. The current mine plan requires mixing of LFZ ore with ore from the MMS zone currently being mined, which has been determined to be potentially acid generating (PAG), over the next 7 to 8 years. RMM is currently conservatively assuming that all tailings will be PAG and will require subaqueous disposal, however as the MMS ore will be exhausted allowing deposition of un-mixed LFZ ore, RMM will complete further studies on the LFZ ore to determine if all tailings produced will need to be treated as PAG. If LFZ ore is determined to be non-acid generating, it may not require subaqueous disposal and would change the storage volume requirements within the TMF.

While RMM has successfully identified mineral reserves that extend the current LOM to approximately 20 years, the mineable resource and associated LOM are based on predictions of a competitive and stable copper price over the same period. As recent history has shown, significant and unpredictable copper price fluctuations are possible, and could result in the early closure of RMM's operations. Based on RMM's review and understanding of the province's assessment and permitting of similar mining projects over the past 8 to 10 years, it appears that government regulators understand that long term mine operations cannot accurately predict long term variables such as commodity prices and other economic indicators associated with

successful mining operations. Proponents have therefore been permitted to stage mining projects in reasonable increments, typically 5 years for detailed design, provided the general LOM requirements are addressed.

As described above, RMM has considered the LOM requirements for tailings storage associated with the Ming Mine and Nugget Pond Mill site. RMM is also addressing the next stage of tailings storage requirements to ensure operational continuity and is continuing efforts to further study means of optimizing the tailings storage requirements.

RMM continues to carry out exploration drilling around their current deposit and as resources are better defined, the potential total LOM tailings storage requirements will become better understood.

5.2 Initial Assessment of Site Location Options

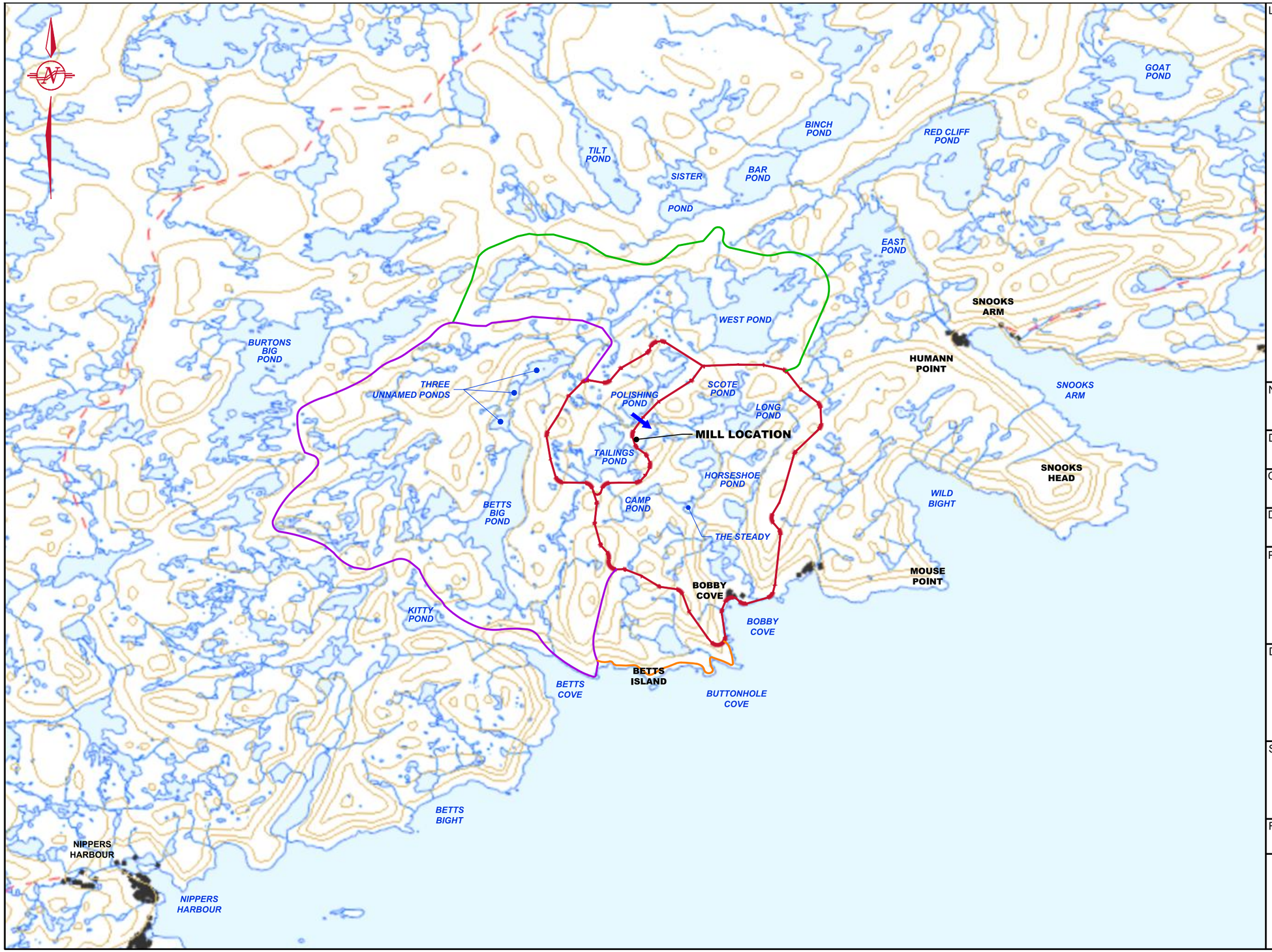
The area surrounding the Nugget Pond Mill and existing TMF is characterized by relatively sharp topographical relief with exposed bedrock ridges generally trending in a southwest to northeast direction. Valleys are filled with deep ponds and connecting streams, with some plateaus containing small wetlands. The sharp vertical relief and valley ponds means there are virtually no significant areas of level ground, side slopes, or dry valleys in which a surficial tailings impoundment can be constructed. The only practical location for subaqueous tailings disposal in the area is in the valleys, which will entail converting a waterbody (or waterbodies) to some degree. Most of the ponds within these valleys are deep and are bedrock controlled, i.e., essentially bedrock 'bowls', and are therefore very stable containment areas for tailings. The use of this natural physical feature is preferable and environmentally safer, from RMM's point of view, to the construction of large earthen dams that would be required to contain tailings stored in narrower and shallower river valley areas.

In general, RMM considered all feasible tailings options within 3 km of the Mill and a discussion of each option is presented below. The location of the tailings options and their associated watersheds are presented in Figure 21.

5.2.1 West Pond

West Pond lies approximately 2 km northeast of the Nugget Pond Mill and is a substantially sized pond. This pond was not considered as part of the 2016 and 2017 ecological studies for the following reasons:

- It is generally understood to be fish bearing.
- It is already dammed to control water as part of a hydroelectric project located on East Pond and Snook's Arm.
- It is upstream of the Town of Snook's Arm water supply.



Legend

- DISCHARGE FROM EXISTING TMF
- WATERSHED BOUNDARY 1
- WATERSHED BOUNDARY 2
- WATERSHED BOUNDARY 3
- WATERSHED BOUNDARY 4

Note

1. Coordinate system is NAD83(CSRS) UTM zone 21.

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Calculations By	Checked By
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Date: APRIL 2018

Project: RAMBLER METALS AND MINING BAIE VERTE TAILINGS MANAGEMENT FACILITY EXPANSION

Drawing: NUGGET POND WATERSHEDS

Scale: 1:50 000

0 1 2 3km

File No.	Drawing	Revision No.
80002.02	FIGURE 21	0

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5.2.2 Betts Big Pond

Betts Big Pond is a large and deep pond located approximately 2 km southwest of the Nugget Pond Mill. The pond is large and would likely be sufficient to contain all future tailings generated from RMM's project, including sufficient space for effluent treatment.

The key constraints limiting the consideration of this pond for tailings disposal are as follows:

- There is a high bedrock ridge between the Nugget Pond Mill and this pond, which would require a significant length of pipeline and pumping effort to overcome.
- A significant length of difficult road and service corridor over difficult terrain would be required to utilize this location, both for a control structure at the outlet of the pond, and for tailings deposition infrastructure at other locations around the pond.
- There is a large contributing watershed to Betts Big Pond from the northwest and northeast. It is likely impossible to divert the natural water flow from a TMF arrangement using this pond, and it will likely be difficult to manage the natural water flow in combination with tailings effluent.
- The large contributing watershed increases risks associated with operational and post-closure water management and routing of storm runoff.
- Given the size of this pond and its inflow and outflow tributaries, RMM estimates it would require a substantial effort to determine if the pond is fish bearing or contains productive habitat. If proven to be fish bearing, substantial effort would be required to quantify its productivity level and offset its potential conversion to a tailings impoundment area.

While there are significant challenges to studying this location and overcoming the limitations noted above, RMM commissioned a preliminary bathymetry program to determine the approximate depth and volume of the pond, as further discussed below.

5.2.3 Small Ponds Northeast of Betts Big Pond

There are three relatively small ponds that drain into Betts Big Pond and lie northwest of the Nugget Pond Mill. These ponds are approximately 1.5 km from the mill and access to them presents similar challenges to those described for Betts Big Pond. It is currently unknown whether these ponds are considered fish habitat. These ponds have a moderately sized upstream drainage area.

Based on the initial options review, these ponds and the surrounding valley represented an opportunity for tailings disposal so RMM also commissioned a preliminary bathymetry program for them.

5.2.4 Scote and Long Ponds

There are two ponds located approximately 1.3 km east of the Nugget Pond Mill which, based on the initial options review, could be suitable for tailings storage for LOM. These ponds are known

to be fish habitat based on the environmental effects monitoring, required under the MMER, that has been conducted around the Mill and existing TMF area. The ponds are in a headwater area of the watershed and the upstream drainage area contribution is not substantial. The depths and volumes of the ponds are unknown, but are assumed to be similar to other ponds in the surrounding area.

5.2.5 Camp and Horseshoe Ponds

Camp Pond and Horseshoe Pond are the closest waterbodies (both less than 1 km) to the existing Mill and TMF. Some baseline ecological studies were completed at these pond locations as part of the initial mill registration in the late 1990's and there is ongoing MMER environmental effects monitoring being carried out in the area. The results of this work indicated the following:

- The ponds are deep, in the order of 30 m in the deepest sections of Camp Pond and 14 m in Horseshoe Pond.
- Horseshoe Pond contains fish and is productive fish habitat. Some limited work was done at Camp Pond in 2016 and, at that time, no fish were encountered as part of the studies.
- Camp Pond is a headwater pond with a very steep and rocky outflow, reinforcing study findings that it is not productive fish habitat.
- Horseshoe Pond receives the outflow from the existing TMF.
- Camp and Horseshoe Ponds, along with a small downstream pond called "The Steady", were considered in RMM's 2015 Technical Report (NI43-101 compliant) as generally suitable for LOM tailings storage based primarily on engineering and cost considerations, although RMM noted that further environmental study was required to confirm suitability.

Horseshoe Pond bathymetry is presented in Figure 22.

LEGEND

20 CONTOURS REPRESENTING DEPTHS IM METERS AT TIME OF SURVEY (16/05/09).

NOTES:
1. Base mapping, aerial photo and bathymetry provided by Rambler Metals and Mining.
2. DEM provided by Terrane Geosciences.
3. Coordinate system is NAD83(CSRS) UTM zone 21.
4. NTS map sheet 02/E13.
5. Contours are shown in metres (1m interval).

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Date
MAY 2018

Project
RAMBLER METALS AND MINING BAIE VERTE TAILINGS MANAGEMENT FACILITY EXPANSION

Drawing
HORSE SHOE POND BATHYMETRY

Scale
1:2000
0 40 80 120m

File No.	Drawing	Revision No.
800020207	FIGURE 22	0

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CONSULTING ENGINEERS AND SCIENTISTS

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5.2.6 Conclusions

Table 6, below, presents a summary of the initial options review using simplified rankings of the issues described in the sections above. As a result of the initial options review, and based on environmental, technical, e.g., storage volume, etc., and cost implications, the following conclusions were reached:

- West Pond would not be considered for further study.
- Despite significant challenges relative to access, Betts Big Pond and the three ponds upstream would be assessed to determine preliminary bathymetry and volumes (if feasible) and for a general assessment of their suitability for tailings and effluent management.
- Scote and Long Ponds would not be studied further in the short term as they were characteristically similar to Camp and Horseshoe Ponds, however were further from the Mill and generally did not appear to have the same storage capacity potential.
- Camp and Horseshoe Ponds would be studied further to investigate fish presence, fish habitat and bathymetry as these were in closest proximity to the Mill and Camp Pond, held some potential to be fishless. In addition, the initial assessment of the potential tailings storage volume was positive in terms of storing the LOM tailings.

Table 6 Summary of Initial Options Review of Site Locations

Location Option	Location/ Accessibility	Volume/ Depth	Water Management (Ops and Closure)	Fish/Fish Habitat	Relative Env Impact (excluding fish)	Relative Expected Cost (Capex/Opex/ Closure)	Consider for Further Assessment
West Pond	✓	?	Rejected	X	1	2	X
Betts Big Pond	X	✓	X	X	4	1	✓
Small Ponds NE of Betts Big Pond	X	?	✓	Unknown	2	3	✓
Scote & Long Ponds	✓	?	✓	X	3	4	X
Camp & Horseshoe Ponds	✓	✓	✓	X / ✓	5	5	✓

General Ranking: ✓ = suitable/reasonable, X = not suitable/difficult;
Relative Ranking: 1 = worst case, 5 = best case

5.3 Further Assessment of Site Location Options

5.3.1 Betts Big Pond

Based on the size of Betts Big Pond, limited ice-based bathymetry work was completed during the winter of 2016 and 2017. This work indicated very deep water within this pond, with measured depths of up to 60 m and a possible bathymetric storage capacity in the range of 10-12 million m^3. Based on this preliminary work, Betts Big Pond would have more than sufficient capacity to safely store the estimated LOM tailings from RMM's operations.

Further assessment was also completed regarding the access and suitability of this pond for tailings storage. In general, the topography challenges relative to site access and water management involving the pumping of tailings and water to and from the Mill site were considered extensive and would potentially result in greater environmental risk and potential impacts than the other TMF options being considered.

5.3.2 Small Ponds NE of Betts Big Pond

Limited bathymetry work was completed in the spring of 2017 in the two upstream ponds. This work indicated maximum water depths in the range of 7-10 m with a possible bathymetric storage capacity in the order of 0.6-0.8 million m^3. Based on a preliminary assessment, these ponds would not have sufficient tailings storage capacity for RMM's LOM mine production without substantial dam construction. Water management at this site could be somewhat more manageable than at Betts Big Pond. These ponds are not headwater ponds however, and the upstream contributing watershed cannot be practically diverted due to the steep topography. Therefore, there would be a sizeable natural input to the water management component of the system.

5.3.3 Camp and Horseshoe Ponds

Terrestrial and aquatic environment work was completed at Camp and Horseshoe Ponds and The Steady in 2016 and 2017 to determine existing baseline conditions and to explore potential tailings management options that may exist for this area. The key findings were as follows:

- Camp and Horseshoe Ponds were confirmed to be relatively deep, reaching 30 m depth in places in Camp Pond and having a combined bathymetric storage capacity of approximately 1.7 million m^3.
- Horseshoe Pond and the Steady, as well as the interconnecting tributaries, were confirmed to be fish habitat, as expected.
- Camp Pond was determined to be fishless, or non-productive habitat, likely a result of the physical barrier to fish passage created by the steep and rocky outflow from the pond.
- The terrestrial areas surrounding these ponds were determined to be common to the region, presented no unique habitat, and no species of rare or protected flora or fauna were encountered.

5.3.4 Tailings Impoundment Site Selection

An updated assessment of all tailings impoundment siting options was completed using the results of the additional work carried out after the initial assessment of options. This review considered environmental, technical, and site constraints, as well as a high level review of relative costs and concluded that Camp Pond and Horseshoe Pond were considered the most suitable option for future tailings storage. In particular, Camp Pond was confirmed as the optimum location for tailings storage based on both design and environmental criteria. Table 7, below, presents a summary of the assessment review using simplified rankings of the issues described in the sections above.

Table 7 Summary of Assessment of Site Location Options

Location Option	Location/ Accessibility	Volume/ Depth	Water Management (Ops and Closure)	Fish/Fish Habitat	Relative Env Impact (excluding fish)	Relative Expected Cost (Capex/Opex/ Closure)	Selected Option
Betts Big Pond	X	✓	X	X	1	1	
Small Ponds NE of Betts Big Pond	X	X	✓	Unknown	2	2	
Camp & Horseshoe Ponds	✓	✓	✓	X / ✓	3	3	✓

General Ranking: ✓ = suitable/reasonable, X = not suitable/difficult;
Relative Ranking: 1 = worst case, 3 = best case

5.4 LOM Tailings Storage Design Alternatives

The site location options outlined in Sections 5.2 and 5.3, above, provide the basis for determining the LOM tailings storage design alternatives. As previously noted, there are a number of scenarios under which the full LOM tailings storage requirements may be reduced and/or the subaqueous tailings storage requirements may be reduced. As requested by the EPR Committee, the following presentation of tailings storage alternatives addresses the full LOM tailings storage volume and assumes all tailings are PAG and will therefore require permanent subaqueous deposition.

5.4.1 Lowest Footprint Design Alternative

The lowest footprint alternative is to use the existing TMF and the proposed tailings impoundment at Camp Pond. This alternative will achieve increased tailings storage via containment dam raises at all three ponds, i.e., Camp Pond, the existing TMF, and the Polishing Pond, and the reconfiguration of the Polishing Pond later in the mine life. The approximate final dam heights at each pond location are as follows:

- Existing Tailings Impoundment dam = 8 m
- Existing Polishing Pond dam = 10 m
- Camp Pond dam = 12 m

The depositional sequencing will focus on the use of Camp Pond and the existing Tailings Impoundment until a deeper depositional zone is again required. Once tailings deposition in the existing Polishing Pond commences, tailings effluent will be pumped to the Camp Pond tailings impoundment for treatment prior to release to the environment.

At closure, these dams will remain in place and will need to be maintained in perpetuity.

5.4.2 Lowest Long Term Risk Design Alternative

The lowest long term risk alternative is to deposit tailings within the natural bedrock ‘bowls’ of the existing ponds surrounding the Nugget Pond Mill and to maintain final tailings deposition elevations in those ‘bowls’. In other words, stabilizing the tailings placed closest to the dam to ensure that the dam can actually be breached or removed at closure, or that dam failure will not result in the release of tailings.

Pursuit of this alternative will require additional ponds to be used for tailings storage, i.e., larger footprint, however this alternative will minimize, or eliminate, the potential long term liability and future impacts associated with dam failure. This alternative will require further study and assessment. However, based on the bathymetry data currently available, it is estimated that this alternative could be achieved using the two existing TMF ponds, Camp Pond, Horseshoe Pond, plus one additional pond of comparable storage volume. It is possible that The Steady will be

considered for use as a polishing pond under this scenario, however there is potential for this scenario to be avoided.

5.4.3 Larger Footprint, Low Long Term Risk Design Alternative

This alternative represents a compromise between the two alternatives listed above. For this option, dam heights can be maintained at lower levels than required for the "lowest footprint alternative" presented above, while expanding the footprint of the TMF to include Horseshoe Pond and The Steady. This alternative will require estimated dam heights as follows:

- Existing Tailings Impoundment dam height (existing dam plus raise) = 6 m
- Existing Polishing Pond dam height (existing dam plus raise) = 8 m
- Camp Pond dam height = 5 m
- Horseshoe Pond dam height = 5 m
- The Steady dam height = 4 m

At closure, these dams, with the exception of the dam at The Steady, will remain in place and will need to be maintained in perpetuity. The consequence of dam failure with this alternative will be substantially less compared to the "lowest footprint alternative" presented above, as the majority of the tailings will be maintained within the natural bedrock bowl of each pond, and therefore tailings mobilization in the event of a future dam failure will be minimized.

5.4.4 Summary

Each of the design alternatives presented above utilizes Camp Pond as there are distinct technical and environmental advantages associated with using this waterbody as an impoundment area. Therefore, Camp Pond is the recommended next phase of RMM's TMF. As noted above, and as indicated in Table 8 below, the LOM TMF design alternatives currently being considered do not present a clearly superior alternative, and further work will be required to evaluate the environmental, cost, and liability characteristics of each alternative.

Table 8 Comparison of Design Alternatives

Design Alternative	Environmental				Risk/Liability		Cost		Total Score
	Env Impacts (excluding fish)	Fish Habitat (construction/ ops)	Water Management (Ops)	Environmental Conditions at Closure	Operational	Closure (Long Term)	Capex/Opex/ Closure	Permitting Challenges	
Lowest Footprint	1	3	3	1	1	1	3	3	16
Lowest Long Term Risk	3	1	1	3	3	3	1	1	16
Larger Footprint, Lower Long Term Risk	2	2	2	2	2	2	2	2	16

Relative Ranking: 1 = worst case, 3 = best case

5.5 Discussion and Conclusions

Based on the assessment of LOM, the TMF expansion location options described in Sections 5.3 and 5.4 above, Camp Pond and Horseshoe Pond were selected as the most suitable option. Based on the choice of these locations as the best option, Section 5.4, above, discusses LOM TMF design alternatives currently being considered. Each of the design alternatives utilizes Camp Pond due to its technical and environmental advantages, and therefore it makes sense that the next phase of TMF expansion selected by RMM is Camp Pond, regardless of the selected LOM design alternative.

Based on the remaining storage volume in the existing impoundment and by adding the proposed Camp Pond impoundment, the 7 to 8 years of available storage will provide time to further assess the design alternatives discussed above in consultation with regulators, and to ensure all environmental permitting is in place for the next phase of the TMF, even if the more challenging and time consuming scenario of deposition of tailings in fish bearing ponds may be required.

This Project has been planned to minimize potential adverse environmental effects while maximizing socio-economic benefits for the region and for the province as a whole. RMM is confident that the Project as described is the best alternative that meets RMM's current requirements, and is one that will further reduce the environmental risks associated with the mining operation. Without additional tailings storage capacity, mining and milling operations cannot proceed beyond 2019. Ceasing operations when the existing Tailings Impoundment facility is at capacity would result in the loss of 195 direct jobs, as well as an unknown number of indirect jobs in the region

6.0 POTENTIAL ENVIRONMENTAL EFFECTS AND MITIGATION

6.1 Natural Environment

The Natural Environment is comprised of relevant components of the biophysical environment that may interact with the Project, including vegetation, soils, wetlands, avifauna, wildlife, fish and fish habitat and water resources. The proposed Project footprint is characterized by patches of coniferous forest interspersed with areas of small wetlands, lichen cover and exposed rock.

6.1.1 Construction

Project construction will involve vegetation clearing activities relative to the corridor for the access road upgrades, powerline and pipelines installation, pump house construction, vegetation clearing within the flooded zone of the impoundment, dam and spillway construction and infrastructure development for downstream water management.

RMM anticipates initial Project construction activities to begin in fall 2018. Construction activities will be completed using small to mid-sized, standard construction equipment and construction activities are anticipated to take 3 to 4 months to complete.

6.1.1.1 Vegetation, Wetlands and Soils

There were no listed or rare plant species identified during field studies in close proximity to the proposed Project footprint. During construction, the corridor that is to be upgraded for the existing access road, powerline and pipelines will see some vegetation and soil removal. The proposed Camp Pond Dam, expected to raise the existing water level by approximately 3.5 metres, is anticipated to result in limited loss of adjoining terrestrial habitats due to the steep surrounding slopes. Some loss of forested habitat, rocky barren habitat, and small wetlands will occur, however, these habitats are common on the surrounding landscape.

6.1.1.2 Wildlife and Species at Risk

A number of measures will be implemented during the construction phase of the proposed Project to reduce the potential for interactions between Project activities and any wildlife that may occur in the area:

- Construction areas will be kept clear of garbage;
- Construction personnel will not hunt of harass wildlife while on site;
- Pets will not be permitted on the construction site;
- Equipment and vehicles will yield the right-of-way to wildlife; and
- Any nuisance animals will be dealt with in consultation with the NL Wildlife Division.

No SAR were encountered during field studies at the proposed Project footprint. Project activities will result in limited loss of terrestrial habitat and those habitats impacted are not lacking on the surrounding landscape. RMM does not anticipate any adverse effects to wildlife or SAR in the area as a result of Project construction activities.

6.1.1.3 Avifauna and Species at Risk

RMM anticipates initial Project construction activities to begin by fall 2018. RMM is confident any required clearing can be done outside of the regional bird breeding season, (May 1-August 15). RMM does not anticipate any negative interactions between Project construction activities and avifauna. If clearing is required during the regional bird breeding season, RMM will ensure the following mitigations, outlined in their EPP, and specific to avifauna are carried out:

- Monitoring for bird nests will be conducted in advance of site clearing during the breeding season (May 1st to August 15th) and efforts will be made to avoid trees with nests during that time. Non-intrusive surveys for nests will be conducted, in accordance with the Specific Considerations Related to Determining the Presence of Nests (Environment Canada 2012).

- The *Migratory Birds Convention Act* (MBCA) protects most bird species and their nests, with the exception of the following groups: certain game birds (grouse, quail, pheasants and ptarmigan), raptors (hawks, owls, eagles and falcons), cormorants, pelicans, crows, jays and kingfishers, and some species of blackbirds (starlings, mynas).

- Should a nest of a migratory bird be found, the following steps will be taken (in accordance with guidelines outlined in the MBCA)*:*

    - all activities in the nesting area should be halted until nesting is completed (*i.e.,* the young have left the vicinity of the nest);

    - any nest found should be protected with a buffer zone appropriate for the species and the surrounding habitat until the young have left their nest; and

    - nests should not be marked using flagging tape or other similar material as these increase the risk of nest predation.

- Raptors, although not protected under the MBCA, are protected under Newfoundland and Labrador's *Wild Life Act*. In accordance with provincial guidelines, should a nest of a raptor be found, the following steps will be taken:

    - a buffer zone of 800 m should be maintained while the nest is active;

    - after the young have left their nest, a buffer zone of 250 m should be maintained; and

    - if work within the appropriate buffer zone cannot be avoided, the Newfoundland Department of Fisheries and Land Resources (DFLR) should be contacted for advice on how to minimize disturbance of the nest.

Mixed coniferous forest habitats in Newfoundland and Labrador are generally important habitats for a variety of forest dwelling passerine species, including those that specialize on coniferous forests and large forest tracts. Mixed coniferous forest habitats are also stop over and resting habitats for many migratory passerine species. The forests in the Camp Pond area likely serve as migratory habitat for passerine species of birds. While forest habitat is recognized for its importance for these wildlife values, this habitat type is not rare or limited in extent in the vicinity of Project area. RMM does not anticipate that Project construction activities will have an adverse environmental effect on avifauna in this area.

6.1.1.4 Water Resources

One of the key environmental effects from construction activities will be the interruption of water flow to the outflow tributary by the dam construction. This interruption in flow, if not mitigated,

could have adverse effects on water resources, fish and fish habitat and on wildlife and avifauna downstream of Camp Pond.

In consultation with the WRMD, RMM will establish a Real Time Water Quality and Quantity station downstream of the Camp Pond dam in a location where consistent data can be collected and analyzed. This will be done prior to the start of any construction related activities that will interrupt the flow of water from the Camp Pond outflow tributary. As requested by the WRMD, RMM and their representatives identified potential locations where a Real Time Water Quality and Quantity Monitoring Station could be established (Figure 20). Although WRMD personnel will install and maintain this monitoring equipment, the data collected from this monitoring station will significantly aid RMM and regulators in predicting, avoiding and mitigating any adverse environmental effects as a result of construction activities.

Safeguarding the water quality and quantity of the outflow tributary from Camp Pond will require specific mitigations during the construction phase. RMM will follow all protocols outlined in their EPP specific to work in and around water bodies and wetlands during the construction period for the Camp Pond dam and during the installation of any infrastructure designed to maintain flow through the outflow tributary. In addition, RMM will obtain all required permits and abide by all conditions related to construction activities. RMM will also ensure that data collected from the Real Time Water Quality and Quantity monitoring station is reviewed regularly. Any mitigations required as a result of data collected from this station will be applied in consultation with the WRMD and DFO as required.

During the construction phase, RMM may be able to pump water from Camp Pond to the outflow tributary in order to maintain flow to the downstream environment. In the short term, this is an environmentally sound approach as there will be no change in water chemistry to the downstream environment. At some point during construction, and prior to the commencement of tailings deposition in Camp Pond, RMM will pump water from Horseshoe Pond to the outflow location to deliver an appropriate flow of water to the outflow tributary to mimic the natural flow rate. DFO officials have indicated that other alternatives for the maintenance flow are also viable and the final scenario will be finalized though ongoing consultations and confirmed via a letter of advice from DFO. Some other potential scenarios include the siphoning of water from Little Horseshoe Pond, or the establishment of a groundwater well as a contingency in the event there are operational constraints associated with sourcing water from Horseshoe Pond. If an alternate scenario than Horseshoe Pond is ultimately used for maintaining the outflow tributary, RMM will ensure this approach meets all regulatory approvals and that the water quality is similar to that of Camp Pond today. Once the Camp Pond Tailings Impoundment has reached storage capacity in 2025, the intention is to monitor the water quality in the Tailings Impoundment and to restore flow to the outflow tributary through a permanent spillway adjacent to the dam.

6.1.1.5 Aquatic Species and Habitat

As per requirements of the Fisheries Act, RMM will complete the "Application for Review" form relative to the downstream environment from Camp Pond that will enable DFO officials to determine if a Project's activities may cause serious harm to fish. In addition, RMM consulted DFO's resource material, "Measures to Avoid Causing Harm to Fish and Fish Habitat", when planning their construction activities relative to this Project.

Construction of the Camp Pond Dam will prevent any outflow from Camp Pond through the outflow tributary. The main mitigations to prevent harm to fish and fish habitat downstream of Camp Pond during the Project construction phase will be implemented prior to any dam construction activities.

RMM has committed to collecting additional flow measurements from the outflow tributary and is engaged in ongoing consultation with DFO to better plan this baseline collection prior to any construction activity beginning. Additional flow data will also be collected in the downstream environment post construction start-up in order to fine-tune the appropriate flows to be artificially maintained to the outflow tributary.

RMM will ensure the flow replacement system is in place, has been tested and is functioning prior to any interruption in outflow from Camp Pond from construction activities. The water flow will be artificially maintained via a pumping system whereby an appropriate volume of water from Horseshoe Pond will be diverted to the outflow location at Camp Pond. This system will have a redundancy factor built in whereby secondary equipment will be onsite should there be any primary equipment failures. RMM will ensure that the general chemistry of the sourced water for maintaining flow in the outflow tributary is similar to the existing chemistry in the outflow tributary. A water quality monitoring program will be implemented in this watercourse for the duration of the construction phase to ensure the water quality conditions continue to provide suitable fish habitat similar to conditions prior to the start of construction.

6.1.2 Operations

During the operations phase of the proposed Project, it is unlikely there will be many interactions with the biophysical environment, e.g., vegetation and wetlands, wildlife and SAR, avifauna, fish and fish habitat, water resources. Operational activities will be characterized primarily by a gradual increase in the level of water in the Camp Pond Tailings Impoundment. RMM anticipates that at the end of five years, the water level in the Tailings Impoundment will be approximately 1.5 m below the maximum dam level of 5 m. The tailings slurry delivery line will be monitored and maintained to ensure discharge to the Tailings Impoundment is occurring in a controlled fashion and in the deepest parts of the Pond. This is a common strategy that RMM employs in the management of their existing Tailings Impoundment.

RMM does not anticipate that the Project will have significant negative environmental effects on key components of the natural environment due to careful planning, monitoring and continued

implementation of mitigative measures. All operations activities of the proposed Project will be carried out using existing personnel and RMM anticipates that operation of the Camp Pond Tailings Impoundment will result in minimum additional disruption to the area.

6.1.2.1 Vegetation and Wetlands

During operations, there will be no additional soil or vegetation disturbance, therefore, little or no potential for further effects to these biophysical components are anticipated. As the water level in the Tailings Impoundment rises, there will be some loss of forested habitat, forested bog and some rocky barren habitat. However, these habitats are common on the surrounding landscape and as Camp Pond's slopes are fairly steep, losses to terrestrial habitat will be minimal, i.e., 2.1 ha.

6.1.2.2 Wildlife and Avifauna, Including Species at Risk

Existing mitigations relative to wildlife sightings and management during the operations phase will ensure no adverse impacts to wildlife or SAR. No vegetation clearing is anticipated to be carried out during the operations phase. RMM does not anticipate, therefore, any adverse environmental effects to wildlife or avifauna as it is expected that any wildlife or avifauna species previously using the affected habitat will have relocated to adjacent undisturbed areas before operations activities commence.

During the review of the Registration document, ECCC provided comments relative to the use of the tailings impoundment by waterfowl. In particular, ECCC requests that RMM indicate how they will deter waterfowl from using Camp Pond once it has been converted to a Tailings Impoundment. Prior to placement in the existing Tailings Impoundment, the tailings are subject to a cyanide destruction process and then subject to treatment in the Polishing Pond. This ensures that the quality of effluent/water in the existing Tailings Impoundment is very good, and to date the effluent/water there has not been known to cause harm to waterfowl.

The tailings to be pumped to Camp Pond will have undergone the same pre-treatment as the tailings in the existing Tailings Impoundment, therefore RMM anticipates similar water quality parameters will be present in Camp Pond. Ongoing environmental water quality monitoring will however be carried out once tailings deposition begins in Camp Pond. If any results indicate the presence of deleterious substances, RMM will carry out hazing, procedures i.e., scare tactics, as recommended by ECCC to deter any waterfowl from using the Pond. As per ECCC's advice, RMM will use devices that do not require a permit and will alternate the scare techniques to ensure the birds don't acclimatize to the same disturbance. In general RMM will:

- Monitor the use of the Camp Pond Tailings Impoundment for use by migratory birds;
- Monitor the presence of substances in Camp Pond or any associated water bodies that may be harmful to migratory birds;

- Implement measures to prevent contact of migratory birds with harmful substances.

RMM will also monitor waterfowl presence on Camp Pond and report any observations to ECCC.

6.1.2.3 Aquatic Species and Habitat

Since the downstream aquatic environment from Camp Pond is considered fish habitat, RMM will ensure that operations activities do not negatively impact this environment. As indicated above and as required by the federal *Fisheries Act*, RMM will submit an "Application for Review" form to DFO specific to the downstream environment of Camp Pond. This completed form, and ongoing consultation with local DFO officials, will help ensure that Project operations activities will not cause serious harm to fish in the downstream environment.

In consultation with ECCC and DFO, RMM has proposed a strategy for maintaining an appropriate volume of water to the outflow tributary such that viable fish habitat is maintained in the outlet tributary. During construction, operations and decommissioning, the outlet tributary will be maintained at an appropriate flow and no negative environmental effects are predicted to either fish or fish habitat downstream of the proposed Tailings Impoundment as a result of Project operational activities. As indicated above, RMM will establish and maintain a Real Time Water Quality and Quantity station downstream of the Camp Pond dam in a location where consistent data can be collected and analyzed.

6.1.2.4 Water Resources

RMM has committed to consulting with DFO and WRMD officials to better understand the downstream hydrology and to install and implement appropriate monitoring equipment and protocols to ensure the hydrological regime is duplicated, and that adverse environmental effects are minimized to downstream water quality, aquatic species and habitat.

Water management activities during operations will primarily involve maintaining normal flows in the Camp Pond outflow tributary to ensure that water quantity and quality parameters for fish habitat are maintained during operations as it was prior to the start of any construction and operation activities associated with the Project. Water will likely be drawn from Horseshoe Pond to maintain this flow and RMM does not anticipate any significant adverse effects from using this approach.

The process tailings that will be deposited into Camp Pond will remain underwater at all times to prevent acid generation and metal leaching. The water cover will inhibit the oxygen supply that is normally required to feed the chemical reactions responsible for acid generation.

The use of Camp Pond as RMM's new tailings impoundment will result in the diversion of water / effluent from Camp Pond to the existing TMF via the effluent decant line. This activity is expected to result in a very modest increase in flow through the existing TMF and discharge from the Polishing Pond through to Horseshoe Pond.

The effluent decant line will be operated to ensure appropriate water levels are maintained in the Camp Pond Tailings Impoundment during operations. Effluent pumped from Camp Pond will go initially to the existing Tailings Impoundment and will follow the same effluent treatment scenario that is currently in place at the Mill site, i.e., from the Tailings Impoundment, water will be decanted to the Polishing Pond where it will be discharged to the receiving environment when it has been demonstrated to be within regulatory discharge limits. If RMM sources water from Horseshoe Pond to maintain flow to the tributary downstream of Camp Pond, the change to the water balance in expected to be very small and will only relate to Horseshoe Pond itself.

RMM will build a safety and redundancy factor into this pumping component of the operation such that a second pump and necessary equipment will be maintained at the site in the event there are equipment failures associated with the first system. In this way, water levels in Camp Pond can be carefully managed to ensure no effluent or water will leave Camp Pond via the spillway unless there is an unusual precipitation event. Significant precipitation or runoff events will be attenuated within the TMF using the stormwater (environmental) storage within the TMF design capacity, and therefore should not result in incremental environmental impact downstream during natural flooding events.

As previously indicated, RMM will establish and maintain a Real Time Water Quality and Quantity station downstream of the Camp Pond dam in a location where consistent data can be collected and analyzed. This monitoring equipment will provide valuable data relative to water quality and quantity parameters downstream of Camp Pond during the operations phase and can help ensure any negative environmental effects relative to water quality or quantity are appropriately addressed as they arise.

Relative to water resources, RMM does not anticipate any adverse environmental effects at the Project site as a result of operations activities.

6.1.3 Accidental Effects during Construction and Operation

Spills or releases of hazardous substances, e.g., fuels, oils, effluent, tailings etc., from accidents or malfunctions of vehicles and equipment are possible during all Project phases. Such accidental events have the potential to result in adverse environmental effects to soil and water.

The likelihood of occurrence of an accidental spill or release of hazardous substances, and extent of resulting environmental effects, is minimized through adherence to applicable mitigation measures throughout all Project phases. Fuel and other hazardous materials securely stored, vehicles and equipment will be refueled at designated areas. Emergency spill kits are located onsite, and will be located at the new tailings impoundment site, at all times.

Potential accidental events or malfunctions during Project construction and operations such as a fire, a fuel or chemical spill could affect vegetation, water quality, soils or other aspects of the Natural Environment in or around the proposed Project area. In addition, a release of tailings or

a dam breach are potential accidents that could occur during operations. The resulting environmental effects of such incidents would depend on the nature and magnitude of the event.

Once operational, the Project will be subject to regular inspections and maintenance as required. All water/effluent returned to the original Tailings Impoundment area from the Camp Pond Tailings Impoundment via the effluent decant line will be subject to federal and provincial regulations. In accordance with ECCC's MMER, and as per the conditions of the NLDMAE approvals, RMM conducts EEM and Water Quality and Effluent Monitoring at the Mill as required.

RMM maintains a number of management and emergency response plans, as further described in this document that will aid in avoidance and/or mitigation of any potential accidental events.

6.1.4 Cumulative Environmental Effects

The proposed Project will have an effect on vegetation and soils within the Camp Pond Tailings Impoundment footprint as a result of partial clearing and construction activities that will lead to a rise in water level in Camp Pond. The clearing activities associated with this proposed Project, i.e., corridor improvements for road, pipelines and powerline as well as within the flooded zone of the proposed Tailings Impoundment, will not overlap or interact cumulatively with those of other projects and activities in the area.

The operations phase of the proposed Project will result in deposition of tailings to the Camp Pond Tailings Impoundment. The metallurgical and chemical composition of these tailings are well understood and RMM does not anticipate any fundamental challenges to their management than the protocols and procedures currently in place for the existing Tailings Impoundment area. Extensive field studies demonstrated that Camp Pond does not contain fish, and as such is not considered productive fish habitat by virtue of the physical barriers to fish migration. As such, this proposed Project will not contribute in any way to a net loss of fish or productive fish habitat in the area. The tailings will be maintained in a sub-aqueous state in the Camp Pond Tailings Impoundment until the Tailings Impoundment has reached full capacity.

During the infilling period, the outflow stream from Camp Pond will be maintained through a clean water supply system such that fish habitat downstream will not be negatively impacted. Once the Camp Pond Tailings Impoundment has reached capacity, water will be released in a controlled manner to reintroduce flow to this stream once water quality results indicate that it is safe to do so. In this way, RMM predicts no adverse cumulative effects to any fish bearing water bodies or productive fish habitat in the proposed Project footprint or downstream of the proposed Project footprint. Any water release from Camp Pond will be in compliance with all applicable provincial and federal regulations.

There is a low potential for cumulative environmental effects relative to changes in surface or groundwater flows in the Project area as these flows will return to normal or near-normal at closure.

The Project will not affect listed or rare species, and will not have any effect on overall biodiversity in the region including the Hampden caribou population or other wildlife. The Camp Pond Tailings Impoundment is unlikely to contribute measurably to any overall, negative cumulative environmental effects to the wildlife, SAR or avifauna in the region.

6.2 Human Environment

The Project is not expected to result in any land use conflicts. There is anecdotal evidence that very little recreational activity occurs within the vicinity of the proposed Project. The proposed Project will occur in a rural area and since Camp Pond has been demonstrated to be fishless, there is no probability for conflict relative to an existing recreational fishery at the site. It is unlikely that the site will interfere with other recreational activities as the terrain is difficult, i.e., steep, and is unlikely that hikers, hunters, and berry pickers would typically use this area. Prior to resettlement, some local residents from Snook's Arm would travel via snowmobile across Camp Pond in the winter time. If it is determined that this is an established winter travel route, RMM will endeavor to reroute the trail to avoid any passage across Camp Pond. Signage will also be posted to advise snowmobilers to avoid travelling on Camp Pond.

The EPR Committee noted that NL Hydro has a low voltage powerline (TL260), three transformer stations and two hydro plants in the area and requested that RMM indicate whether NL Hydro had any concerns relative to this infrastructure and the proposed Project. NL Hydro reviewed the information and indicated there were no concerns relative to the project. RMM notes that a permit will be required relative to the proposed powerline that will supply electricity from the Nugget Pond Mill to Camp Pond to power the various pumps to be used there.

RMM also contacted Transport Canada relative to their requirement for a Notice of Works relative to the determination of the nature and degree of the navigability of Camp Pond. That process has been initiated and RMM will be submitting the required information to Transport Canada's (TC) Atlantic Regional Office in Moncton, NB in the near future. TC will complete their review of RMM's application once the EA process is complete.

RMM notes there are staked mineral claims adjacent to this proposed undertaking. Exploration activities can co-exist with the proposed infrastructure associated with the Project and the Surface Rights process through the NLDNR will ensure no conflicting activities are carried out.

RMM is intending to extend the life of the Ming Mine and Nugget Pond Mil operations, and this is reliant on the proposed expansion of the TMF. In this way RMM will continue to contribute in a very positive way to the local communities and their economies. RMM is confident the Project will have positive socioeconomic effects in the region and for the province as a whole by extending employment at the mine for many years to come.

The Project is not expected to result in residual adverse environmental effects to heritage resources. RMM has a Discovery of Historic Resources Contingency Plan which includes

procedures to follow and mitigation measures to implement in the event of discovery of an historic resource.

RMM has strong environmental, health and safety management systems and associated plans, practices and procedures in place for their Ming Copper-Gold Mine operations. Any potential environmental or human health effects which may be associated with the proposed Project will be addressed and mitigated through the application of these established practices and procedures. Any potential effects can be further addressed through specific permitting requirements and compliance standards and guidelines which will apply to the proposed Project.

6.3 Environmental Management and Protection

RMM and its management team are committed to conducting construction and operations in an environmentally and socially responsible manner. RMM is committed to the environment and the local communities in which it works. These commitments will be achieved through prudent environmental management that addresses environmental and resource management issues and outlines the different levels of responsibility for contractors and site personnel. RMM also tracks their environmental policies, regulatory standards, conditions of authorization, and direct field controls for implementation.

6.3.1 Environmental Protection Plan

RMM's Environmental Protection Plan (EPP) outlines the prevention and mitigation measures to be applied to eliminate or reduce potential adverse environmental effects associated with construction and operation activities at all of RMM's sites. RMM will amend their existing EPP, as required, to ensure all aspects of construction and operation relative to the new Tailings Impoundment at Camp Pond are addressed. The updated EPP is considered a working document for use in the field by Project personnel, including contractors that identifies and provides guidance for avoidance and mitigation of potentially negative environmental effects of Project construction and operation activities. The EPP is a part of the contract agreement between RMM and all contractors and subcontractors.

6.3.2 Emergency Response Plan

RMM has an approved Emergency Response Plan (ERP), as required under MMER with respect to unplanned tailings and effluent releases in place for the existing TMF, and this Plan will be amended to incorporate the planned TMF expansion described above. The MMER ERP is a risk-based approach to potential releases and incorporates specific roles and responsibilities for RMM personnel with respect to TMF maintenance, inspection, and monitoring, as well as emergency procedures in the event of an unplanned release.

6.3.3 Contingency Plan

RMM maintains an approved Contingency Plan for each of the sites which addresses specific roles and responsibilities for RMM personnel with respect to the storage and handling of

hydrocarbons and hazardous materials required on the Project, as well as emergency procedures in the event of a spill or release. RMM will update the Contingency Plan to address changes associated with the construction and operation of the new tailings impoundment, as required, and submit the updated Plan to the appropriate regulators for review and approval.

6.3.4 Operation, Maintenance and Surveillance Manual

RMM maintains an Operation, Maintenance and Surveillance Manual for all aspects of their TMF. RMM will update this Manual to address changes associated with the operation, maintenance and surveillance of the new tailings impoundment, as required.

6.4 Effects of the Environment on the Project

The regional topography, climate, biophysical and hydrological conditions primarily influenced the design of the proposed Project. The primary anticipated impact from the environment on the proposed Project is water inflow into the Camp Pond Tailings Impoundment. Camp Pond is a headwater pond with three very steep inflow tributaries, which means that there isn't a large upstream catchment area to address. Due to the steep surrounding topography, the time of concentration for high precipitation events will be fairly quick and this has been accounted for in the water management design components of the impoundment.

Operational water levels will be monitored constantly to ensure that designed water levels are maintained within the impoundment and that overtopping of the dam will not occur. In addition, effluent / water from Camp Pond will be pumped to the existing Tailings Impoundment via an effluent pipeline, sent to the Polishing Pond, treated if necessary and eventually released to the environment. RMM will incorporate a redundancy factor in this pumping scenario such that there will always be backup pumping infrastructure should one system or components of one system fail. In this way, no effluent will leave Camp Pond directly unless a sufficiently large flood event forces discharge through the engineered emergency spillway that will be designed to ensure the dam structure is not damaged. With respect to potential storm and flooding events, the dam and spillway will be designed and constructed in accordance with CDA guidelines, existing climate change data and in consideration of guidance provided by NLDNR officials during the EPR process.

7.0 DECOMMISSIONING AND REHABILITATION

During the decommissioning phase, the water level in the Camp Pond Tailings Impoundment will be maintained at a level to ensure perpetual sub-aqueous coverage of the deposited tailings. Once water quality parameters allow, natural flow will be restored to the downstream tributary. Details specific to decommissioning sampling and discharge procedures will be outlined in RMM's Rehabilitation and Closure (RCP) plan for its operation including the Camp Pond Tailings Impoundment.

RMM is currently completing a five (5) year update of the Development Plan and RCP for their Ming Mine Operations, including the Nugget Pond Mill site and TMF, in consultation with the NLDNR. RMM's current plans for the new Tailings Impoundment have not been sufficiently advanced to incorporate them into the current Plan updates, however once the EA process is complete and additional engineering information is available, an amendment to these Plans will be submitted for NLDNR review. RMM will work to ensure all concerns raised by regulators are addressed in the Development Plan and RCP relative to all components of the TMF.

The rehabilitation of all infrastructure associated with the Camp Pond Tailings Impoundment will be added to RMM's overall RCP for the Nugget Pond Mill. The estimated rehabilitation costs will be calculated and appropriate financial assurances will be put in place through the NLDNR.

The closure components of primary importance are the management of water/effluent, and the long term stability of the dam, which will remain in place after closure.

Based on current planning, at the end of year 2025 when the Camp Pond Tailings Impoundment has reached storage capacity, RMM will monitor the quality of water contained in the Tailings Impoundment to determine when the water quality has stabilized. Once the water quality is determined to be suitable, and based on approval from the appropriate regulators, water will released through the dam spillway in order to restore a natural flow to the Camp Pond outflow tributary.

Prior to closure, a Dam Safety Review, in accordance with the CDA guidelines, will be conducted and a final closure design for the impoundment and dam will be completed to ensure the permanent outflow and spillway is suitably designed for closure. Any maintenance and/or upgrades required to be completed to satisfy the closure requirements at that time will be completed. RMM will consult with appropriate regulators during this process to ensure the long-term risk and liability associated with this infrastructure is minimized.

Other rehabilitation and closure activities and requirements that will be addressed in the RCP amendment will include:

- Dismantling and removal of all powerlines, pipelines, pumps and associated facilities, and removal of all material from site;
- Revegetation of disturbed areas with the exception of the access road and dam which will require long term inspection and maintenance;
- Closure monitoring will continue after closure activities are complete and long term maintenance and inspection of the dam will be included; and,
- Removal of infrastructure, e.g., pipelines, pumps, pumphouse, etc., put in place to maintain flow to the downstream tributary during tailings deposition.

8.0 PROJECT RELATED DOCUMENTS

- AMEC Earth and Environment Ltd. 2008. Aquatic Survey of Tailings Options – Final. Prepared for Rambler Metals and Mining PLC. August 2008. 180 pp.

- GHD 2016. Preliminary Terrestrial Ecology Assessment Report – Tailings Pond and Boundary Shaft Areas. Rambler Copper-Gold Mine Expansion. November 23, 2016. 75 pp.

- GHD 2016. Baseline Aquatic Monitoring Program Report. Rambler Copper-Gold Mine Expansion. January 2017. 143 pp.

- GHD 2017. Camp Pond Aquatic Monitoring Program Report – 2017. Rambler Copper-Gold Mine Expansion. September 2017. 74 pp.

9.0 PUBLIC INFORMATION MEETING

RMM has been operating on the Baie Verte Peninsula since 2011 and has been a contributor to the local communities and overall region.

RMM has conducted public consultation meetings in Baie Verte, Ming's Bight and South Brook throughout the Ming Mine operations; initially when they acquired the property in 2009 and as additional activities have been added to their operations in the area. Ongoing public consultation occurs through forums such as the Baie Verte Mining Conference, the Mineral Resources Review Conference, etc. and in 2017 the proposed use of Camp Pond as a Tailings Impoundment was presented. The Registration review process, recently completed for this proposed Project, provided an opportunity for public commentary as well.

Specific to the EPR process, and further to guidance provided by the NLDMAE, RMM hosted an Open House Public Information Session at the Baie Vista Inn, Baie Verte from 7-9 pm on March 29, 2018 to present the Project. RMM informed the Minister of the NLDMAE on March 21, 2018 of the scheduled meeting, eight days in advance of the scheduled meeting. The public notification was published in printed version of the regional newspaper, the Nor'Wester, on March 22, 2018. In addition, a printed notice of the public information session was posted in the Town Offices and/or Post Offices in the communities of Ming's Bight, Nipper's Harbour, La Scie and Baie Verte at least seven days in advance of the planned session on March 29, 2018. The EA Division subsequently advised RMM that these actions fulfilled the public notification requirements of the EPR process. An attendance sheet from that meeting is included in Appendix A. Although RMM presented detailed information on the proposed TMF Expansion Project at this session, there were no concerns or comments expressed by the attendees during the meeting.

10.0 APPROVAL OF THE UNDERTAKING

In addition to approval under the provincial EA process, the proposed Project may require a number of other permits and authorizations. Some of these potential regulatory requirements are listed in Table 9 and RMM will ensure all necessary permits, approvals and amendments are obtained in a timely fashion.

Table 9 Potential Permits, Approvals, and Authorizations

Agency	Permit/Approval/Authorization	Component
NLDMAE – Environmental Assessment Division	Release from EA process	Tailings Management Facility Expansion (Camp Pond Tailings Impoundment)
NLDMAE – Pollution Prevention Division	Certificate of Approval (amendment)	To include Camp Pond Tailings Impoundment
NLDMAE – Water Resources Management Division	Dam Construction Permit	New Camp Pond Dam & Spillway
NLDMAE – Water Resources Management Division	Water Use License, Working around Water	New Camp Pond Dam & Spillway and to source water for outflow tributary maintenance – likely from Horseshoe Pond
NLDMAE – Water Resources Management Division	Groundwater well permit (potential)	Outflow tributary maintenance
NLDMAE – Water Resources Management Division	Real time Water Quality and Water Quantity Monitoring	Outflow Tributary from Camp Pond or outflow of The Steady
NLDNR – Mines Branch	Development Plan (amendment)	To include Camp Pond Tailings Impoundment and associated infrastructure
	Financial Assurance (amendment)	To include Camp Pond Tailings Impoundment and associated infrastructure
	Rehabilitation and Closure Plan (amendment)	To include Camp Pond Tailings Impoundment and associated infrastructure

11.0 SUMMARY AND CONCLUSIONS

The scope of the proposed Project includes construction of an earthen dam to facilitate the conversion of Camp Pond to a safe and environmentally reliable Tailings Impoundment. Other components of the Project include necessary and associated infrastructure such as a tailings slurry pipeline, an effluent decant line and pumps, a small pump house, a powerline to Camp Pond, outflow tributary maintenance system and some necessary road upgrades. The proposed Project does not require that any additional infrastructure relative to the Mill or mining operations be constructed as these facilities already exist. The Project provides a technically feasible,

environmentally and socially responsible means of accommodating increased tailings storage as a result of ongoing operations that are anticipated to extend the life of mine. The commissioning of the Camp Pond Tailings Impoundment will ensure critical production targets are achieved and thus RMM will continue to provide meaningful employment and to contribute to the local and provincial economy.

The proposed Project will be planned and implemented in accordance with RMM's environmental and health and safety policies, plans and practices, to help ensure that it is constructed and operated in a safe and responsible manner. This approach will avoid and reduce any negative environmental effects of their activities while maximizing socio-economic benefits.

The proposed Project will be constructed and operated in accordance with applicable provincial and federal legislation and regulations. RMM is committed to complying with all relevant legislation and regulations, and any conditions associated with environmental assessment release.

RMM has, and will continue to, consult as required with all relevant government and community organizations throughout the EA process, and will continue as required through all stages of the Project life, including the decommissioning phase.

APPENDIX A

Public Information Session Attendees

RAMBLER
METALS AND MINING
CANADA LIMITED

Form No:	RM HS PWF-05
Date of Issue:	October 2012
Revised:	Jan. 2013

Department:_____ Date: March 29, 2018

Names

	Print Name:	Signature:
1.	Corey Greenham	Corey Greenham
2.	Bert Fudge	Bert Fudge
3.	Scott Britton	Scott Britton
4.	Chelsea Greenham	Chelsea Greenham
5.	Isaiah Haas	Isaiah Haas
6.		
7.		
8.		
9.		
10.		
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SAFETY STARTS WITH "S" BUT BEGINS WITH YOU