

GEOLOGY LEGEND :

	MINERALIZED ALTERATION
	THOR LAKE SYENITE
	GRACE LAKE GRANITE
	HEARNE CHANNEL AND MAD LAKE GRANITES
	WHITEMAN LAKE QUARTZ SYENITE
	CARIBOU LAKE GRABBRO, LEUCIFERRODIORTITE
	GRANITE, GRANODIORITE
	YELLOWKNIFE SUPERGROUP

LEGEND :

	WATER
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NOTES

1. Coordinate grid is UTM (NAD83) Zone 12N and is in metres.
2. Plan is based on information provided by Avalon Rare Metals Inc.
3. Geology based on Wardrop Report 0851530201-REP-R0002-01 Figure 2.2, entitled "Generalized Geology of the Thor Lake Area (after Davidson, 1978).
4. Figure Source: Knight Piesold Consulting, July 2009 (Ref No. NB09-00493, Figure 2).

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THOR LAKE PROJECT

Nechalacho Area Regional Geology

PROJECT NO. V15101007.006	DWN SL	CKD RH	REV 0
OFFICE EBA-VANC	DATE March 17, 2011		

Figure 4.4-1

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Based on exposed crosscutting relationships of dykes and main contacts, Davidson recognized a sequence of five intrusive events. The rocks of the last intrusive event, being compositionally and spatially distinct, are subdivided by Davidson into the Grace Lake Granite and the Thor Lake Syenite, although they bear no obvious intrusive relationship to each other to indicate a significant difference in time of emplacement. Davidson and Trueman et al. have further shown that the intrusions are petrochemically related.

As a result of the extensive drilling carried out from August 2007 to present, Avalon geologists have changed their views on the relationship of the Thor Lake Syenite to the Grace Lake Granite. It is currently thought that the only real difference between the Thor Lake Syenite and Grace Lake Granite is the varying quartz content and degree of silica saturation. In fact, the two sub-units likely reflect a single early intrusive magma pulse which preceded a second related pulse of nepheline sodalite-bearing peralkaline magma. The hydrothermally altered apical portion of this nepheline syenite is only exposed under Thor and Long Lakes and was previously described as altered Thor Lake Syenite.

The drilling of the Nechalacho deposit has also led to the conclusion that the nepheline sodalite peralkaline syenite that underlies the Thor Lake Syenite is in fact a distinct intrusive.

Recent dating of the complex supports the view that all the intrusions are related as the main eastern intrusive, and the western intrusive centres exhibit comparable ages. The Hearne Channel Granite has been dated at $2,175 \pm 5$ million years, the Whiteman Lake Syenite at $2,185 \pm 5$ million years (Bowring et al., 1984) and the Grace Lake Granite at $2,176 \pm 1.3$ million years (Sinclair et al., 1994).

Henderson (1985) reports that small dioritic plugs assigned to the Compton Lake Intrusive Suite cut the Grace Lake Granite and diabase dykes of the 1,200 million year old Mackenzie swarm. The 2,000 million year old Hearne dyke swarm cuts most of the members of the Blachford Lake Complex.

Gravity modeling by Birkett et al. (1994) suggests that the large area of granitic and syenitic rocks of the eastern intrusive centre form a thin tabular body with a maximum thickness of one kilometre. In contrast, the Caribou Lake Gabbro in the western centre is thought to have a deep root.

Most of the Thor Lake Property is underlain by the Thor Lake Syenite where it occurs in the centre of the Grace Lake Granite. The T Zone deposits are seen to cross both rock types which are only demarcated by the presence or absence of quartz. The Nechalacho deposit is seen confined solely to the Thor Lake Syenite.

The Grace Lake Granite is a coarse-grained, massive, equigranular, riebeckite-perthite granite with about 25% interstitial quartz. Accessories include fluorite, zircon, monazite, apatite, sphene, iron and titanium oxides, astrophyllite, an alkali pyroxene and secondary biotite. Near the contact of the Grace Lake Granite with the Thor Lake Syenite, the two units are texturally similar and the contact appears to be gradational over a few metres rather than intrusive. The presence of interstitial quartz is the main distinguishing feature, although the granite is also pinker in colour and less readily weathered than the syenite.

Because of their textural similarity and gradational contact relations, Davidson suggested that both rock types derive from the same magma.

The Thor Lake Syenite is completely enclosed by the Grace Lake Granite. It has been divided into five subunits, four of which are amphibole (ferrorichterite) syenites that differ mainly in texture. The fifth and most distinctive subunit is a narrow arc of fayalite-pyroxene mafic syenite, which is locally steeply dipping and lies close to the margin of the main amphibole syenite and the Grace Lake Granite. It forms a distinct semi-circular ridge, and has been locally termed the rim syenite. It can be traced for a distance of about eight kilometres. In outcrop, Thor Lake Syenite is seen to transition to Grace Lake Granite with the appearance of quartz on the solidus in an otherwise felspathic rock.

The nepheline-sodalite syenite that hosts the Nechalacho mineralization has the following key distinctive features which contrast it to the Thor Lake Syenite and Grace Lake Granite:

- It has a distinct chemical composition showing undersaturation in quartz, with nepheline and sodalite variously as rock-forming minerals;
- It has cumulate layering;
- It contains agpaitic zircon-silicates including eudialyte; and
- It is the host to the Nechalacho zirconium-niobium-tantalum-rare earth mineralization.

This syenite is only exposed at surface in a window through the Thor Lake Syenite in the area encompassing Long Lake to Thor Lake. It is believed to dip underneath that Thor Lake syenite in all directions. Also, the Nechalacho deposit mineralization, which occurs in the top, or apex, of the syenite, is also present in this window through the Thor Lake syenite. For the sake of convenience at this time, this unnamed syenite will be referred to in this report as the “(Nechalacho) Nepheline Sodalite Syenite”.

The (Nechalacho) nepheline sodalite syenite consists of a layered series of increasingly peralkaline rocks with depth. A consistent downward progression is observed from hanging wall sodalite cumulates, through coarse grained to pegmatitic nepheline aegirine syenites which are locally enriched in zirconosilicates, to foyaitic syenite with a broad zone of altered eudialyte cumulates (Basal Zone). This upper sequence is strongly to intensely hydrothermally altered by various K, Na and Fe fluids. Pre-existing zircon-silicates are completely replaced by zircon, allanite, bastnaesite, fergusonite and other minerals. Below the Basal Zone cumulates, alteration gradually decreases, with relict primary mineralogy and textures increasingly preserved. Aegirine and nepheline-bearing syenites and foyaitic syenites progress downward to sodalite foyaites and naujaite. Drilling has not extended beyond this sodalite lithology to date. Minerals related to agpaitic magmatism identified from this lower unaltered sequence include eudialyte, catapleite and analcime.

4.4.2 Nechalacho Deposit Geology

The Nechalacho deposit is the largest mineralized body on the property. As currently identified, it is approximately triangular in shape and covers an area of about two square kilometres. Diamond drilling indicates that the deposit is upwards of 200 m in thickness.

The geology of the Nechalacho deposit is complex. Within the Avalon lease area, the geology is dominated by a succession of syenites including the nepheline-sodalite “(Nechalacho) Nepheline Sodalite Syenite” and the Thor Lake Syenite, the latter having evolved into a granitic counterpart (Grace Lake Granite). Together, these three phases form the eastern part of the Blachford Lake Intrusive Suite of Davidson.

The Ore (Nechalacho) Nepheline Sodalite Syenite consists of a series of cumulate rocks which pass upwards into porphyritic, mafic, laminated, and pegmatitic counterparts. Detailed descriptions of these rock types are provided in Table 4.4-1.

TABLE 4.4-1: NECHALACHO TABLE OF ROCK TYPES

ALTERATION	MINERALIZATION		
		95	OVERBURDEN
		90	DIABASE
			Alkaline Rocks, Intrusive Suite 1
		85	GRACE LAKE GRANITE
		84	THOR LAKE SYENITE
			Peralkaline Rocks, Intrusive Suite 2
strong to pervasive alteration common; primary minerals and textures commonly obliterated	magmatic and hydrothermal Zr-REE mineralization	79	SODALITE CUMULATE (ALTERED)
			Roof series cumulates
		78	AEGIRINE ARFVEDSONITE SYENITE (ALTERED)
		a.	Pegmatitic
		b.	Porphyritic
		c.	Eudialyte/zircono-silicate bearing
		75	FOYAITE I (ALTERED)
		a -	unmineralized
		b -	zircono-silicate bearing
moderately altered; primary minerals altered, primary textures preserved	magmatic mineralization	70	TRACHYTIC MICROSyenite
			Fine grained, green-black to red with aligned fine white fsp
			(locally zircono-silicate bearing) (formerly "lujavrite")
		69	EUDIALYTE ARFVEDSONITE (+/-AEGIRINE) SYENITE (ALTERED)
fresh or weakly altered; primary minerals and textures commonly preserved			moderate to abundant zircon-eudialyte pseudomorphs in matrix, aegirine/arfvedsonite pseudomorphs commonly preserved, poikilitic K-feldspar (former upper zone MRZ) (2a). Strong biotite/chlorite alteration.
		67	EUDIALYTE CUMULATES (ALTERED)
			eudialyte/zircon pseudomorphs cumulate. Some remobilization. (former MRZ, 2b basal zone)
		65	AEGIRINE (NEPHELINE) SYENITE II (ALTERED)
		63	FOYAITE II
		a -	pegmatitic
		60	AEGIRINE SYENITE
			fresh, green aegirine and white plagioclase (+/-nepheline)
		55	SODALITE NEPHELINE SYENITE
		a -	foyaite
		50	NAUJAITE
		99	UNKNOWN
		a -	pervasive albitization - unknown precursor
		b -	pervasive mafic alteration - unknown precursor
		c -	pervasive fluorite-illite metasomatism
		96	FAULT
		97	BRECCIA
		a.	Green breccia unit
		b.	other

The primary igneous peralkaline rocks noted above have been subject to pervasive hydrothermal and metasomatic activity which replaces in part, or in whole, the Syenite. The metasomatism has resulted in new assemblages of biotite, magnetite, specularite, albite and chlorite, which in turn host the rare metals and rare earth elements that form the basis of the present resource estimates. The last events in the metasomatic sequence include microclinization, albitization and silicification.

There is indication that the early formed rocks suffered some displacement through magmato-sedimentary processes, magmatic currents, and possibly foundering during cooling which makes geologic correlation difficult from section to section. The metasomatic rocks generally show a good chemical-stratigraphical correlation from section to section and they may reflect a Pressure/Temperature, or chemical disequilibrium boundary.

The Nechalacho deposit has previously been described as consisting of a core of “altered breccia” enveloped by a feldspathic “Wall Zone.” The original protolith of the Nechalacho deposit appears to have been the Nepheline Sodalite Syenite and it appears from limited paragenetic analysis to have suffered successive periods of metasomatism and re-equilibration. It can be divided into several rock types based on constituent lithology, primary textural preservation and degree of alteration. It is difficult to correlate lithologic units from drill hole to drill hole due to intense and often episodic phases of metasomatism which commonly obscure original protoliths. Correlations of rock types in the Nechalacho deposit are made further difficult because of north-easterly trending faults running through the deposit and coincidentally, a number of Hearne diabase dykes which are parallel to or occupying these faults. These faults are poorly outlined due to the mainly vertical drilling, and thus their frequency is not well understood. This is also the direction of the regional schistosity where developed.

The REEs, Ta, Nb and Zr mineralization in the Nechalacho deposit occur in broad enriched sub-horizontal replacement zones, in addition to being widely disseminated over much of the deposit. Potential ore minerals consist primarily of fergusonite, ferrocolumbite, allanite and zircon. Minor or accessory assemblages include bastnaesite group minerals, monazite, and apatite. The highest grades of HREEs, LREEs, niobium, and tantalum appear to occur in magnetite and zircon-rich areas within the sub-horizontal replacement zones.

The Nechalacho deposit is hosted in a layered magmatic peralkaline intrusion comprising a layered sequence of aegirine and nepheline syenites and cumulates. Ore minerals were originally deposited in situ during cooling as disseminated grains and as cyclic cumulate layers. Hydrothermal alteration of these original zircon-silicates has partially remobilized REEs, particularly LREEs as part of a process of metasomatism. Remobilization appears to be fairly local, but could also have been more extensive, depositing LREEs in zones away from their original site of crystallization. HREEs do not appear to be remobilized and their occurrence is considered to be in situ. Late brittle faults may locally vertically displace some mineralized zones in the order of a few to tens of metres.

The mineralization itself, as noted, is accompanied by intense hydrothermal metasomatism which commonly obscures original mineralogy and assemblages, but relict precursor textures are commonly preserved enough to recognize the original protolith. Metasomatic overprinting processes include Na (albitization, feldspathization), and K+Fe+Zr+F (magnetite, hematite, biotite, zircon).

4.4.3 Nechalacho Deposit Mineralization

Mineralization in the Nechalacho deposit includes LREEs found principally in allanite, monazite, bastnaesite and synchysite; yttrium, HREEs and tantalum found in fergusonite; niobium in ferro-columbite; HREE and zirconium in zircon; and gallium throughout but especially high in albitized feldspathic rocks. The relative abundance of the various rare earth bearing minerals, as from a Qemscan study of 30 selected samples from three drill holes (SGS 2011) is:

- Zircon averaging 11%
- Allanite averaging 3.6%
- Monazite averaging 1.5%
- Synchysite averaging 0.9%
- Fergusonite averaging 0.6%
- Bastnaesite averaging 0.4%
- Columbite (not a REE mineral) averaging 0.9%

These averages should not be taken as statistically representing the whole mineralized body because there were an insufficient number of samples and they were not randomly collected. For example, the 11% zircon content is clearly higher than the average for the Nechalacho deposit. However, they do give a general indication of the relative abundance of the minerals. The statistical results are from both less and more highly mineralized samples, and from upper and lower parts of the mineralized zones.

The economically interesting minerals in the Nechalacho deposit are found to be fine grained and form intimate admixtures, which have in the past, presented metallurgical difficulties.

The Nechalacho deposit alteration system varies between 80 m (L08-65) and 190 m (L08-127) in vertical thickness, with the alteration usually starting from the surface. The whole alteration system is enriched to varying degrees in REEs, Zr, Nb and Ta, relative to unaltered syenite, with average values over the whole alteration package of approximately 0.75% to 1.0% total rare earth oxides (TREO). Within this alteration envelope, there are sub-horizontal zones of increased alteration accompanied by increased REE enrichment alternating with less enriched REE zones. Within the more intensely altered zones, the effect is that the original textures and mineralogy of the host rock is no longer apparent.

These zones of increased alteration, which can vary in thickness from a few metres to tens of metres, frequently contain TREO grades in the range of 2% and higher. The lowermost

band, referred to here as the Basal Zone, contains the highest proportion of heavy rare earth oxides (HREO). Overall, the HREO proportion of the TREO within the 80 m to 190 m thick alteration system is typically between 7% and 15%. However within the Basal Zone this proportion can exceed 30%.

4.4.4 Seismicity

The central region of the Northwest Territories where the Thor Lake Property is located is a historically quiet earthquake zone. A seismic hazard assessment for the Thor Lake Property was completed using probabilistic calculations based on design tables from the 2005 National Building Code of Canada. The maximum acceleration for the proposed Nechalacho Mine and Flotation Plant site ranged from 0.007 g for a 1 in 100 year return period to 0.16 g for a 1 in 10,000 year return period. These maximum acceleration values were determined to be the same at the proposed Hydrometallurgical Plant site.

A review of the tailings management facility consequence classification, following the Canadian Dam Association's 2007 Dam Safety Guideline, classified the Nechalacho Mine and Flotation Plant site's proposed tailings management facility (described in section 2.7.4.3) as 'Significant'. The resulting earthquake design ground motion is a 1 in 1,000 year event, which corresponds to a maximum acceleration of 0.035 g for the Nechalacho Mine and Flotation Plant site (Knight Piésold 2010a).

4.4.5 Resources and Reserves

The last publicly available NI 43-101 technical report and mineral resource estimate for the Nechalacho deposit was completed by Scott Wilson Roscoe Postle Associates Inc. (SWRPA). The effective date for SWRPA's resource estimate is July 29, 2010. Since that time, updated resource estimates have been announced in two press releases (September 8, 2010 and January 27, 2011).

The technical data used for the January 27, 2011 resource estimate were compiled, validated and evaluated by Avalon Rare Metals Inc. Bill Mercer P.Geo. was the Qualified Person for this resource estimate. The January 2011 technical data were updated with new drill hole information and assays. Bill Mercer also validated this data set, Finley Bakker P.Geo. updated the wireframe and interpolated values for the fifteen REE elements (plus Zr, Nb, Ga, Hf, Th and Ta) into the block model.

Avalon has summarized the January 27, 2011 resource estimate using a Net Metal Return (NMR) per tonne cut-off value (Table 4.4-2). This is an economic number rather than an oxide cut-off grade. The rationale behind this change in the cut-off parameter is explained further under 'Cut-Off Grade'. Detailed resource tables, including the individual rare earth oxide grades, are included at the end of this section. In addition a TREO equivalent is also reported. It is similar in sense to the NMR calculation but rather than converting the various metals to a unit price it converts them to an equivalent grade in TREO based on metal prices, recoveries etc.

TABLE 4.4-2: THOR LAKE PROJECT MINERAL RESOURCE SUMMARY

BASAL ZONE RESOURCES INDICATED								
Area	Tonnes (millions)	TREO (%)	HREO (%)	HREO/TREO (%)	ZrO2 %	Nb2O5 %	Ta2O5 ppm	TREO equiv.
Tardiff Lake	41.55	1.61	0.34	20.61	2.99	0.41	397	2.07
West Long Lake	15.94	1.42	0.31	21.01	2.99	0.38	392	1.85
TOTAL	57.49	1.56	0.33	20.72	2.99	0.40	396	2.01
INFERRED								
Tardiff Lake	19.34	1.66	0.36	20.54	3.08	0.42	423	2.14
Thor Lake	79.27	1.30	0.24	18.80	2.78	0.37	338	1.71
West Long Lake	8.98	1.17	0.21	17.12	2.71	0.33	347	1.56
TOTAL	107.59	1.35	0.26	18.97	2.83	0.37	354	1.77
UPPER ZONE RESOURCES INDICATED								
Area		TREO (%)	HREO (%)	HREO/TREO (%)	ZrO2 %	Nb2O5 %	Ta2O5 ppm	TREO equiv
Tardiff Lake	23.63	1.50	0.15	10.44	2.09	0.32	194	1.89
West Long Lake	7.02	1.40	0.13	9.63	2.14	0.27	185	1.77
TOTAL	30.64	1.48	0.15	10.26	2.10	0.31	192	1.86
INFERRED								
Tardiff Lake	28.66	1.34	0.12	9.19	1.96	0.32	175	1.71
Thor Lake	81.66	1.24	0.12	9.72	2.54	0.36	206	1.65
West Long Lake	5.67	1.34	0.12	9.44	1.95	0.26	170	1.68
TOTAL	115.98	1.27	0.12	9.57	2.37	0.34	196	1.67
TOTAL COMBINED INDICATED								
Upper and Basal	88.13	1.53	0.26	17.08	2.68	0.37	325	1.96
TOTAL COMBINED INFERRED								
Upper and Basal	223.57	1.31	0.19	14.10	2.59	0.36	272	1.72

Notes:

1. CIM definitions were followed for Mineral Resources.
2. HREO (Heavy Rare Earth Oxides) is the total concentration of: Y₂O₃, Eu₂O₃, Gd₂O₃, Tb₂O₃, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃ and Lu₂O₃.
3. TREO (Total Rare Earth Oxides) is HREO plus: La₂O₃, Ce₂O₃, Pr₆O₁₁, Nd₂O₃ and Sm₂O₃.
4. Mineral Resources are estimated using price forecasts for 2014 for rare earth oxides prepared early in 2010. Some of these prices are higher and some are lower than current prices. The prices used are the same as in the June 14, 2010 disclosure.
5. Mineral Resources are undiluted.
6. A cut-off NMR grade of \$260 Can was used for the base case. NMR is defined as "Net Metal Return" or the *in situ* value of all the payable rare metals in the ore net of estimated metallurgical recoveries and processing costs.
7. An exchange rate of 1.11 was used.
8. ZrO₂ refers to Zirconium Oxide, Nb₂O₅ refers to Niobium Oxide, Ta₂O₅ refers to Tantalum Oxide, Ga₂O₃ refers to Gallium Oxide.
9. TREO equivalent is estimated by calculating a weighted average NMR per kg for the rare earths and rare metals (Zr, Nb, Ta) in an given interval, and re-estimating the interval assuming that all the value was in rare earths only.
10. The two main differences to previous estimates were that 8 composites were used per block, versus 15 in the estimate released in July 19th, 2010 and the Basal Zone was not flattened onto the lower contact prior to block estimation. All other parameters were similar.

The Mineral Reserve is based upon underground mining of the deposit (Table 4.4-3). The Mineral Reserves were all converted from Mineral Resources and no Inferred Mineral Resources were converted to Mineral Reserves. Where Inferred Mineral Resources are included within the stope boundaries of the mine plan the material has been treated as dilution.

TABLE 4-4-3: MINERAL RESERVES – THOR LAKE PROJECT

	Tonnes (millions)	% TREO	% HREO	% ZrO₂	% Nb₂O₅	% Ta₂O₅
Probable Reserves Basal Zone	12.01	1.70	0.38	3.16	0.41	0.041
Total Probable Reserves	12.01	1.70	0.38	3.16	0.41	0.041

Notes:

1. CIM definitions were followed for Mineral Reserves.
2. Mineral Reserves are estimated using price forecasts for 2014 for rare earth oxides (US\$21.94/kg average), zirconium oxide (US\$3.77/kg), tantalum oxide (US\$130/kg) and niobium oxide (US\$45/kg), which are significantly above current prices.
3. HREO grade comprises Y₂O₃, Eu₂O₃, Gd₂O₃, Tb₂O₃, Dy₂O₃, Ho₂O₃, Er₂O₃, Tm₂O₃, Yb₂O₃, and Lu₂O₃. TREO grade comprises all HREO and La₂O₃, Ce₂O₃, Nd₂O₃, Pr₂O₃, and Sm₂O₃.
4. An exchange rate of C\$1.11/US\$1 was used.
5. Mineral Reserves are estimated using a Net Metal Return (NMR) cut-off value of C\$260/t.
6. A minimum mining width of five metres was used.
7. Totals may differ from weighted sum of numbers due to rounding.

4.5 PROJECT COMPONENTS

4.5.1 Sites

As previously indicated in Section 1.0, the proposed Thor Lake Project has two site locations, the Nechalacho Mine and Flotation Plant site, and the Hydrometallurgical Plant site. The proposed Nechalacho Mine and Flotation Plant site will be located approximately 100 km south of Yellowknife and about 5 km north of the Hearne Channel of Great Slave Lake. The Project footprint at this site will encompass approximately 173 ha.

The proposed Hydrometallurgical Plant site will be located at the existing brownfields site of the former Pine Point Mine 85 km east of Hay River, near the south shore of Great Slave Lake. The Project footprint at this site will encompass approximately 62 ha.

REEs will be mined underground and concentrated at the Nechalacho Mine and Flotation Plant site. The resulting REE concentrates will be barged across the east end of Great Slave Lake to the Hydrometallurgical Plant site. Upon arrival, the concentrate will be transported from the south shore of Great Slave Lake to the Hydrometallurgical Plant site via a haul road. The concentrate will be further processed at the Hydrometallurgical Plant. The resulting final products will be hauled to the Hay River railhead via truck, and direct shipped to downstream customers.

4.5.2 Components

4.5.2.1 Nechalacho Mine Site

The primary components of the Nechalacho Mine and Flotation Plant site include an underground mine, flotation plant, water supply, tailings management facility, camp, power supply, concentrate storage and loading, access road, airstrip, fuel storage and seasonal dock facility. The preliminary general arrangement (GA) for the Nechalacho Mine and Flotation Plant site is depicted in Figure 4.5-1. These components are discussed in brief below and in greater detail in subsequent applicable sections.

Mine

Underground mining will consist of decline ramp access (15% ramp grade) to the ore zone located at approximately 200 m depth. Primary, secondary and tertiary crushing will be completed underground and crushed ore and waste rock will be conveyed to the surface.

Flotation Plant

The process to produce the REE concentrate will involve conventional grinding and flotation techniques. Processing facilities will include a Flotation Plant that will produce a high grade concentrate that will be barged off-site to the proposed Hydrometallurgical Plant site for secondary processing.

Water Supply

The proposed fresh and process water supply source is Thor Lake.

Tailings Management Facility

The tailings management facility will be located up slope from the Flotation Plant and northeast of Thor Lake in the local catchment of Ring and Buck lakes. The tailings will be discharged to a number of locations around the tailings management facility to develop a relatively flat tailings beach and centralized supernatant pond to maximize tailings storage efficiency. Construction of the tailings management facility will occur in two phases over a period of three years. Excess water from the tailings management area will be discharged in compliance with Water License and federal discharge criteria into Thor Lake.

Camp

A 150 person camp to house the employees and staff will be constructed adjacent to the Flotation Plant and in close proximity to the airstrip.

Power Supply

All site power is currently planned to be generated by a diesel powered generation facility at the site. The power plant will consist of modular diesel generators capable of producing 1.4 MW per unit. The power requirements during operations will average 8.4 MW demand at the planned 2,000 tpd mining rate. Standby diesel generators will be installed to allow for maintenance and as a secondary power source for any safety related components.

Concentrate Storage and Loading

Approximately 360 tonnes per day (tpd) of concentrate will be produced from the Flotation Plant during the life of the Project. The concentrate will be loaded directly from the Plant into half-height intermodal containers. The containers will have 40 tonne load capacities, external dimensions of 6.1 m long (20') by 2.4 m wide (8') by 1.3 m high (4'3"), end doors and removable tops for ease of loading and unloading, and be capable of being stacked up to 4 containers high. Once loaded, the containers will be removed from the Plant and transported to the dock either for shipment to the Hydrometallurgical Plant or for winter storage in a designated stacking area located near the seasonal dock facility.

Access Road

The existing 5 km access road that extends from the proposed Flotation Plant site to the current seasonal dock site will be upgraded for the safe transport of concentrate and supplies.

Airstrip

The current airstrip (constructed during the summer of 2010) is located northwest of the proposed Flotation Plant and west of Thor Lake (Figure 4.5-1). The airstrip will be upgraded and extended to a total length of approximately 1,000 m. The upgraded airstrip will accommodate Dash 8 and Buffalo aircraft and facilitate the safe transport of employees and supplies.

Fuel Storage

Diesel fuel will be transported from the south side of Great Slave Lake to the barge dock at the Nechalacho Mine and Flotation Plant site. The barging contractor (tentatively Northern Transportation Company Limited) (NTCL) is equipped to load and transfer fuel at its Hay River base and has barges with the capacity to haul 1 M litres per barge. Upon arrival, fuel will be offloaded to an upland receiving fuel storage facility to be located adjacent to the seasonal dock at Great Slave Lake. It will then be transferred by tanker truck to the main storage facility to be located adjacent to the Flotation Plant near the diesel generators (Figure 4.5-1).

Seasonal Dock Facility

A seasonal dock facility comprised of a single low keel barge connected to shore for the open water period and an adjacent yard will be used for concentrate storage and shipment to the Hydrometallurgical Plant site. It will also be used to receive and handle the annual resupply of mine consumables including fuel. The Great Slave Lake barging season typically lasts 120 days each year. During the life of operations, barge loading activities will occur over a 60 day period during the summer allowing for an additional 60 days within the overall 120-day barging season for any delays due to weather or mechanical issues.

4.5.2.2 Hydrometallurgical Plant Site

The primary components of the Hydrometallurgical Plant site include a Hydrometallurgical Plant, water supply, hydrometallurgical tailings facility, concentrate storage and loading,

power supply, limestone storage, haul road, seasonal dock facility and product transportation to the railhead. The preliminary GA for the Hydrometallurgical Plant site is depicted in Figure 4.5-2. These components are discussed in brief below and in greater detail in subsequent applicable sections.

Hydrometallurgical Plant

The proposed Hydrometallurgical Plant will further process the REE concentrates from the Nechalacho Mine and Flotation Plant. The process will include a thaw shed and dump system, sulphuric acid plant, acid baking, water washing, filtration, bulk concentrate loadout, neutralization, product drying and mixed light rare earth packaging facilities to produce direct ship products to Avalon's separation plant.

Water Supply

Potable and process water will be obtained from an existing nearby open pit lake known as T-37N (Figure 4.5-2) and treated on-site as necessary for its intended uses.

Hydrometallurgical Tailings Facility

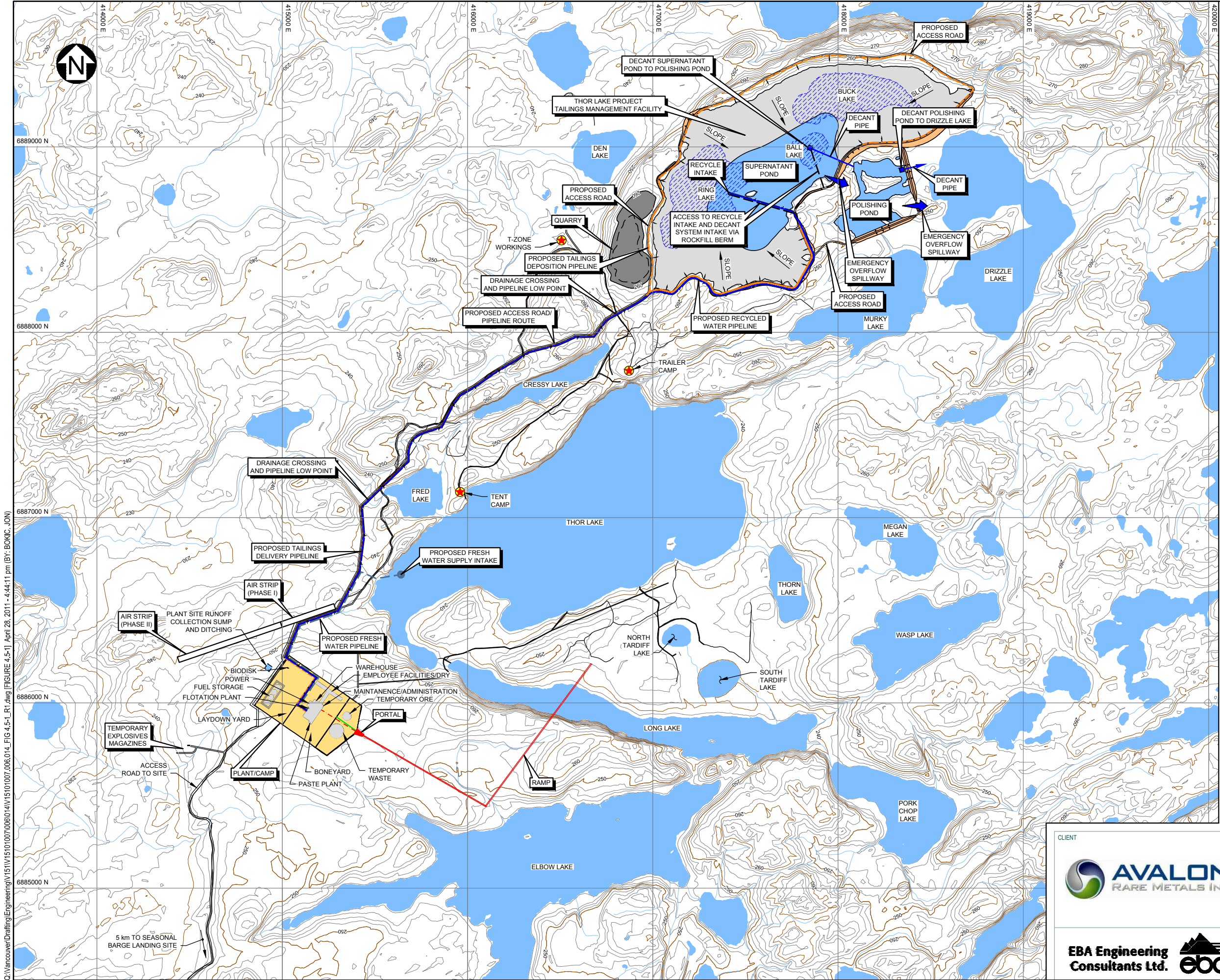
The proposed hydrometallurgical tailings facility will be an engineered facility located 2.5 kilometres south of the proposed plant in an existing historic open pit (L-37) which remains from the historic Pine Point Mines operation (Figure 4.5-2). Using this location presents significant environmental and operational benefits for the overall Project. Any water decanted from the tailings facility will be discharged in compliance with MVLWB Water License discharge criteria into an adjacent existing historic open pit (N-42) which is located 1.5 kilometres southwest of the L-37 pit.

Concentrate Storage and Loading

Upon arrival at the Hydrometallurgical Plant, the concentrate storage containers will be unloaded from the trucks and placed into a secure storage area. As required, the containers will be moved into a heated thaw shed. Once in the thaw shed, the concentrate will be removed from the containers. The containers will be cleaned prior to shipment back to the Nechalacho Mine.

Power Supply

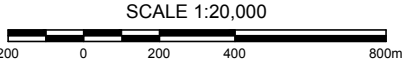
Average power consumption for the Hydrometallurgical Plant during start-up and throughout the life of operations is estimated at 3.5 MW demand. This power will be provided through the existing Northwest Territories Hydro Corporation (NTHC) power grid and substation located at the former Pine Point Mine site. Additional backup diesel generation of 1.3 MW will be available for any unscheduled outages and for safety control systems only.



LEGEND:

- WATER
- TAILINGS
- EXISTING LAKE FOOTPRINT
- EMBANKMENT
- PLANT/CAMP
- EXISTING ACCESS ROAD
- PROPOSED ROAD
- RAMP
- PROPOSED CAUSEWAY
- PROPOSED TAILINGS DELIVERY PIPELINE
- PROPOSED TAILINGS DEPOSITION PIPELINE
- PROPOSED RECYCLE WATER PIPELINE
- PROPOSED FRESH WATER PIPELINE
- PROPOSED POWERLINE
- DISCHARGE

- NOTES:**
- COORDINATE GRID IS UTM (NAD83) ZONE 12N AND IS IN METRES.
 - CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 2 METRES.
 - TAILINGS MANAGEMENT FACILITY FINAL LAYOUT (YEAR 20) DETERMINED FROM WATER/SOLIDS BALANCE ANALYSIS (MEMO NB11-00100).
 - FIGURE SOURCE IS KNIGHT PIESOLD CONSULTING REF. NB11-00138 FIGURE 1 DATED MARCH 10, 2011.



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CLIENT		THOR LAKE PROJECT			
AVALON RARE METALS INC.		Feasibility Site Layout Summary Nechalacho Mine Site General Arrangement			
PROJECT NO. V15101007.006.014	DWN JAB	CKD RH	REV 1	Figure 4.5-1	
OFFICE VANC	DATE April 28, 2011				
EBA Engineering Consultants Ltd.		ebs			

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NOTES

1. Coordinate grid is UTM (NAD83) Zone 11N.
2. Image provided by Avalon Metals Inc.
3. Figure Source: Knight Piesold Consulting, March 2011 (Ref No. NB11-00024, Figure 2).

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THOR LAKE PROJECT

Feasibility Water/Solids Balance General Hydrometallurgical Site Layout

PROJECT NO. V15101007.006	DWN SL	CKD RH	REV 0
OFFICE EBA-VANC	DATE March 21, 2011		

Figure 4.5-2

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Limestone Storage

The limestone used to neutralize the Hydrometallurgical Plant's waste stream prior to discharge to the tailings management facility will be obtained from local supply sources and stockpiled in a designated area that is in close proximity to the Hydrometallurgical Plant. Because the limestone is a neutralizing product, no special stockpile considerations will be necessary.

Haul Road

An existing access road remaining from historical mine activities will be upgraded to safely transport the concentrate offloaded from barges on the south shore of Great Slave Lake to the Hydrometallurgical Plant located at the former Pine Point Mine site. The haul road will be approximately 8.6 km long. It will be aligned directly north-south along an existing access road and drainage ditch for approximately 4.9 km prior to connecting to an existing haul road from a former mine pit located north of the main Pine Point Mine area.

Dock Facility

A seasonal dock facility consisting of two low keel barges connected together to create a temporary floating dock and a marshalling yard will be installed on the south shore of Great Slave Lake approximately 8.6 km from the Hydrometallurgical Plant. The seasonal dock facility will permit the berthing and offloading of Thor Lake REE concentrates onto flatbed trucks for transportation to the Hydrometallurgical Plant. This facility will also be used for the annual shipment of major mining consumables, including fuel, to the Nechalacho Mine site.

Product Transportation to Railhead

The Hydrometallurgical Plant will produce approximately 418 tpd of acid-baked concentrate and light rare earth products. The acid-baked concentrate to be trucked to Hay River makes up 330 tpd while the light rare earth produced is 88 tpd. Both acid-baked concentrate and light rare earth products will be dried to approximately 10-12% moisture content and prepared for shipment to Avalon's separation plant.

Acid-baked concentrate will be dried and loaded into 20 tonne trucks and pup trailers with covers for direct shipment to the railhead facilities operated by CN rail. The final light rare earth products will be in 22 tonne intermodal containers to ensure that product is not lost during the handling and/or transportation process. The containers will be hauled 85 km from the Hydrometallurgical Plant to the Hay River railhead on flatbed trucks. Truck shipments are expected to occur daily during one twelve hour shift. The concentrates and rare earth products will be direct-shipped south from the railhead to Avalon's separation facility.

4.6 PROJECT SCHEDULE

The Thor Lake Project schedule is anticipated to include three years of regulatory review and approvals processes, 18-30 months of construction, 20 years of operation, and three years of closure and reclamation activities (Table 4.6-1):

- Regulatory Review and Approvals Processes: Quarter 2, 2010 – Quarter 1, 2013;
- Construction at Thor Lake: Quarter 2, 2013 - Quarter 4, 2014;
- Construction at Hydrometallurgical Plant: Quarter 3, 2013 – Quarter 3, 2015
- Operations at Thor Lake: Quarter 4, 2014;
- Operations at Hydrometallurgical Plant: Quarter 4, 2015; and
- Closure and Reclamation: Quarter 4, 2033 – Quarter 4, 2036.

TABLE 4.6-1: THOR LAKE PROJECT SCHEDULE

Activity	Years (2010 – 2032)																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Regulatory Review and Approvals																											
Nechalacho Site Construction																											
Hydrometallurgical Construction																											
Nechalacho Site Operations																											
Hydrometallurgical Operations																											
Closure and Reclamation																											

4.7 NECHALACHO MINE AND FLOTATION PLANT SITE

4.7.1 Site Preparation and Construction

The proposed Nechalacho Mine and Flotation Plant will mine and concentrate REEs from Avalon's Thor Lake Property. The site has been the subject of drilling and exploration activities since the 1930's. Current infrastructure at the proposed Nechalacho Mine and Flotation Plant site includes an access road to an existing barge landing site at Hearne Channel, an exploration camp, a 300 metre gravel airstrip, a rock quarry, and several storage buildings.

Preparation and construction for the Project will include:

- Upgrading existing site access roads from the Flotation Plant to the Mine's portal, ventilation raise and mine air heater;
- Upgrading and construction of access roads to the tailings management facility, water reclaim area, air strip, and dock facility at Great Slave Lake;
- Extending the existing airstrip located northwest of the Flotation Plant and west of Thor Lake;

- Developing a rock quarry to supply necessary construction materials during the construction and operations phases;
- Upgrading the existing barge landing site to handle the logistical requirements of the Project; and
- Utilizing a combination of steel, stick built and prefabricated structures for the surface facilities.

4.7.2 Mine

4.7.2.1 Plan and Operation

Access

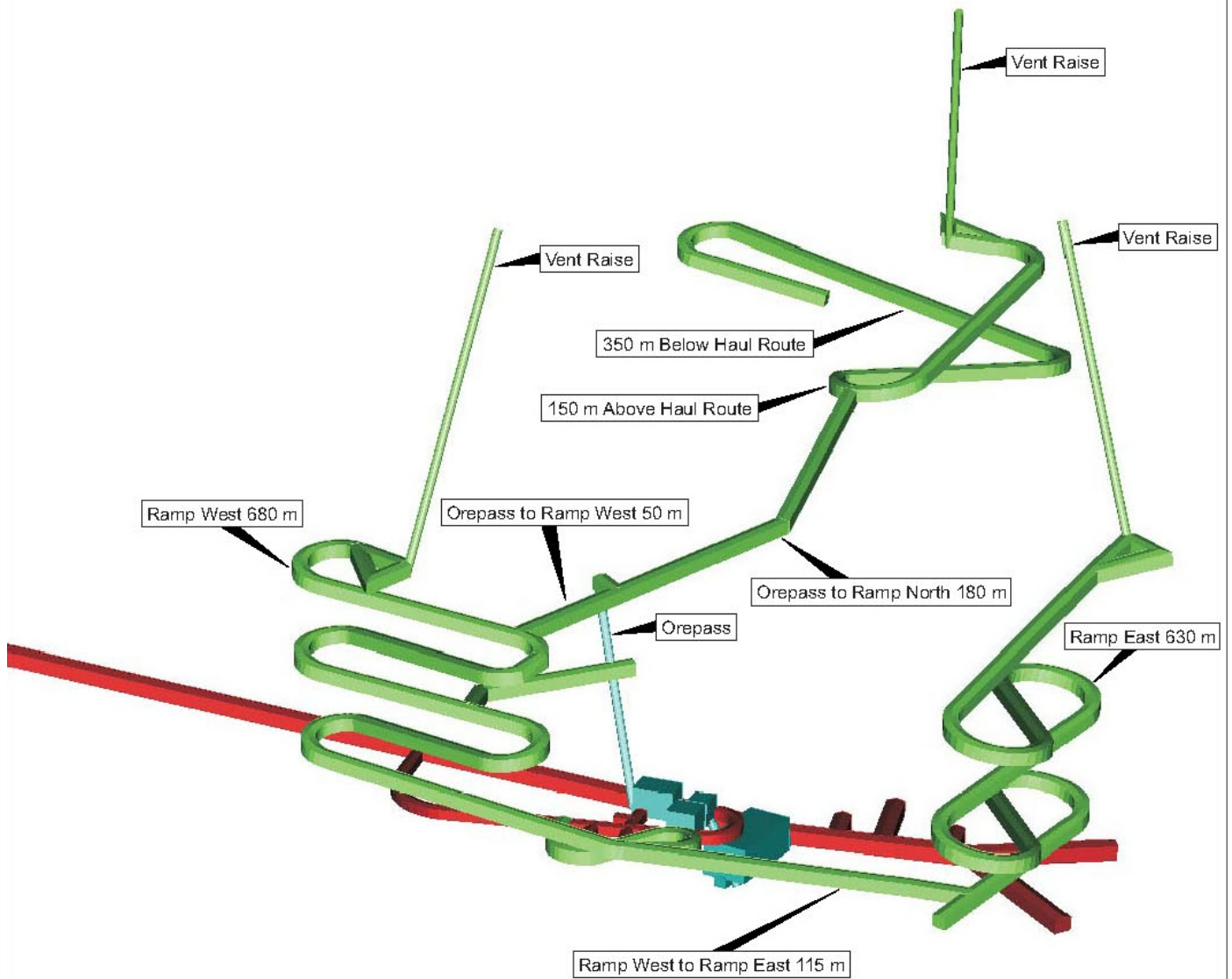
The majority of the Nechalacho deposit's Mineral Resources are located directly beneath and to the north of Long Lake, approximately 200 m below surface. The deposit will be accessed via a decline ramp collared to the southwest of Long Lake. The main access decline ramp will be driven from a location near the Flotation Plant at a grade of -15% and will be approximately 1,600 m in length. The development decline ramp and stope access headings will be driven as 5 m by 6 m headings and decline ramp grades will be approximately 15%.

Mining Method

The Nechalacho Mine plan will utilize underground methods to access the higher grade resources at the base of the deposit and to minimize surface disturbance. Ground conditions have been studied and identified as being very competent. In light of the high value of the resources in the Basal Zone, the use of backfill is planned beginning in year five of operations.

Mining will be conducted with a first pass of primary stopes, followed by pillar extraction after the primary stopes have been backfilled. The primary stopes are expected to be stable at widths of up to 15 metres. Only primary stopes will be mined in the first 4 years in a retreat type fashion with stope lengths up to 50-75 m long. Due to the expanse of the basal zone, and the ability to leave solid rock support pillars, backfill will not be required until year 5 of operations.

Access to the stopes will be through a single access ramp located outside the Indicated Resource in the Basal Zone. The location of the ramp is shown in Figure 4.7-1. The access ramp would connect to a centrally located ore pass and two ventilation raises to surface. Mining will be carried out with rubber-tired mechanized equipment to provide maximum flexibility. The modeled Mine design is shown in Figure 4.7-2.



NOTES

1. Figure Source: Figure 5-3. Scott Wilson RPA 2010.

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THOR LAKE PROJECT

Mine Development Schematic

PROJECT NO.
V15101007.006

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SL

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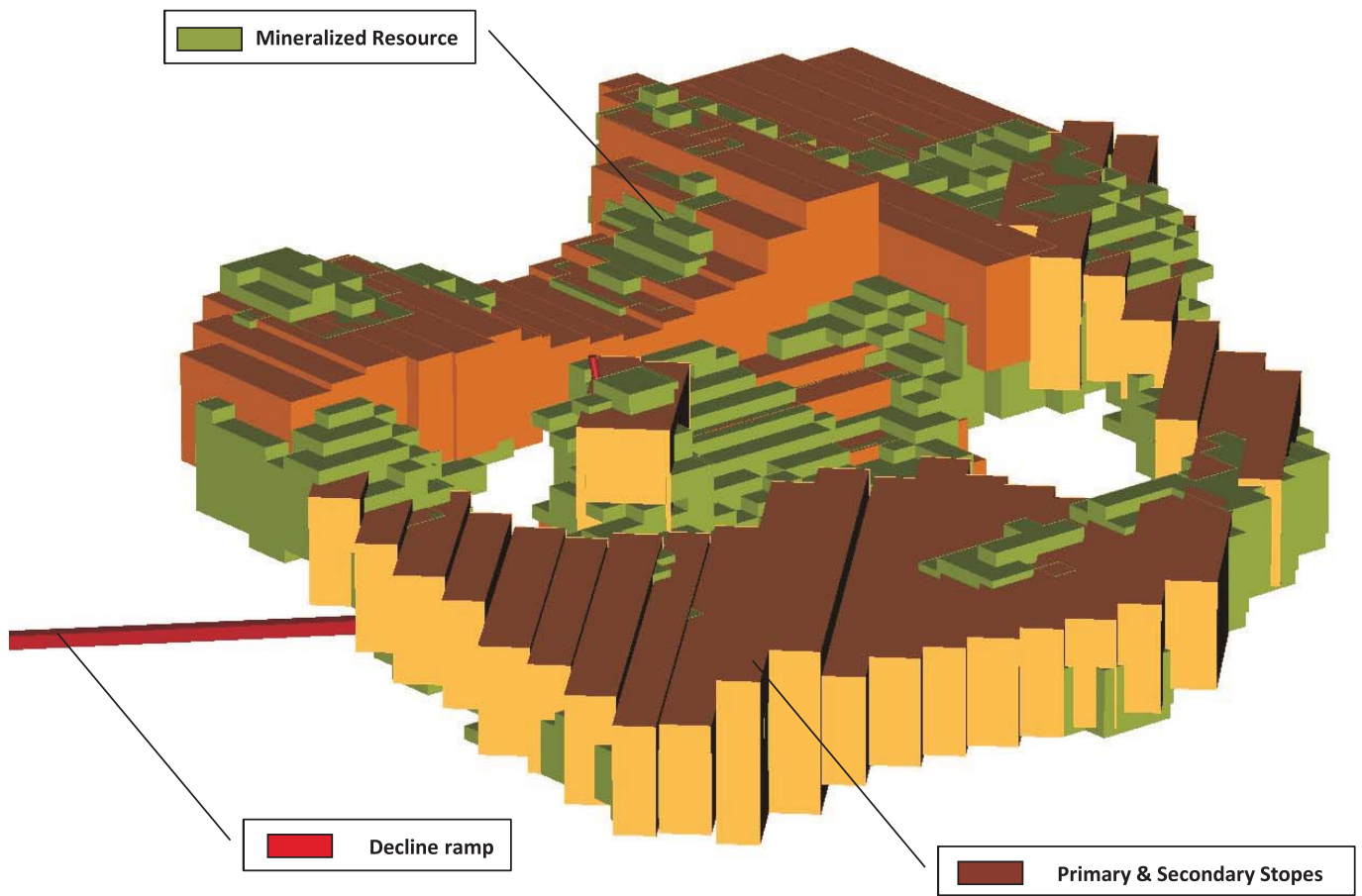
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DATE
May 9, 2011

Figure 4.7-1

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THOR LAKE PROJECT

Nechalacho Mine Block Model

PROJECT NO.
V15101007.006

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March 14, 2011

Figure 4.7-2

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Transport of Ore and Waste

During development, waste and ore materials will be hauled to the surface using underground haul trucks and segregated in a temporary storage area. Once the underground crusher and conveyor are in place, broken rock will be hauled and deposited in an ore pass leading to the underground crushing chamber. The underground crushing circuit will include primary, secondary and tertiary crushing as well as screening. From the crushing plant, the -15 mm fine ore will be stored in a 1,000 tonne fine ore bin excavated in the rock. The ore will be conveyed from the fine ore bin to the Flotation Plant along the main decline access. During operations, waste from ongoing development activities will be diverted to mined stopes for use as fill, combined with planned paste backfill.

Temporary Waste and Ore Stockpiles

Decline ramp development activities will generate approximately 400,000 tonnes of waste, plus low grade and ore grade material. This material will be hauled to the surface and segregated in a temporary storage area (see Figure 4.5-1). Over 375,000 tonnes of waste rock will be used for surface construction activities, specifically for dam building for the tailings management facility, extension of the existing airstrip and road upgrading. The minimal amount of ore produced from development will be temporarily stockpiled on the surface and utilized for the flotation plant feed during start-up operations.

During operations, ore will be stockpiled underground in a 500 tonne ore bin prior to crushing.

Paste Backfill

Paste backfill will be utilized to maximize the extraction recoveries of the higher grade resources in the Basal Zone. It will be distributed via a pipeline installed in the main decline ramp. The paste fill pipeline's location in the main decline ramp will be advantageous because it will be exhaust ventilated, in a warm environment and more accessible for maintenance.

The paste plant will be installed as a component of the Flotation Plant, and will operate as part of the mill operations. The plant will be constructed in year 5 of operations. Once commissioned, it will operate on a continuous basis to progressively fill the voids created by the mined primary stopes and to allow full extraction of secondary stopes. Use of the paste plant will also reduce the mass of tailings directed to the tailings management facility on surface.

Avalon intends to utilize a deep cone thickener during normal operations to increase the amount of reclaim water for processing. This will allow less water to report to the tailings management facility. Because of this, infrastructure required for the pastefill plant is limited to the addition of a pug mill and two silos for cement and fly ash additions.

Mine Services/Supplies

Mine services/supplies include ventilation and mine air heating, compressed air, electric power, communications, water supply, water discharge, explosives, warning system, primary and secondary escapeways and refuge stations.

Ventilation and Mine Air Heating. The Mine ventilation is planned to consist of a fresh air fan atop the fresh air intake raise located to the northeast of the ore body. The intake system will include the Mine air fans and direct fired propane air heaters. The intake raise will also serve as a secondary escapeway equipped with a staggered ladder system with platforms for emergency and maintenance services. For proper ventilation, the raise will be 2.4 metres (8 ft) in diameter. This will accommodate a variable pitch axial vane fan with an output capacity of 300,000 cubic feet per minute.

Ventilating curtains, seals and airlocks will be used throughout the mine to divert air to all active working locations. Booster fans will be located in key locations to help divert fresh air to the main working locations. A designated responsible employee will be assigned to monitor the air quality at each working location, during each shift, on a daily basis and maintain records of the air quality monitoring information.

Compressed Air. Compressed air will be fed to the underground operations from a bank of primary compressors located inside the Flotation Plant building. Mining equipment will receive constant feed via 150 mm schedule 40 steel pipe that will be hung along the rib of the decline ramp and placed near each working heading.

Electric Power. Electrical power will be generated at the diesel power station located at the site. The power will be generated and distributed throughout the site at 4,160 V and reduced to 600 V. The feed to the underground workings will be by 4,160 V power cables installed in the decline ramp feeding load centers with 4,160:600 V transformers. When the ventilation raise is in place, an additional line may be installed in the raise to provide a loop for power distribution.

Communications. Mine communications will consist of telephone service to the main Mine switchboard, as well as, radio communications through a leaky feeder system. The communications system will also be used for monitoring and control of production equipment, ventilation systems, dewater and backfill.

Water Supply. Water will be required for all drilling activities in the Mine. Supply water will be taken from the fresh water feed from Thor Lake and piped along the decline ramp to the active working faces.

Water Discharge. The Mine is expected to be relatively dry and ground water inflows are anticipated to be in the range of 11 to 36 m³/h (Knight Piésold 2011e). All excess water underground will be collected in a main sump near the bottom of the main ramp and pumped to the surface through a steel line along the ramp. Water will either be mixed with the tailings thickener as mill recycle water or discharged to the tailings management facility.

Powder Magazine. Explosives will be stored on the surface in accordance with federal explosives storage guidelines in a temporary explosives and detonator magazine during construction. Avalon will be utilizing ammonium nitrate-fuel oil (ANFO) and detonators which will be stored in separate approved explosives magazines underground to eliminate the need for daily transport of explosives material from the surface and to reduce handling time. Two short drifts will be excavated near the south end and bottom of the main development decline. The explosives storage drifts will be located on the exhaust side of the mine. Both storage drifts will be gated and locked with access keys given only to designated responsible employees. The two drifts will be separated by at least 4.5 metres (15 ft) of consolidated rock. One drift will be used for the safe storage of ANFO and Emulsion and the second drift will be utilized for all Detonators. Only properly trained and certified employees or contractors will be permitted to handle explosives.

Mine Warning System. The Nechalacho Mine will develop and maintain an emergency warning system to warn all surface and underground employees of any potential emergency that requires immediate worksite evacuation. The underground operations will have a stench warning system located at the fresh air intake. Both the underground Mine and surface Plant will have a siren and flashing beacon system.

Primary and Secondary Escapeways. Avalon will ensure that a safe means of access will be provided and maintained to all working places. Primary and secondary escape routes will be clearly marked and posted in all lunch rooms, refuge stations and primary working areas. The primary escape route will follow the course of fresh air and be directed to the ventilation shaft. The secondary escapeway will direct employees out of the Mine through the main access ramp.

All escape routes will be inspected on a regular interval and maintained in a safe, travelable condition. Both the primary and secondary escape-ways will be marked with conspicuous and easily read direction signs that clearly indicate the ways of escape. Prior to entering the mine, all personnel will be trained and oriented to the proper method of escape from the mine.

Refuge Stations. Refuge stations will be installed near the most active work places that can be accessed within 15 minutes. Refuge stations will meet all requirements as outlined in the NWT Mine Health and Safety Act and Regulations.

Maintenance Bay. An underground mobile equipment maintenance bay will be located on the exhaust side of the mine near the main decline ramp. This location will allow uniform accessibility to and from all mobile equipment. Maintenance activities will include scheduled preventative and predictive maintenance, troubleshooting and short term repairs. Most consumable parts will be kept in the warehouse on surface with a small rotating supply underground.

Fuel and Lubrication Bay. A fuel and lubrication bay will be located near the proposed maintenance bay to allow for quick and easy preventative maintenance and a uniform accessibility for all mobile equipment. It is anticipated that fuel will be transported through an enclosed piping system from the surface to an underground storage tank sized for a week

of production usage. The lubrication supplies will be supplied in bulk totes and transported underground via the main decline ramp.

Crushing and Loading. Loading from the stopes will employ diesel power self-propelled mobile underground mining equipment (Load-Haul-Dump vehicles - LHD's) sized to provide a consistent feed to the crushing station of 2,000 tonnes per day. Run of mine ore hauled from the working faces to the underground ore stockpile will range in size from over 700 mm (28") to less than 9 mm ($\frac{3}{8}$ "). The coarse ore will be fed directly into the primary jaw crusher located beneath the coarse ore bin. The combined undersize and crushed material will then pass through a second vibratory screen in which undersize will by-pass the secondary crusher. A final, tertiary crusher will receive the oversized material from a third vibratory screen that will allow the undersize to by-pass this crusher. The screened and crushed material will be stored in a fine ore bin where slot feeders will direct the material onto an overhead conveyor for delivery to the Flotation Plant.

Mobile Underground Mining Equipment. Self-propelled diesel and electric powered mobile underground mining equipment will be utilized throughout operations. Loading material from the working stopes to the underground crushers will be done by specialized underground mining LHDs, which are a combination of a loader and a truck. Drilling activities will be completed by diesel/hydraulic and electric/hydraulic vertical and horizontal drilling machines. Ground support will be installed as necessary using mechanical rock bolters. Personnel carriers will provide transport to and from the surface to the working locations.

4.7.2.2 Production Schedule

The mine plans to operate 365 days per year utilizing 12 hour rotating shifts. Production during the first year of mining will ramp up quickly from an average of 1,800 tonnes per day (tpd) to 2,000 tpd and will continue at 2,000 tpd for the duration of the proposed mine life.

Mine production will come from primary stopes and panels, which are planned to be developed from the stope access crosscut. Each crosscut will be four metre high by four metre wide cut and generate approximately 200 tonnes of ore. The mined stopes are envisioned to be 15 metres wide by 20 to 30 metres in height. An average of 5 metres rounds would be taken from each stope resulting in approximately 4,200 tonnes of ore. The mine production schedule has been set at 2,000 tpd due to anticipated market demand.

The production schedule was developed based on mining of the highest value ore in the early years. Feed grades at Thor Lake do not vary over a wide range, but there are higher grade areas and the zone at the bottom of the Basal Zone carries the highest grades.

The deposit is flat lying, but there are variations in elevation interpreted at the bottom of the orebody. To minimize dilution, stopes are aligned perpendicular to the main haulage access and driven slightly above the floor of the Basal Zone. Upon retreat of each stope, any high grade ore left in the floor will be breasted up and taken with each stope shot.

Material at the upper elevations from the basal zone have decreasing grades moving vertically upward from the Basal zone therefore, stopes will be designed to be completed

within the high grade intervals leaving the lower grade zones untouched. Lower grade material that is above cutoff can be accessed at a later time in the mine life via internal access ramps.

At the planned production rates, the mine is currently expected to produce higher grade ores from the Basal Zone Mineral Resources over a 20 year life. Processing

4.7.2.3 Flotation Plant

The Flotation Plant design is based on a throughput of 2,000 tpd, the specified production capacity for the current life of mine.

The Flotation Plant process will be comprised of several unit operations including underground crushing and fine ore storage, delivery of mill feed to a surface Flotation Plant incorporating rod mill/ball mill grinding, desliming, magnetic separation and regrinding to recover coarse non-magnetics, dewatering of flotation feed, rougher/cleaner flotation to recover a flotation concentrate for further processing through gravity separation including gravity tails regrind, thickening, and pressure filtration of the gravity concentrate.

The proposed Flotation Plant layout is illustrated in Figure 4.7-3 and the summary flow sheet is presented in Figure 4.7-4. The upgraded concentrate will be shipped off-site for further processing at the Hydrometallurgical Plant and tailings will be discharged to the tailings management facility.

Underground Crushing

The crushing circuit, including coarse and fine ore storage facilities, will be located underground in a purpose-built excavation area. Run of mine (ROM) ore will be fed to a 500 tonne coarse ore pocket via a grizzly fitted with a rock breaker. The 700 mm (28") rock will be fed directly to the primary jaw crusher located beneath the coarse ore bin. The discharge from the jaw crusher will be fed to a double deck screen located in a separate screening chamber. The combined undersize and crushed material will then pass through a second vibratory screen in which undersize will by-pass the secondary crusher. A final, tertiary crusher will receive the oversized material from a third vibratory screen that will allow the undersize to by-pass this crusher. The -9 mm ($\frac{3}{8}$ ") screened and crushed material will be stored in a fine ore bin where slot feeders will direct the material onto an overhead conveyor for delivery to the Flotation Plant.

The fine ore bin will discharge crushed product via slot feeders to a fine ore transport conveyor suspended from the back of the underground decline ramp. One transfer point approximately half way up the ramp has been included in the underground design. NWT mine regulations require the spraying of all muck piles after each shot therefore, ore reporting to the crushing station will be wet however, water sprays will be used at key points in the crushing station to dampen any dust that may form. Runoff water collected from dust control efforts will be diverted to the main mine sump for eventual reporting to the tailings management facility.