# Environmental Assessment Registration

Scully Mine Reactivation

Wabush, NL

Prepared for:

**Government of Newfoundland & Labrador**
**Department of Municipal Affairs and Environment**
P.O. Box 8700
St. John's, NL, Canada
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Prepared by:

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September 28, 2017

TACORA RESOURCES

www.tacoraresources.com

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# 1.0 Executive Summary

TACORA Resources Inc. (hereinafter “TACORA”) proposes to reactivate the Scully Mine and Mill located in Labrador West, Newfoundland and Labrador, for a minimum of 15 years at an expected annual production rate of 6.25 million metric tonnes once fully operational. TACORA is presenting this Environmental Assessment Registration in accordance with the Newfoundland and Labrador *Newfoundland and Labrador Environmental Protection Act* (NL EPA, Part 10).

The Scully Mine is an existing iron ore mine, having operated in the same location for over 50 years. Operations were curtailed in early 2014 and the idled mine facilities entered the Companies' Creditors Arrangement Act (CCAA) process in 2015. TACORA purchased the mine assets in July 2018. This Project is the reactivation and continued operations of the existing facility.

# 2.0 Introduction

An overview of the proponent and the Scully Mine Reactivation is presented below.

## 2.1 PROPONENT INFORMATION

### 2.1.1 Corporate Entity

TACORA Resources Inc.
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### 2.1.2 Chief Executive Officer

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### 2.1.3 Project Address

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## 2.2 THE UNDERTAKING

### 2.2.1 Name of Project

*Scully Mine Reactivation*

The Scully Mine is located in Wabush, Newfoundland and Labrador. The development of Wabush Mines began in 1957. The mine was initially developed by Pickands Mather & Co. and then operated by Cliffs Natural Resources (Cliffs) from 1965 to 2014. Operations at this mine ceased in February 2014 due to economic factors and financial performance. For most of 2014, the site was preserved in a "warm idle" state while the company reviewed strategic options. On October 30, 2014, Cliffs informed the Department of Natural Resources of the company's plans to close Wabush Mines.

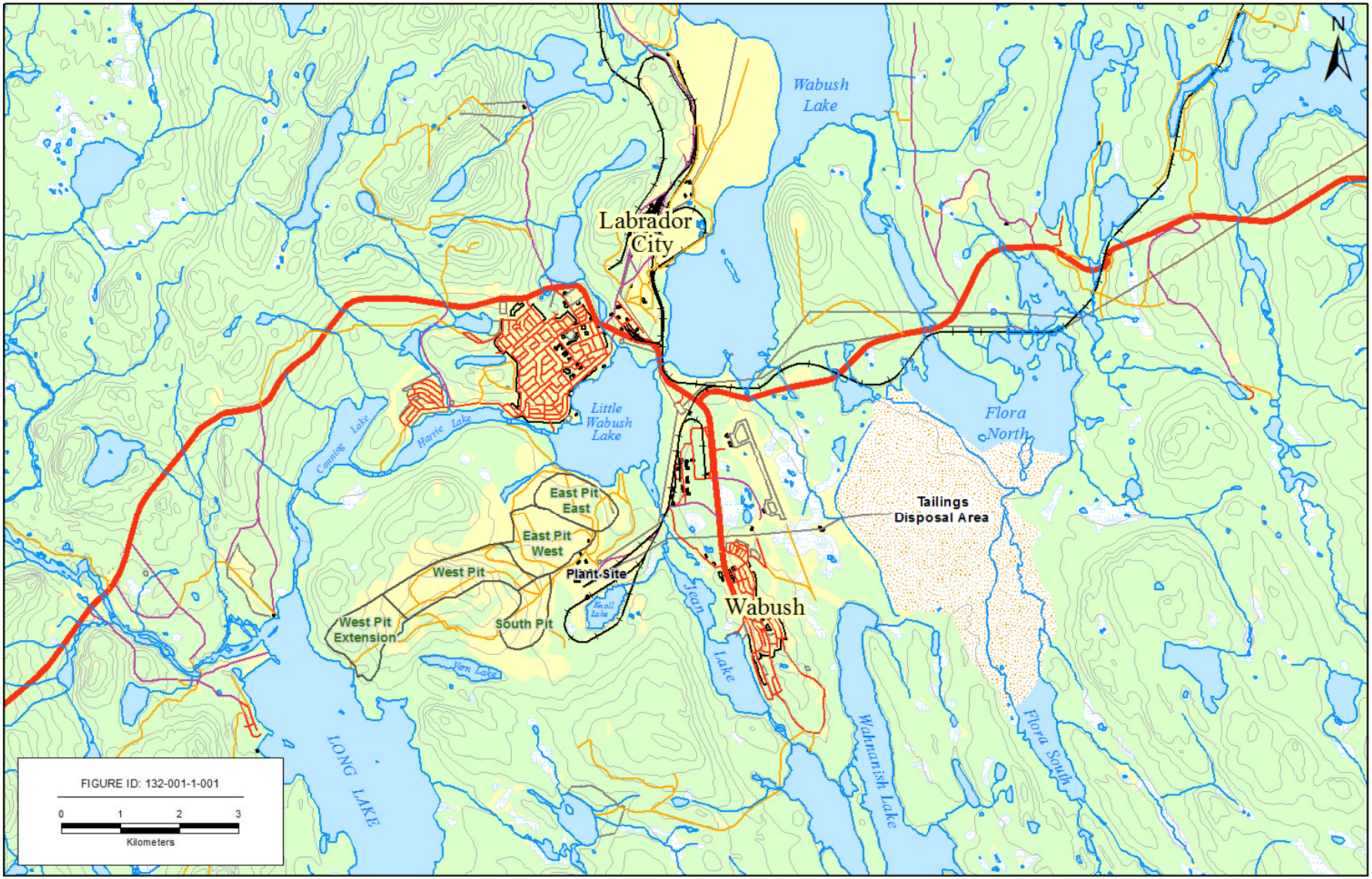
Subsequent to announcing the mine closure, Cliffs announced the operation was entering protection under the CCAA process and concurrently began marketing the mine for sale. From the fall of 2014 through early summer of 2017, the mine was maintained as a closed facility while efforts continued to market the facility for sale. During this time, facility staff continued the required environmental monitoring and reporting to various provincial and federal regulatory authorities. Some amount of tailings basin revegetation and other work occurred as specified in the mine's approved Rehabilitation and Closure Plan.

Tacora Resources Inc. (TACORA) purchased the mine and certain other assets via the CCAA process on July 18, 2017. In conjunction with this purchase, TACORA has worked diligently with many Provincial and Federal agencies to obtain or transfer the applicable government permits and other regulatory approvals necessary to reactivate the Scully mine. One outcome of this regulatory process was a determination from the Newfound & Labrador Department of Municipal Affairs and Environment (DMAE) that the Scully Mine Reactivation (the Project) is required to be registered for Environmental Assessment (EA) under Part X of the *Environmental Protection Act*. This *Environmental Assessment Registration* has been prepared in relation to the proposed Project by TACORA with assistance from Sikumiut Environmental Management Ltd. (SEM).

### 2.2.2 Nature of and Rationale for the Undertaking

Wabush Mines is a conventional open pit mining operation located in the southwest corner of Labrador approximately three kilometres from the Town of Wabush as shown in Figure 2.1. The mine pits are located west of the Town of Wabush and south of the Town of Labrador City and are accessed via the plant access road off Hwy 530. The tailings management area (Flora Lake) is situated east of the Town of Wabush. The ore deposit covers an area of approximately 23 square kilometres ($km^2$).

The Scully Mine consists of open pit mines, a concentrator and support processing facilities, waste rock and tailings management facilities and a spur railway line that connects to the

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|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 2.1** | PREPARED BY: SEM |
| | **Scully Mine Site Overview** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **22/03/2017** |

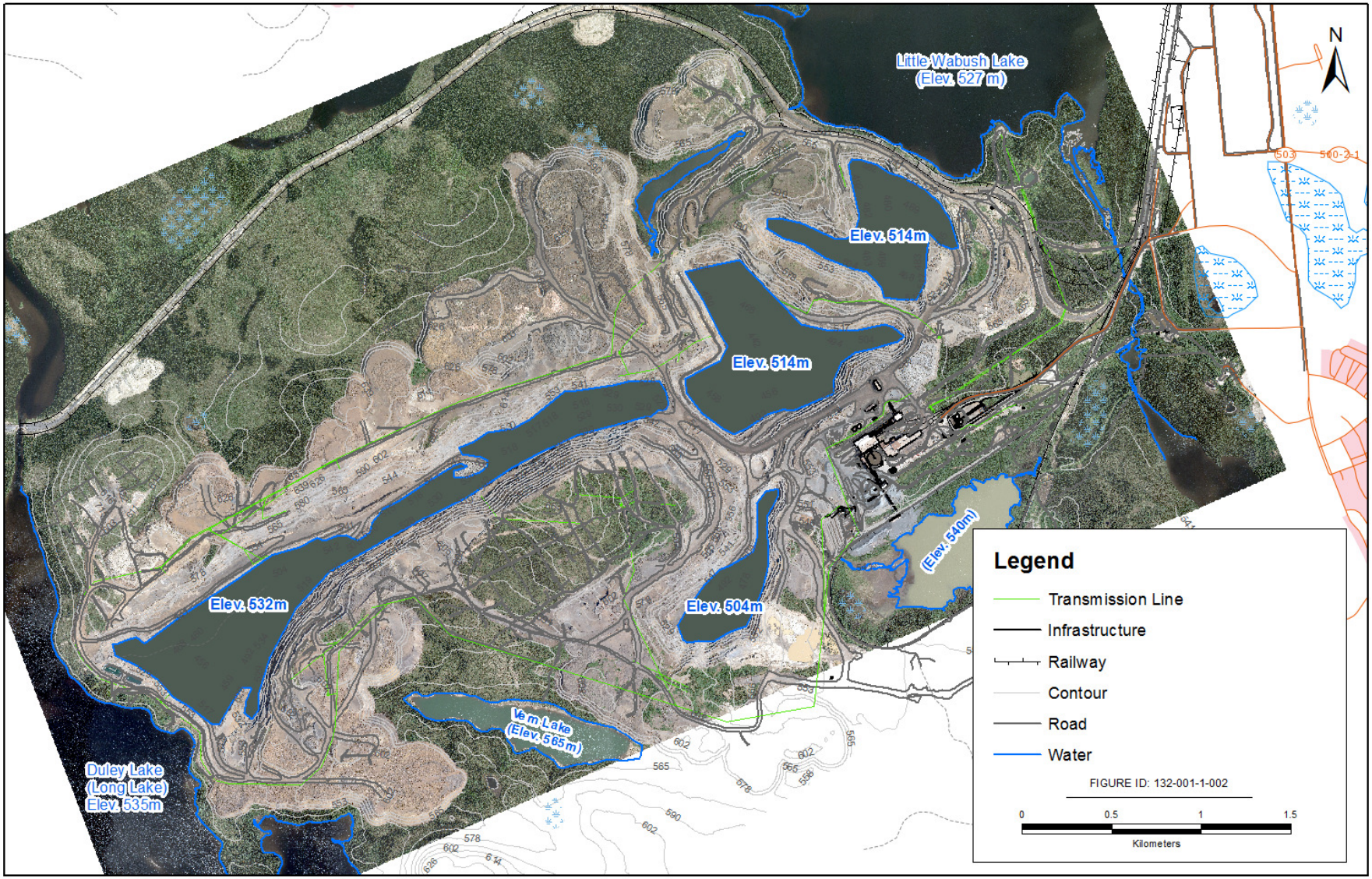
QNS&L Railway. Historically, the site had an annual production capacity of 5.6 to 6.0 million metric tonnes of iron concentrate, which was shipped on the railway to Cliffs' facilities in Pointe Noire, Quebec, and then shipped throughout North America and Europe. Approximately 500 persons were employed at its mining, processing, rail and port operations.

TACORA plans to reactivate the mine in a safe, methodical and environmentally responsible manner that follows the steps specified in the Reactivation Plan[i] submitted to the Provincial Department of Natural Resources (NR) in September 2017. The major components of the mine reactivation include:

- Open Pit Dewatering; establish dewatering rates based on current pit water quality information and existing pumping systems that ensure there is no adverse impact on receiving water bodies.
- Site Infrastructure Reactivation
- Concentrator Equipment Repair and Improvement
- Open Pit Mine Preparation
- Commence Mining and Beneficiation

Once reactivated, the Scully Mine will have annual production capacity reaching 6.25 million metric tonnes of iron concentrate by 2021. The concentrate will be shipped on the QNS&L Railway to SFP Pointe-Noire facilities in Quebec and then shipped throughout Europe and Asia. A revised mineral reserve estimate has been completed and projects mineral reserves that support mining operations for 22 years, although current tailings storage in the Tailings Management Area supports operations for an additional 16 years.

Figures 2.2 and 2.3 depict existing sites conditions for the mine site and Tailings Management Area, respectively.

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| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 2.2** | PREPARED BY: SEM |
| | **Existing Site Conditions (Mine)** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **05/09/2017** |


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| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 2.3** | PREPARED BY: SEM |
| | **Existing Site Conditions (Tailings)** | COORDINATE SYSTEM: **NAD83 UTM Zone 19** | DATE: **30/04/2017** |

## 2.3 REGULATORY CONTEXT

### 2.3.1 Environmental Assessment Process

The *Newfoundland and Labrador Environmental Protection Act* (NL EPA, Part 10) requires anyone who plans a project that could have a significant effect on the natural, social or economic environment (an "Undertaking") to present it for examination through the provincial EA process. The associated *Environmental Assessment Regulations* (Part 3) list those projects that require registration and review.

Under the NL EPA (definitions), an Undertaking "includes an enterprise, activity, **project**, structure, work or proposal and a modification, abandonment, demolition, decommissioning, rehabilitation and an extension of them that may, in the opinion of the minister, have a significant environmental effect" (emphasis added).

Following public and governmental review of this EA Registration, the Minister of Municipal Affairs and Environment will determine whether the Project may proceed, subject to any terms and conditions and other applicable legislation, or whether further assessment is required.

The *Canadian Environmental Assessment Act (CEAA 2012)* is the legislative basis for federal EA in Canada. As per Section 5 of CEAA 2012, a federal environmental assessment focuses on potential adverse environmental effects that are within federal jurisdiction, including on

- fish and fish habitat,
- other aquatic species,
- migratory birds,
- federal lands,
- effects that cross provincial or international boundaries,
- effects that impact on Aboriginal peoples, such as their use of lands and resources for traditional purposes, and
- changes to the environment that are directly linked to or necessarily incidental to any federal decisions about a project.

The Minister of the Environment may also designate a project that is not currently listed in these Regulations if there is the potential for environmental effects in areas of federal jurisdiction or public concerns about such effects. This Project is not expected to trigger federal EA.

# 3.0 Project Description

The following section provides detail on the Project including its location, main components and the various activities that will be associated with it.

## 3.1 PROJECT ALTERNATIVES

The alternative to the Project was defined in the CCAA process; implementing the decommissioning and rehabilitation plan for the Scully mine and tailings management area as outlined in Cliff's Rehabilitation and Closure Plan[ii] and further articulated in the associated EA Registration[iii].

## 3.2 GEOGRAPHIC LOCATION

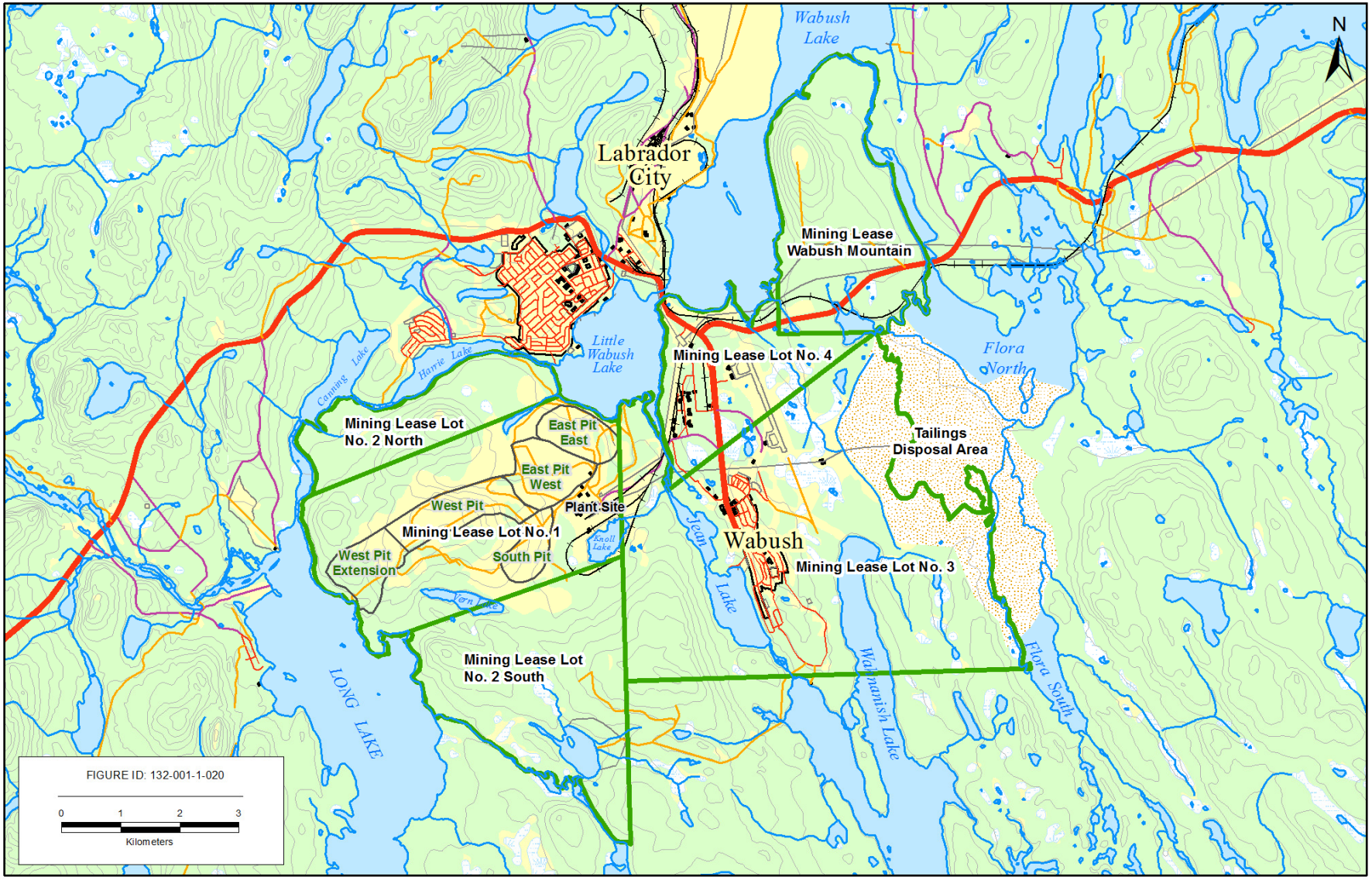
The Scully Mine is located in the southwest corner of Labrador approximately three kilometers from the town of Wabush as shown in Figure 2.1.

The mine pits are located west of the Town of Wabush and south of the Town of Labrador City and are accessed via the plant access road off Hwy 530. The tailings management area (Flora Lake) is situated east of the Town of Wabush. Figure 2.1 shows the location of the Project relative to Wabush and Labrador City.

### 3.2.1 Land Ownership

The Project area is located entirely within the boundaries of the existing mine operating site and the Project is taking place on land that is covered by mining leases as shown in Figure 3.1. Scully mine has five mine leases and one surface lease issued by the provincial Department of Natural Resources, Mines and Energy Branch and by Crown Lands. Table 3.1 lists the existing mine leases.

Surface rights are largely TACORA owned property with some exceptions. The facility site and open pits are located within the area shown on Figure 3.1 as "Mining Lease Lot No. 1", this surface is leased from the Crown along with the mineral rights. As part of the asset purchase agreement, TACORA obtained the surface rights to all of Lots 2, 3, and 4 *"excepting all portions of that real property that have been sold, conveyed, or assigned…to any third parties… registered in the Registry of Deeds for Newfoundland and Labrador"*. The previous owners had been selling real property to third parties for several years, and any unsold residential or commercial property within the municipal boundary of Wabush were explicitly excluded from the asset purchase agreement. Finally, TACORA did not acquire the surface rights to what is referred to in Figure 3.1 as "Mining Lease Wabush Mountain".

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| TACORA RESOURCES | Tacora Environmental Assessment Registration | FIGURE NO: **Figure 3.1** | PREPARED BY: SEM |
| | **Mine Lease Locations** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **5/09/2017** |

Table 3.1. Mine Site Leases

| Area Block Description | Size ha | Impost Paid By |
|---|---|---|
| Newfoundland & Labrador Corp. Ltd. Lot 1 | 1450.42 | Knoll Lake Minerals Ltd. |
| Newfoundland & Labrador Corp. Ltd. Lot 2 | 1517.77 | Knoll Lake Minerals Ltd. |
| Newfoundland & Labrador Corp. Ltd. Lot 3 | 2688.47 | Knoll Lake Minerals Ltd. |
| Newfoundland & Labrador Corp. Ltd. Lot 4 | 595.71 | Knoll Lake Minerals Ltd. |
| Newfoundland & Labrador Corp. Ltd. Wabush Mt. | 911.7 | Knoll Lake Minerals Ltd. |

### 3.2.2 Federal Lands

There are no federal lands, including national parks or Canadian forces bases, proximate to the Project area and the Project is located wholly within the province of Newfoundland and Labrador.

## 3.3 SITE HISTORY

The development of Wabush Mines began in 1957 and first iron ore concentrate production occurred in 1965. The town of Wabush was developed and owned entirely by the mining company, it was incorporated as a municipality in 1967.

The Scully Mine continued to operate under various ownership configurations until operations at this mine ceased in February 2014 due to economic factors and financial performance. During the mine's operations, employees lived in local company provided housing and over time many current or previous employees purchased their residences from the mine. Title to various commercial and other properties were conveyed to private companies or the local government entities over time.

On October 30, 2014, Cliffs informed the Department of Natural Resources of the company's plans to close Wabush Mines. Subsequent to announcing the mine closure, Cliffs announced the operation was entering protection under the CCAA process and concurrently began marketing the mine for sale.

Tacora Resources Inc. (TACORA) purchased the mine and certain other assets via the CCAA process on July 18, 2017.

## 3.4 PHYSICAL FEATURES

### 3.4.1 Mining Area

The mine pits are located west of the Town of Wabush and south of the Town of Labrador City and are accessed via the plant access road off Highway 530. The ore deposit, which is part of the Labrador Trough, covers an area of approximately 23 square kilometers. The approximate area disturbed by mining through 2014 is shown in Figure 3.2. This figure also depicts the waste rock dump outlines and open pits extents as at 2014.

#### 3.4.1.1 Open Pits

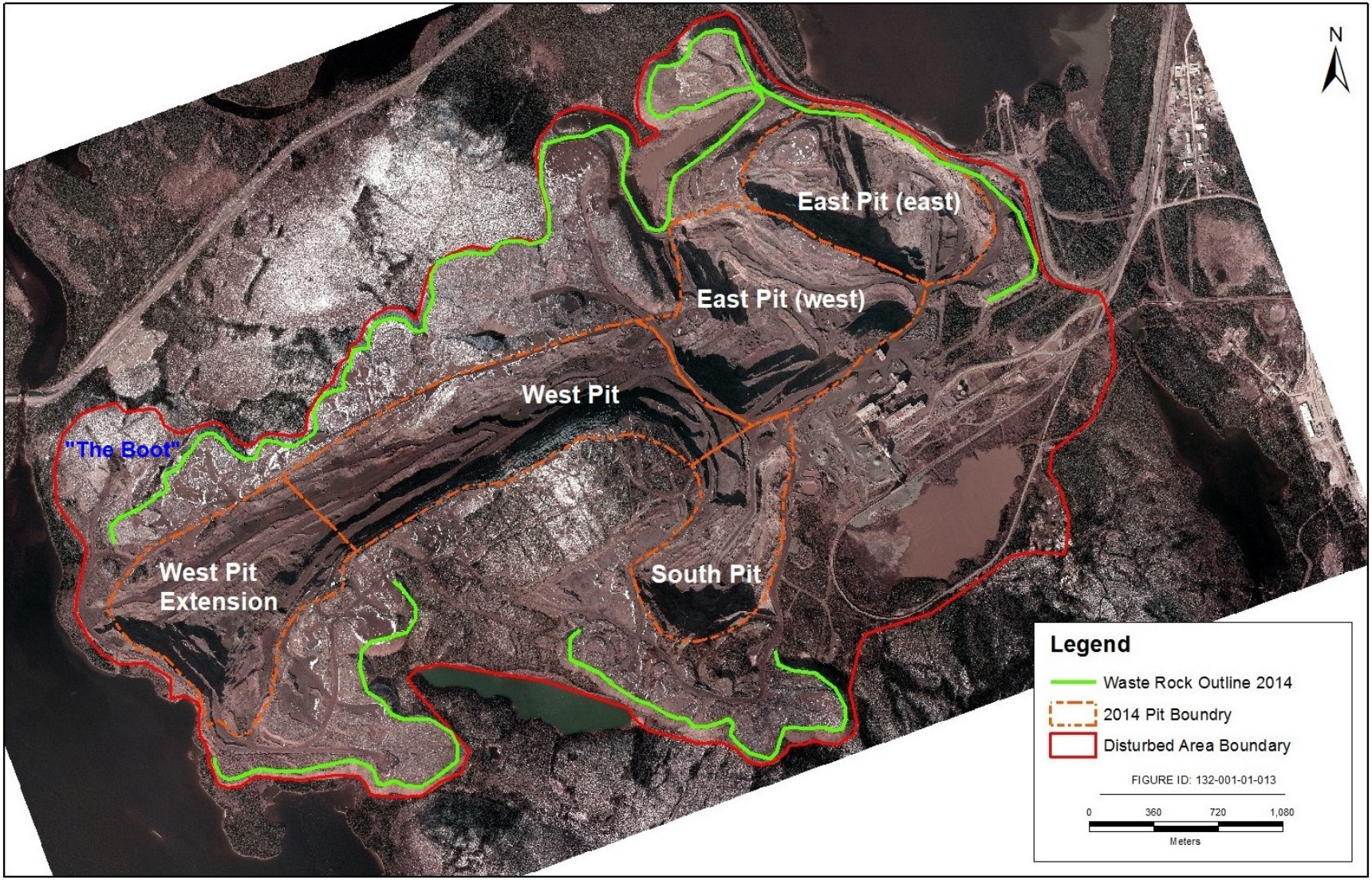
Figure 3.2 shows five open pits that were active up until 2014. These are East Pit (east), East Pit (west), South Pit, West Pit, and West Pit Extension. There is another area referred to as "The Boot" located to the northwest of the West Pit Extension, this area has had initial overburden stripping started and will be a future iron ore resource for the Scully Mine. The East Pit (west) is currently considered depleted, the West Pit Extension will remain partially flooded and East Pit (west) is being considered as a future waste rock dump location.

The open pit boundaries at the projected end of mine life are shown as a blue outline in Figure 3.3. The mining sequence for these open pits is described in Section 3.6.1.

#### 3.4.1.2 Waste Rock Dumps

Waste rock dumps (WRDs) are located at several locations around the perimeter of the open pits and expansions of the dumps are planned to occur in three locations to support future operations. Figure 3.2 shows the areal extent of the WRDs as of 2014, they are largely along the northern edge of the West Pit with additional locations south of the mining area. Figure 3.3 shows the projected waste rock footprint limits in 2033, it shows additional waste rock deposition to the northeast of The Boot, further material placed on existing WRDs southeast of the West Pit Extension and waste rock being placed within the East Pit (west).

It is assumed for the purpose of this document, based on operational observation and knowledge of the waste rock piles, that the dumps are stable and modifications to the slopes will be restricted to contouring where needed. Most of the existing waste rock dumps will continue to be used with dumps extending outward with contoured steps and less steep slopes (3H:1V). The extension of waste rock dump footprint will also serve to reinforce the toes of the existing steep slopes. Geotechnical stability analyses will be conducted by professional geotechnical engineers during progressive rehabilitation activities, currently scheduled for 2021.

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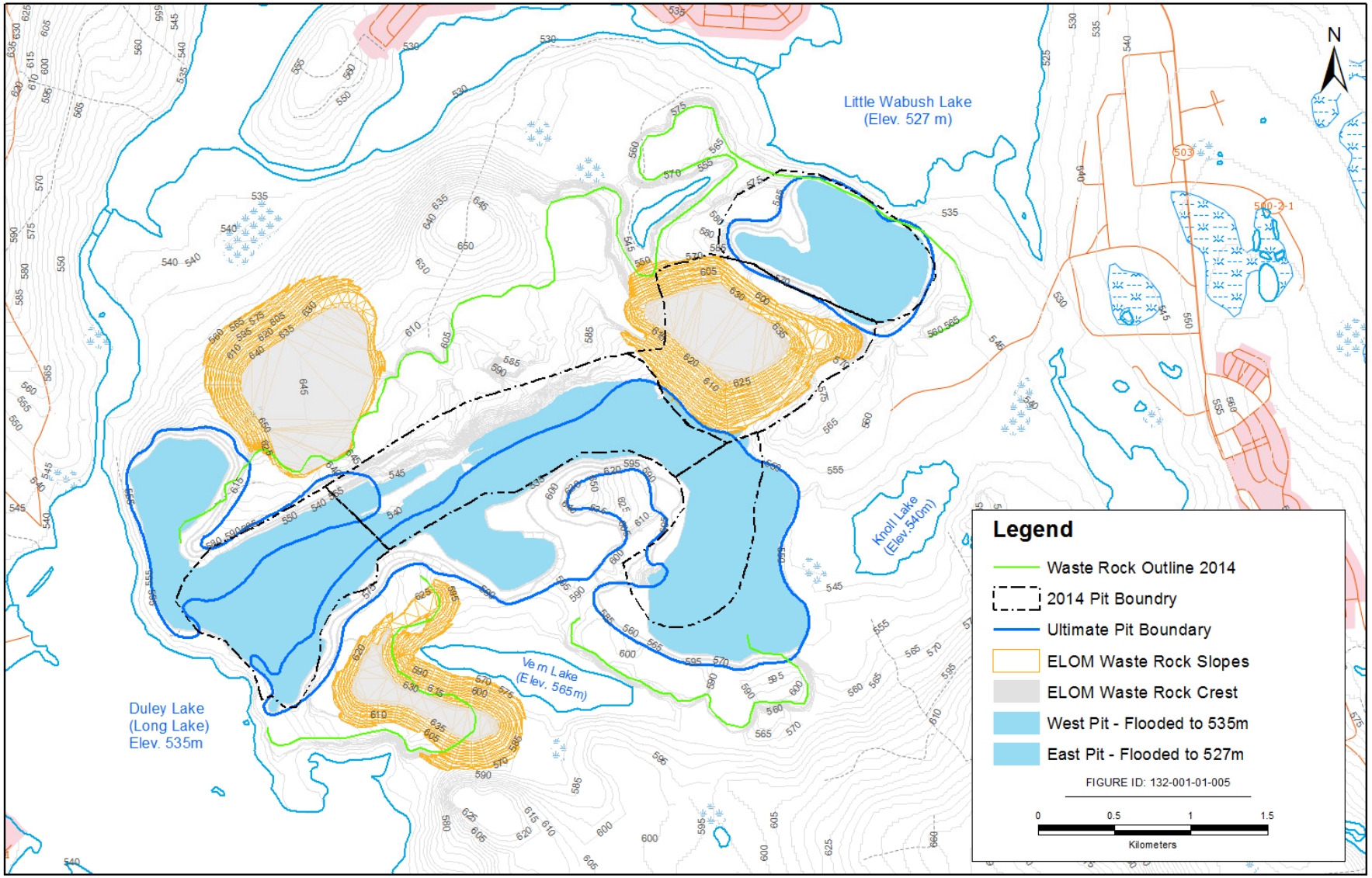
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: Figure 3.2 | PREPARED BY: SEM |
| | **Disburbed Areas, Pit and Waste Rock Dump Outlines (2014)** | COORDINATE SYSTEM: UTM Zone 19 | DATE: 05/09/2017 |

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| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.3** | PREPARED BY: SEM |
| | **Waste Rock Outlines (Projected for 2033)** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **02/04/2017** |

### 3.4.2 Buildings and Infrastructure

The Scully mine site has been operational for many decades, adding some buildings and related infrastructure to the site over the past 50 years. Figure 3.4 below is an aerial photograph that identifies much of the site improvements and related infrastructure as of 2014, including below grade improvements.

#### 3.4.2.1 Process Buildings

The existing process buildings will be used when the mine resumes operations. There are additional buildings planned for construction as part of the site reactivation.

#### 3.4.2.2 Storage Tanks

The facility has a number of large oil storage tanks used for holding Bunker C fuel oil to fire the site's iron ore concentrate dryers and two of the facility's boilers. Several others are used for diesel fuel or gasoline for rolling stock and two are storage tanks for used oil. Table 3.2 lists the site storage tanks.

Table 3.2. Outdoor Petroleum Storage Tanks in Mill Area

| Tank ID | Size (L) | Fuel Type | Status |
|---|---|---|---|
| | | | |
| 401 | 6,870,000 | Bunker C | In use |
| 402 | 6,870,000 | Bunker C | Out of service since 2007, to be cleaned and inspected before reused |
| 403 | 2,680,000 | Diesel | In use |
| 404 | 272,000 | Bunker C | Day tank – out of service, to be cleaned and inspected before reused |
| 405 | 272,000 | Bunker C | Day tank – in use |
| 406 | 91,500 | Bunker C | Surge tank – in use |
| - | 50,000 | Gasoline | New tank – installed, not in service |
| - | 50,000 | Gasoline | New tank – installed, not in service |
| - | 50,000 | Gasoline | Mobile tank – in use |
| - | 20,000 | Used oil | In use – outside the mobile shop |
| - | 20,000 | Used oil | In use – outside the mobile shop |
| - | 91,000 | Diesel | Replaced in 2014 |


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| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: Figure 3.4 | PREPARED BY: SEM |
| | **Existing Infrastructure** | COORDINATE SYSTEM: UTM Zone 19 | DATE: 05/09/2017 |

#### 3.4.2.3 Power Transmission Lines and Electrical Equipment

There are approximately 550 wooden power poles on the mine site carrying 30 kilometers (18.6 mi) of power cabling throughout the Scully Mine. These provide electrical distribution from the various electrical substations to equipment within the processing buildings, open pits and other facility structures.

#### 3.4.2.4 Pipelines

There are approximately 24 km of pipelines throughout the existing mine site and tailings management area that are necessary for the facility to operate. Uses include pumping tailings slurry to the tailings management area, freshwater supply from Little Wabush Lake to the plant, pit dewatering piping and numerous process water piping systems throughout the site.

#### 3.4.2.5 Roads and Rail Lines

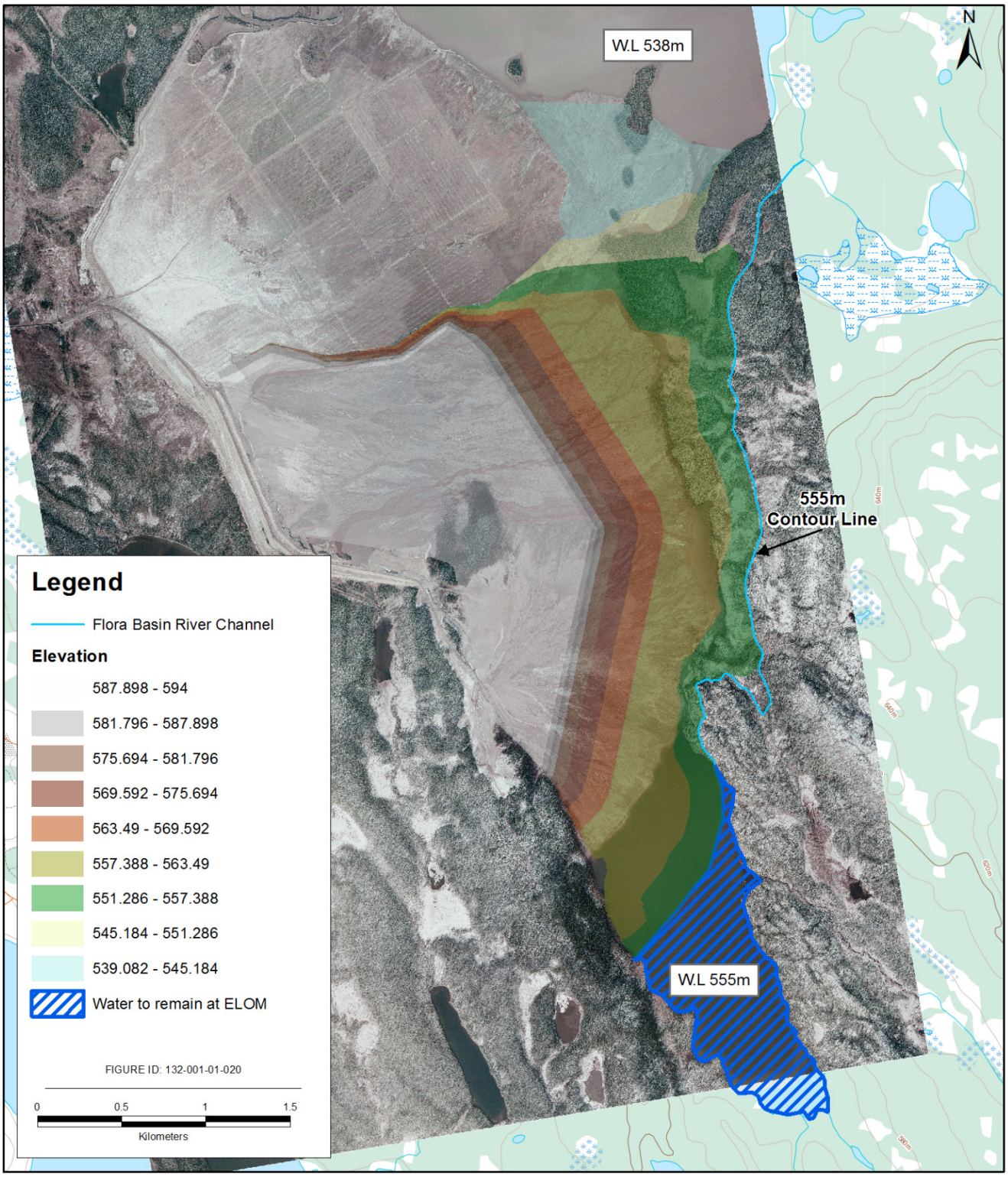
The existing road system at the mine will be reused, as the site will be used in a manner consistent with its historical uses. There are approximately 10 km of railway line to be owned and used by TACORA, which tie into the QNS&L railway system. 1.9 km of this is common to the Bloom Lake railway line.

#### 3.4.2.6 Flora Lake Diversion Channel

TACORA will construct a water diversion channel along the eastern edge of the Flora Lake Tailings Management Area (TMA) to accommodate flow from South Flora Lake to North Flora Lake. This channel is intended to minimize the potential for TMA erosion and associated suspended solids effects in North Flora Lake. The preliminary route for this channel follows the 555 meter contour line along the eastern edge of the TMA and may be up to 4.6 km long (see Figure 3.5). Figure 3.6 gives the conceptual channel cross section, showing that the earth is piled along the western channel side, thus providing further material between tailings deposition and the water channel.

### 3.4.3 Tailings Management Area

A 2014 aerial photograph showing extents of the Flora Lake TMA and areas revegetated to date is shown in Figure 3.7. Over the life of the previous operation and as of February 2014, the previous owners had developed a tailings surface area of approximately 1110 hectares. Up to 2014, it has established 425 hectares of vegetative cover on inactive areas of the TMA. An additional 400 ha was vegetated in 2015-2016 while plant operations were curtailed. Continued use of the TMA to 2033 closure will result in tailings being deposited to an ultimate elevation of 594 m, some 56 m above the original Flora Lake water surface elevation of 538 m.

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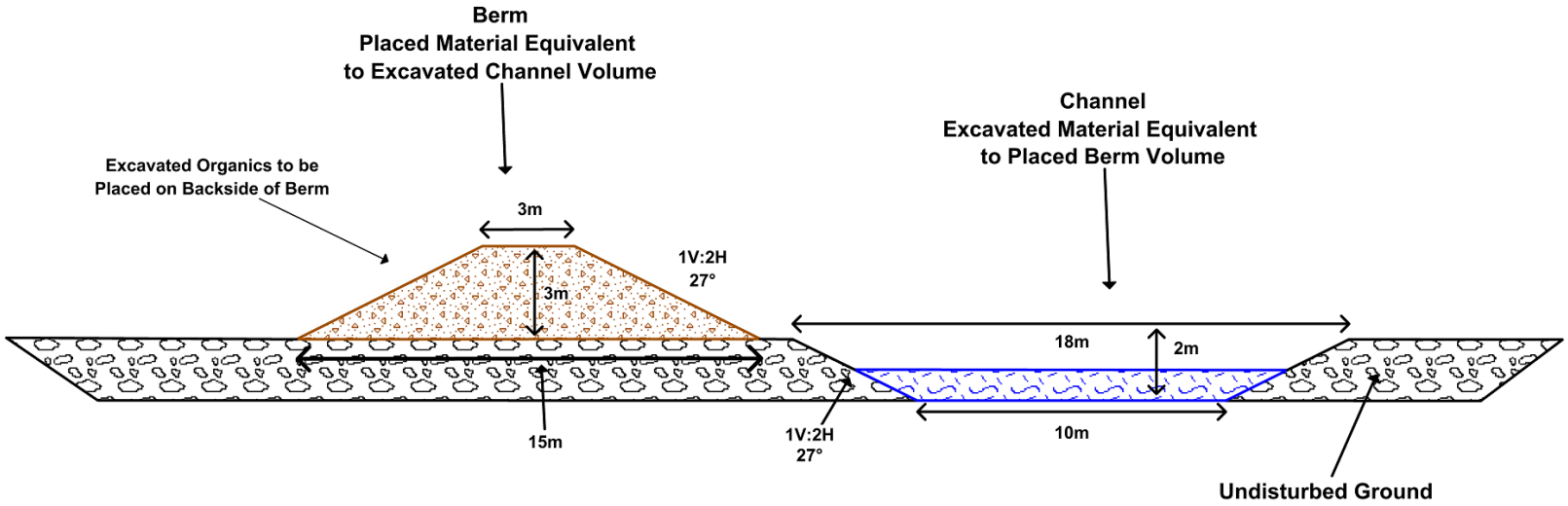
| TACORA RESOURCES | Tacora Environmental Assessment Registration | FIGURE NO: **Figure 3.5** | PREPARED BY: SEM |
| | **Flora Basin River Channel** | COORDINATE SYSTEM: **NAD83 UTM Zone 19** | DATE: **08/03/2017** |

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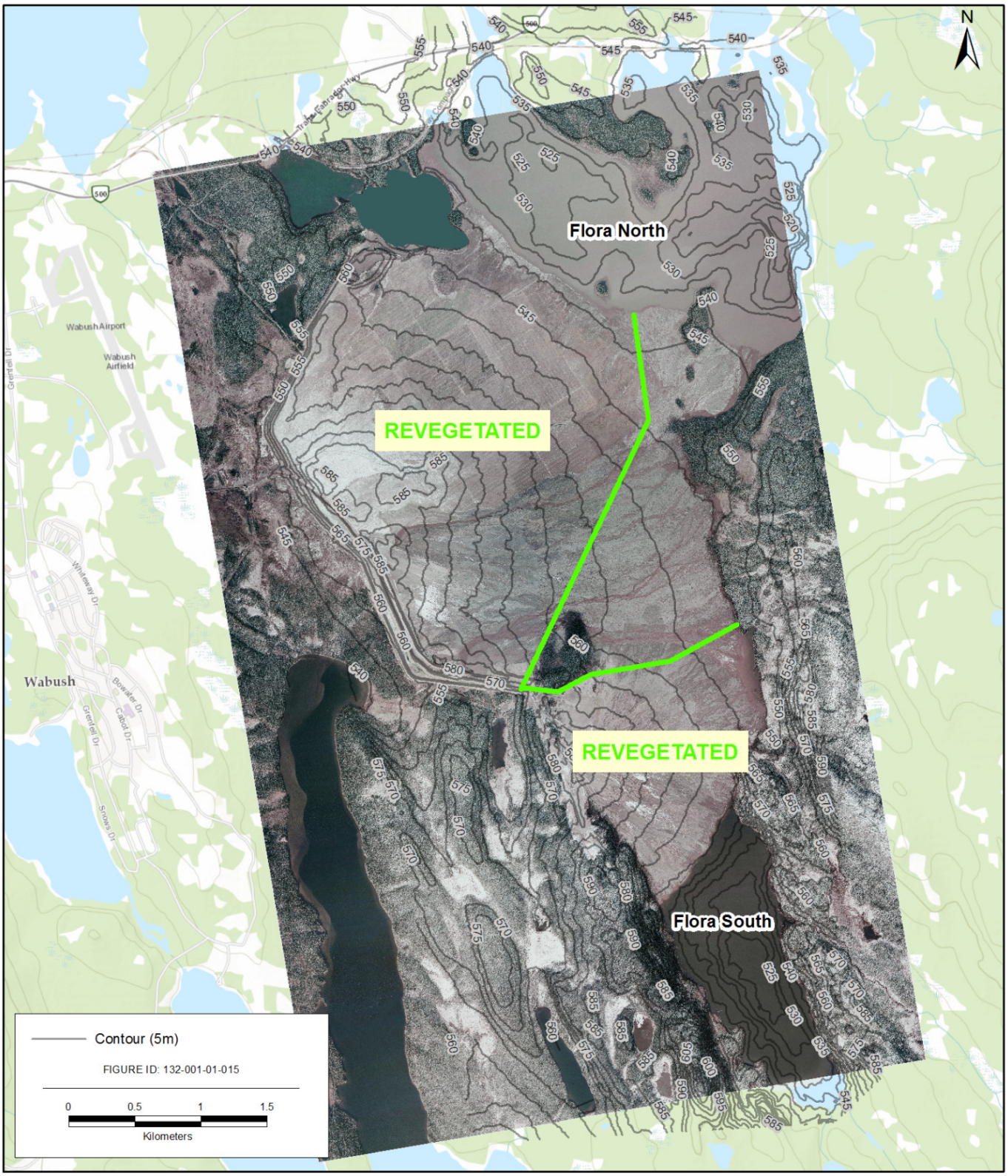
| TACORA RESOURCES | Tacora Environmental Assessment Registration | FIGURE NO: Figure 3.6 | PREPARED BY: SEM |
| | **Flora Channel Typical Cross Section** | COORDINATE SYSTEM: UTM Zone 19 | DATE: 30/04/2017 |

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| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.7** | PREPARED BY: SEM |
| | **Tailings Management Area Revegetated Areas to Date** | COORDINATE SYSTEM: **NAD83 UTM Zone 19** | DATE: **30/04/2017** |

Future development will take place primarily in the southern end of the TMA using the upstream construction method of dike raising. Figure 3.8 provides a contoured view of the TMA as of 2033. Figures 3.9 and 3.10 provide a series of actual and projected cross sections of the TMA taken from the 2014 and 2033 contoured views. The slope of the tailings in the conceptual model was derived following the tailings cone slope analysis (Appendix C in the Rehabilitation and Closure Plan) that showed the fall off from the outflow to be between 6-8% and then flattening to 3% and down to ½% if linear distance is available.

Maintaining water flow from the southern portion of Flora Lake beyond the TMA is accomplished during the mine closure process with a diversion channel as described previously in Section 3.4.2.6.

The TMA is a potential source of fugitive dust emissions from tailings deposition that has not been vegetated. The progressive rehabilitation work that occurs as part of the Rehabilitation and Closure Plan includes an annual tailings revegetation program is intended to keep pace with the tailings surface expansion. This work is described in Section 3.7.1 of this document. Additionally, potential dust liftoff from wind erosion is discussed in Section 3.8.1.2.2 of this document.

#### 3.4.3.1 Tailings Dikes

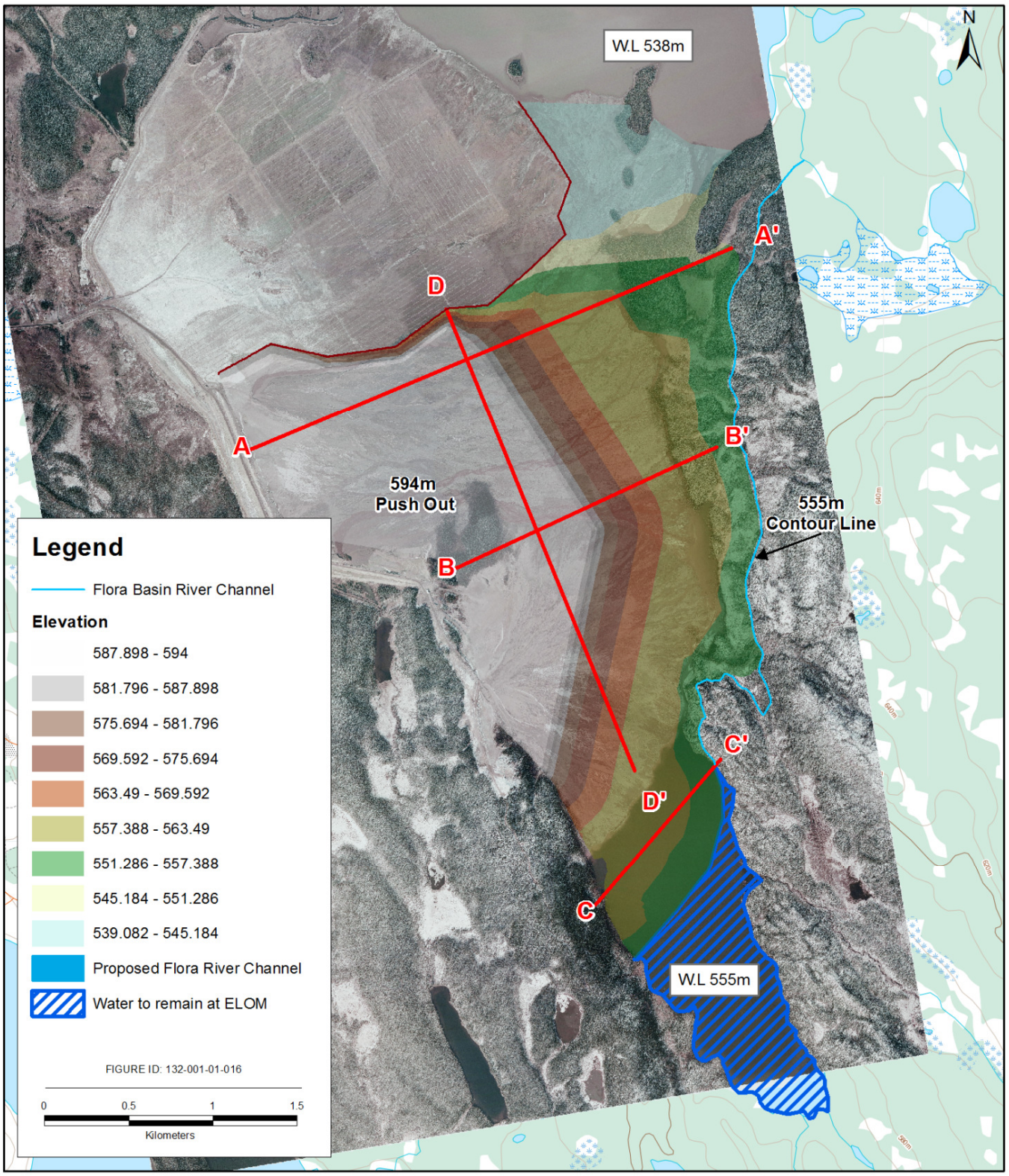
The Engineer of Record has not been identified for the dikes. The design and construction of existing TMA structures were completed in-house by facility personnel. The tailings dikes along the western and northern walls of the TMA have been inspected on a regular basis and reported to be stable in terms of static and dynamic (pseudo-static) stability and liquefaction. The stability of the tailings structures has been monitored on a number of occasions by third party past studies (1994, 2007, 2012 and 2013). Similar studies will be conducted throughout the operational life of the mine as part of operations program. Additional geotechnical inspections will be conducted on a regular basis. As part of the Closure activities, TACORA will investigate completing the geotechnical studies necessary to reclassify the tailings dikes as landforms, thus reducing ongoing inspection costs during the post closure monitoring period.

Ongoing vegetative cover growth mitigates potential wind erosion issues. Prevention of surface water erosion has been and will continue to be addressed by slope contouring and drainage control to complement the vegetative cover.

### 3.4.4 Physical and Biological Environment

#### 3.4.4.1 Topography

The mine is located in an area of undulating hills that reach elevation heights of 686 metres (m) and low lying areas with elevations of approximately 533 m.

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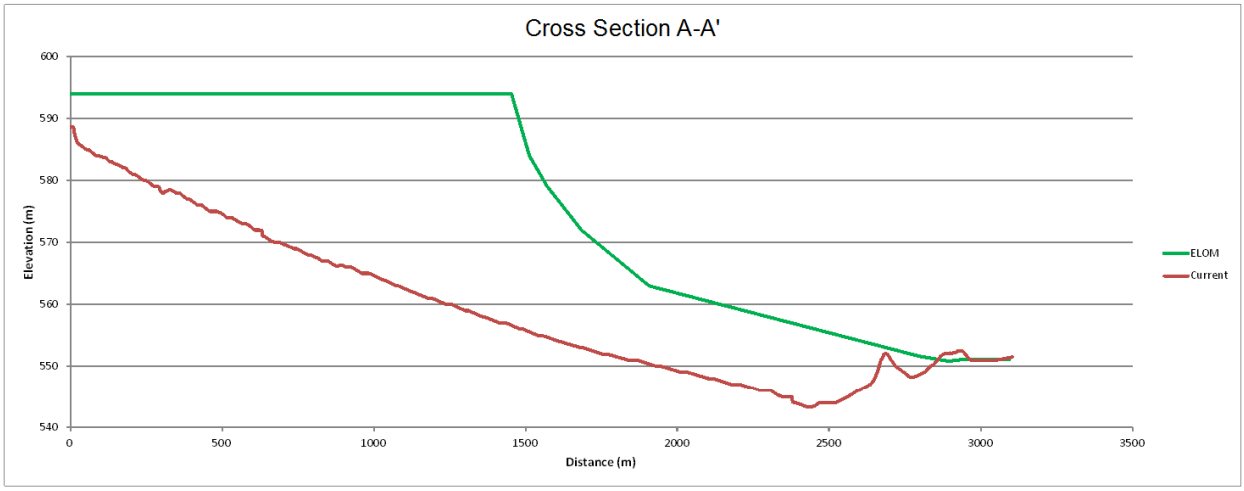
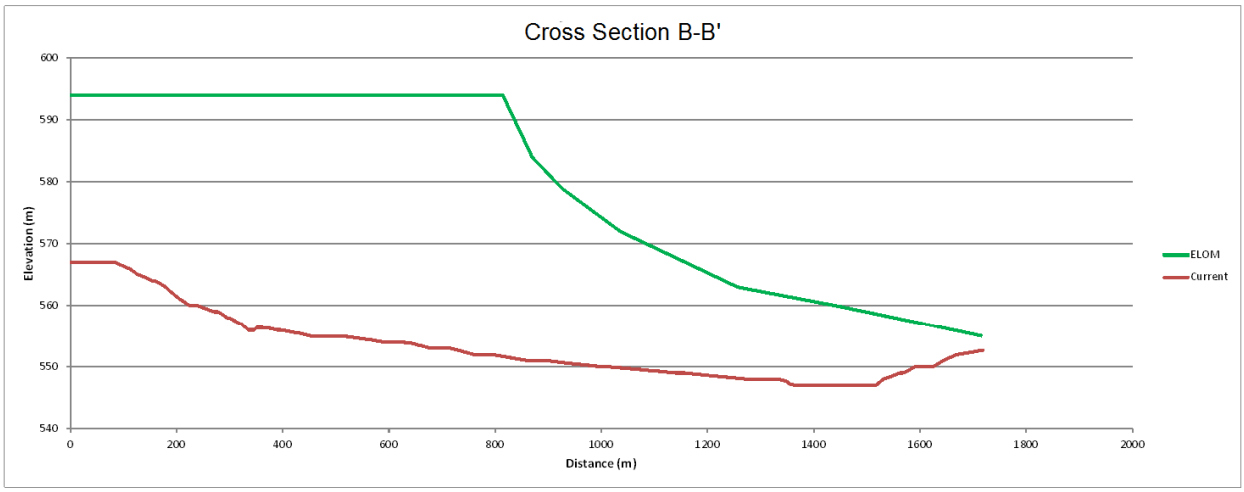
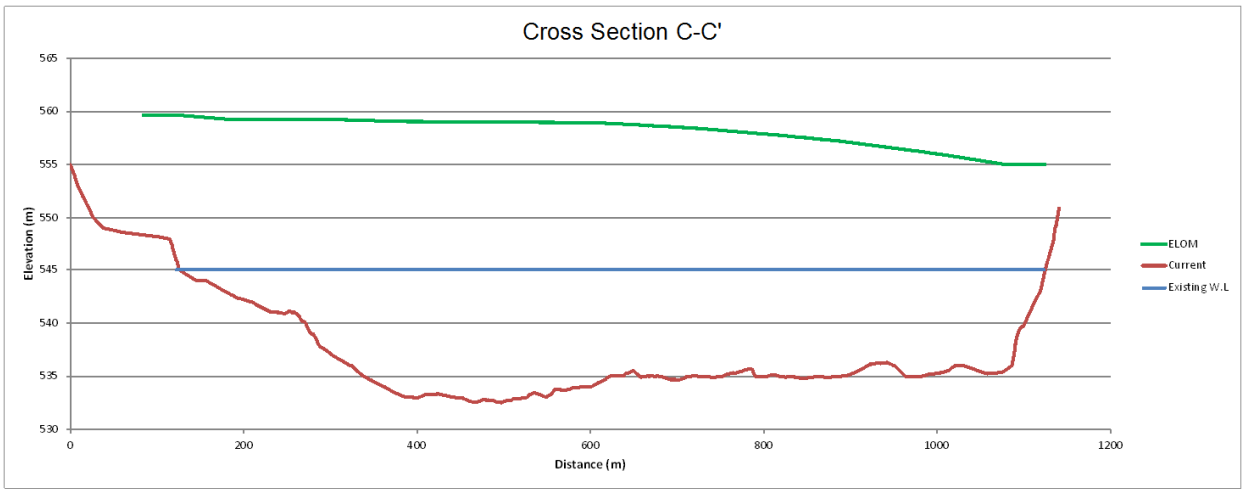
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.8** | PREPARED BY: SEM |
| | **Final Pushout and Tailings Maximization (Conceptual)** | COORDINATE SYSTEM: **NAD83 UTM Zone 19** | DATE: **05/09/2017** |

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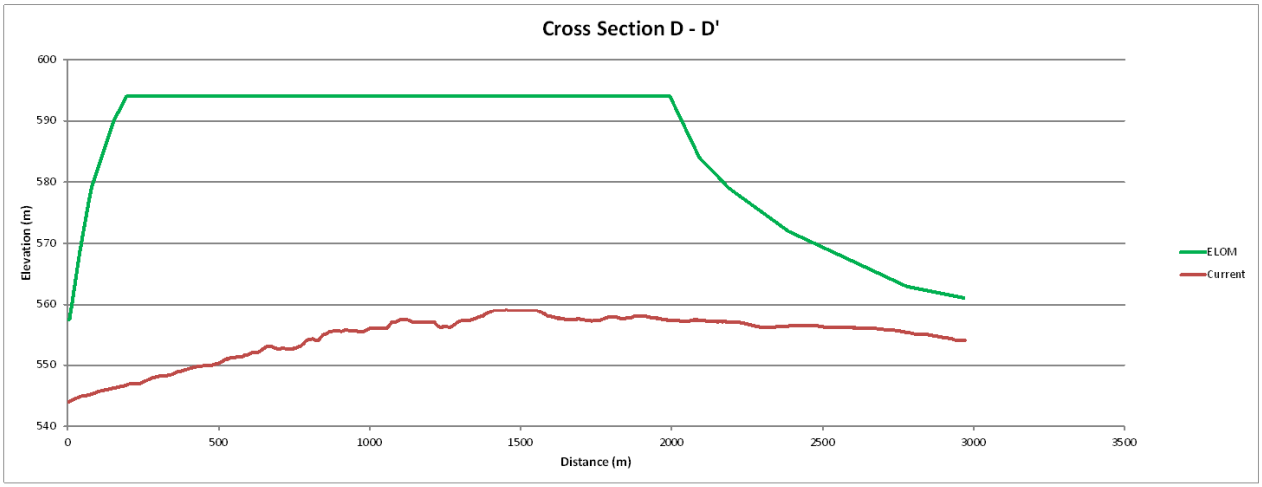
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.9** | PREPARED BY: SEM |
| | **Tailings Maximization Cross Sections A-A', B-B' and C-C'** | COORDINATE SYSTEM: **NAD83 UTM Zone 19** | DATE: **05/09/2017** |

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| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.10** | PREPARED BY: SEM |
| | **Tailings Maximization Cross Sections D-D'** | COORDINATE SYSTEM: **NAD83 UTM Zone 19** | DATE: **05/09/2017** |

#### 3.4.4.2 Water Resources, Fish and Fish Habitat

The water resources, fish and fish habitat associated with Wabush Mines' Scully Mine include waterbodies that are directly associated with the mines' footprint and mining and processing infrastructure and those that are affected by tailings management activities including downstream receiving waterbodies (Figure 3.11). Additional waterbodies outside of areas directly affected by the mine's operations have also been included in habitat compensation and offsetting activities.

##### 3.4.4.2.1 Mine Infrastructure

###### 3.4.4.2.1.1 Knoll Lake

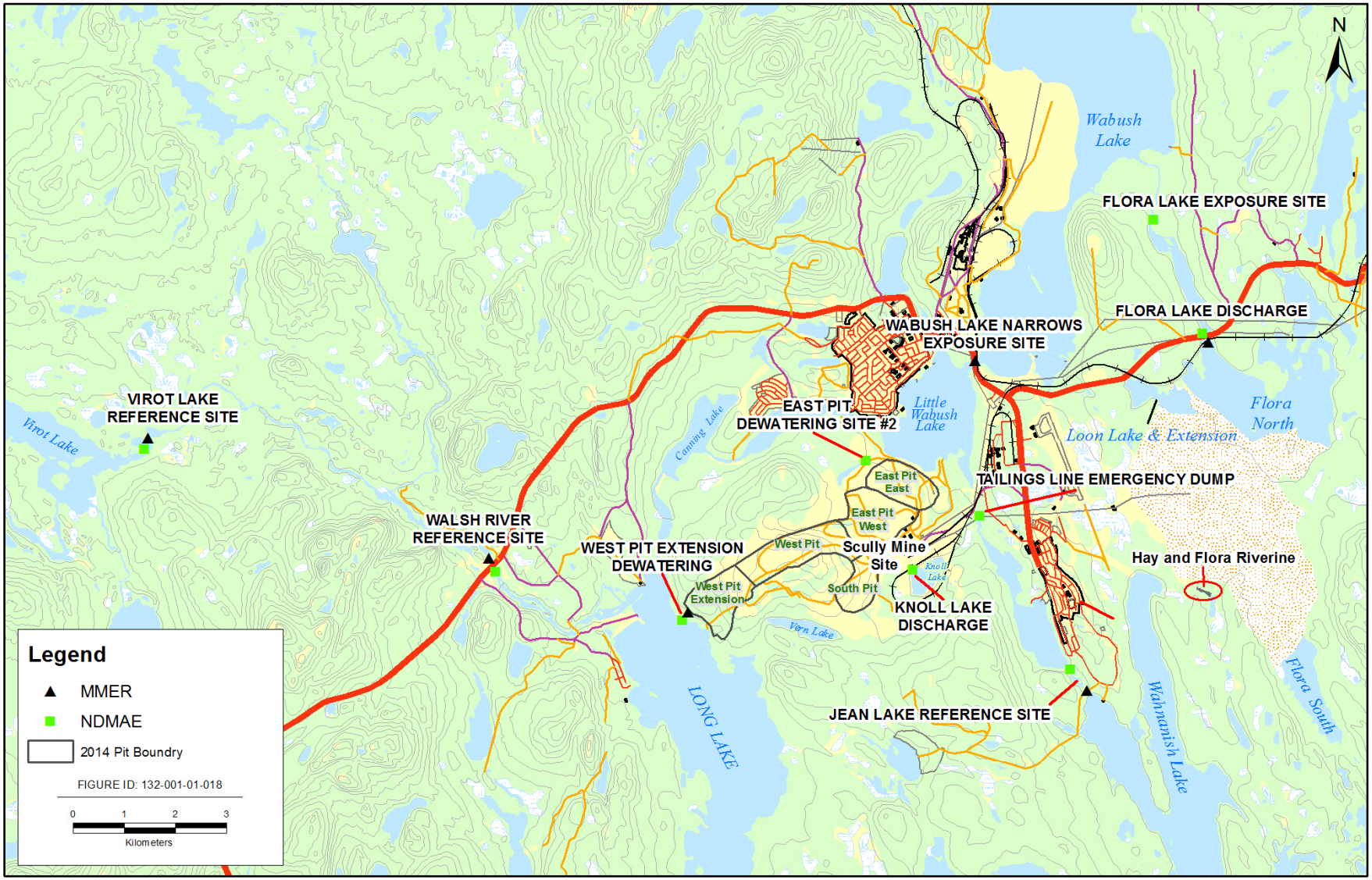
Knoll Lake is a 32 ha lake that is located directly south of the Scully Mine's main processing facility (JWEL 2003[iv]). The lake's natural watershed has been altered by the mine infrastructure including a rail spur, which completely encircles the lake. Inflows into the lake after reactivation will include water from ongoing pit dewatering activities (continuous, East Pit West), some natural runoff (minimal), and mining related discharges including unscheduled mine crashes, tailings line maintenance shut downs, or cleaning of the concentrator (episodic) (SEM 2014[v]).

Long-term inflow of tailings and sediment into the lake from these operations has degraded water quality as well as the quality of fish habitat in the lake. The rail line that goes around the lake and an adjacent access road constrains natural runoff, other than what is contributed from the intermittent tributaries. The outflow of Knoll Lake drains into small stream that drains into Jean River.

Fish species in the lake include lake chub (*Couesius plumbeus*), longnose sucker (*Catostomus cato*stomus), white sucker (*Catostomus commersoni*), burbot (*Lota lota*), brook trout (*Salvelinus fontinalis*), lake whitefish (*Coregonus clupeaformis*), round whitefish (*Prosopium cylindraceum*), and longnose dace (*Rhinichthys cataractae*). It is likely brook trout and whitefish species are transient in the lake coming up from the Jean River for feeding and rearing.

The MMER discharge point for Knoll Lake is located on the north side of the railway tracks at the end of the last settling basin before entering the lake. The settling basins provide primary settling for ongoing pit dewatering activities and mining operations. An experimental water treatment facility was set up the settling basins and was used when settling did not reduce total suspended solids (TSS) levels below the MMER regulatory limit of 15 ppm. Water treatment has normally only been required for unscheduled mine crashes.

Ongoing mining operations have negatively affected the fish habitat quality in Knoll Lake. Improvements to fish habitat in Knoll Lake were included in the fish habitat compensation plan for the habitat alteration, disruption, and destruction (HADD) associated with the proposed loss

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|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.11** | PREPARED BY: SEM |
| | **Water Resources Associated with the Scully Mine** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **08/03/2017** |

of habitat associated with the removal of Hay and Vern Lakes. Wabush Mines reviewed the effectiveness of the Knoll Lake settling basins to reduce total suspended solids (TSS) inputs into Knoll Lake and determined habitat gains associated with TSS reduction to be 4.0 ha (SEM 2010[vi]).

#### 3.4.4.2.1.2 Vern Lake

Vern Lake is a small 28 ha lake located west of the mine's infrastructure (Figure 3.11) (SEM 2010[vii], JWEL 2003[viii]). It was once connected to the Wabush Lake system through Long Lake, Harrie and Little Wabush Lakes, but currently has no outlet and/or inflow streams due to deposition of overburden and waste rock adjacent to the lake. With no outlet and/or inlet streams, fish are unable to move to and from the lake and recruitment to fish populations in the lake must come from reproduction and rearing within the lake. Vern Lake was originally planned to be removed due to mining expansion and all fish were rescued and relocated to Long Lake in 2005. 682 fish were relocated including 640 lake chub and 42 lake trout (*Salvelinus namaycush*). Wabush Mines subsequently decided not to remove Vern Lake and Fisheries and Oceans Canada (DFO) required Wabush Mines to determine the status of fish populations in the lake. Fishing efforts in 2006 and 2010 determined that fish populations have persisted in the lake, lake chub and lake trout are known to currently inhabit the lake.

#### 3.4.4.2.1.3 Hay Lake

Hay Lake was once an 11.7 ha lake once located on Wabush Mines property and included a lake outlet, which consisted of 4.9 habitat units (100 $m^2$) of rearing and spawning habitat[ix]. The lake and its outlet were removed in 2005 and prior to removal, all fish were relocated to Little Wabush Lake. The lake contained six species including white sucker, brook trout, and lake chub, burbot, longnose sucker and lake whitefish. The outlet stream contained brook trout, burbot, longnose dace and white sucker.

The loss of fish habitat in Hay Lake and its outlet were compensated for through enhancing fish habitat in Loon Lake (creation of a spawning shoal) and construction of the Hay Riverine Habitat compensation channel (5.2 units of riverine habitat) (SEM 2015[x]).

#### 3.4.4.2.1.4 Settling Basins

There are a number of settling basins within the Wabush Mines infrastructure which have been considered as final discharge points under the Metal Mining Effluent Regulations (MMER) and these include East Pit Dewatering Settling Basin #2, East Pit Dewatering East, West Pit Dewatering Settling Basin, Tailings Line Emergency Dump Basin, and Load out Ditch Discharge. Water quality and effluent discharge are monitored at these sites on a regular basis as required under the MMER and the Certificate of Operation (CoA) for Wabush Mines. These sites are normally only monitored when actively discharging. A number of reference sites have also been established in relation to these discharge points including Long Lake (West Pit

Dewatering Settling Basin), Wabush Narrows (East Pit Dewatering Settling Basin #2, East Pit Dewatering East), and Jean River (Tailings Line Emergency Dump Basin).

#### 3.4.4.2.2 Tailings Management Area

##### 3.4.4.2.2.1 Flora (North and South) Basins

Waste products (tailings) generated from Wabush Mines operations were historically (since 1964) deposited into Flora Lake under a license provided by the Province of Newfoundland. Tailings were deposited on land in the Flora Lake watershed and allowed to dewater into the lake (JWEL 2003[xi]). Over time, solids accumulation has divided Flora Lake into distinct North and South Basins. In 2009, regulatory approvals designated Flora Lake as the Scully Mine's Tailings Impoundment Area (TIA).

The Flora TIA included the South Basin, the North Basin and associated tailings covered areas. Thickened tailings are deposited into the South Basin, which acts as a settling pond, with discharge through a 1.5 km-long, poorly defined, channel that enters the North Basin. The tailings effluent and natural runoff from the North Basin enters into Flora Outlet Arm, then into Flora River and subsequently into Wabush Lake. The Flora TIA Discharge has been identified as the Scully Mine tailings effluent compliance point for the Metal Mining Effluent Regulations (MMER).

Studies in 1999 determined the following fish species were in the Flora Basins including lake whitefish, longnose sucker, lake trout, northern pike (*Esox lucius*), burbot, slimy sculpin (*Cottus cognatus*), brook trout, longnose dace, and lake chub (JWEL 1999[xii]). Several species were only found in riverine habitats (i.e. brook trout, longnose dace) while lake chub were only found in the Flora River. Lake trout were only found in the North Basin while burbot were only found in the South Basin.

Tailings deposition into the Flora basins was determined by DFO to cause a HADD, which included 34 ha of lacustrine habitat in Flora South and 52 of units (100 $m^2$) of riverine habitat due to inundation of three tributaries flowing into Flora South. Wabush Mines compensated for the loss of lacustrine habitat by developing 34 ha of new lacustrine habitat adjacent to Loon Lake (Loon Lake Extension). The riverine HADD was compensated for by construction of 52 units of riverine habitat in an intermittent flow channel between an unnamed lake and Wahnahnish Lake (Flora Riverine Habitat Compensation Project).

##### 3.4.4.2.2.2 Flora Outlet Arm and River

The Flora Outlet Arm has been designated as the final discharge point for the Flora Basins Tailings Impoundment Area and the Arm and Flora River are the immediate receivers of the Scully Mine's tailings effluent discharge (Minnow 2011[xiii]). The Flora Outlet Arm is separated

from the TIA by a railway bed under which the water flows via two large culverts. The Flora Outlet Arm is approximately 2.2 km long and has a total surface area of 58 hectares.

The Flora River drains the Flora Outlet Arm, flowing north approximately 1.56 km before discharging into Wabush Lake. The Flora River is a shallow, straight river, with an average width of approximately 18 m and a maximum depth of approximately 0.85 m during late summer. Flora River includes a combination of riffle (20%) and run (80%) habitat. At Wabush Lake, the Flora River system drains a total watershed of approximately 151 km2, with annual average flow of approximately 4.6 m3/s.

Ten fish species have been identified in the Flora River, with longnose dace (and slimy sculpin found in greatest abundance during EEM fish surveys. Lake chub, longnose sucker, white sucker, burbot, brook trout, lake trout, lake whitefish, northern pike (and white sucker also captured during historical fish surveys.

#### 3.4.4.2.3 MMER EEM Reference Areas

##### 3.4.4.2.3.1 Long Lake Outlet

The initial reference area elected for the MMER Environmental Effects Monitoring (EEM) was the Long Lake Outlet. The Long Lake Outlet drains Long Lake, flowing north into Canning Lake (Minnow 2011[xiii]). The riverine sections of the Long Lake Outlet are straight channels separated by approximately 1 km of lacustrine habitat. Riverine sections of the Long Lake Outlet average approximately 40 m wide with mean and maximum depths of about 0.3 m and 1.0 m. Fish habitat is represented by 15% and 45% riffle habitat and 85% and 55% run habitat, respectively. At the Long Lake Outlet, the total watershed area is approximately 886 $km^2$ and extrapolated flow rates indicate an annual average flow of approximately 27.7 $m^3/s$. The Long Lake Outlet receives some discharge from the Scully Mine via the West Pit Dewatering Settling Basin approximately 2 km upstream however on an annual basis this contribution of effluent to the system is only approximately 0.9%

Eight fish species have been identified at the Long Lake Outlet including longnose dace and slimy sculpin, in greatest abundance, along with burbot, Lake Chub, brook trout, longnose sucker, white sucker and land-locked Atlantic salmon (ouananiche).

##### 3.4.4.2.3.2 Virot Lake Outlet

The Virot Lake Outlet is located within the Walsh River system, 12 km upstream from Long Lake, and drains a watershed of approximately 496 $km^2$ with an extrapolated mean annual flow (MAF) of approximately 15.5 $m^3/s$ (Minnow 2011[xiii]). The outlet study reach is relatively shallow and straight, with a moderate gradient, and average width of approximately 100 m. The morphology of the study reach is a combination of riffle and run habitat types.

Fish species composition includes slimy sculpin, longnose dace, burbot, lake chub, longnose sucker, white sucker and brook trout.

#### 3.4.4.2.4 Fish Habitat Compensation and Offsetting

##### 3.4.4.2.4.1 Loon Lake and Extension

Placement of tailings into the Flora Basins caused a harmful alteration, disruption or destruction of 34 hectares (ha) of lacustrine habitat. Compensation for this lost habitat involved excavation of a 34 ha extension to the existing 25 ha Loon Lake which was completed in 2010 with the extension joined to Loon Lake in September 2011 (SEM 2015[xiv]). Loon Lake was originally part of the Flora Basins but was disconnected due to deposition of mine tailings. Loon Lake and extension has one small inlet stream while the outlet drains through a 1.5 and Trans Labrador Highway. The lake drains through a relatively high gradient stream into Wabush m diameter culvert underneath the Quebec North Shore & Labrador Railway line Lake. The culvert acts as a hydraulic control to maintain the lake level. Following connection of Loon Lake to the Extension, the area of the lake increased to approximately 59 ha and, during high water periods, a small pond is also temporarily connected to the north side of the Extension. Baseline studies of Loon Lake determined the fish community included northern pike, mottled sculpin, burbot, and lake whitefish.

As part of the habitat compensation plan for the Flora Basins, DFO has required annual monitoring of the effectiveness of the habitat compensation. In 2014, 20 fish were captured in Loon Lake while a total of 447 were captured in the Extension. Catches represented seven species including burbot, lake chub, pearl dace, longnose sucker, white sucker, northern pike and sculpin sp., with only dace missing from Loon Lake. No brook trout have ever been captured.

A fish offset plan was developed for the Vern-Hay project and the accepted offsetting approach involved the construction of a spawning shoal in Loon Lake for brook trout and he transfer of an adult population of brook trout into Loon Lake (SEM 2013[xv]). Previous studies had determined there were no brook trout resident in Loon Lake. The spawning shoal was constructed in the winter of 2016 through placement of appropriately sized spawning gravels on the ice surface at a pre-designated location. A total 208 adult brook trout fish were subsequently moved from approved donor sites and released live into Loon Lake in the summer of 2016. TACORA is currently monitoring the effectiveness of this habitat offsetting project.

##### 3.4.4.2.4.2 Flora Riverine Habitat Compensation Channel

The HADD related to tailings deposition in the Flora Basins required that 52 units (100 $m^2$) of riverine habitat be created as compensation. 56.5 units of fluvial habitat containing a sinusoidal combination of pools (n=23) and riffle/run reaches (n=24) was subsequently constructed in an intermittent flow channel between and unnamed lake and Wahnahnish Lake[xvi]. Other habitat

features included addition of substrates for fish spawning and rearing; creation of depth and velocity conditions suitable for brook trout; and provision of undercut bank structures and root wads to provide shade and cover/shelter for adult trout. Wabush Mines had monitored the effectiveness of this habitat compensation project and Tacora Resources will continue monitoring as required under the Flora Basins Habitat Compensation Plan.

#### 3.4.4.2.4.3 Hay Riverine Habitat Compensation Channel

The HADD for the loss of the Hay Lake outlet required that 4.9 units (100 $m^2$) of riverine habitat be created as compensation. 5.06 units of fluvial habitat containing a sinusoidal combination of two pools and three riffle/run reaches was constructed in the intermittent flow channel between and unnamed lake and Wahnahnish Lake, immediately below the Flora Riverine Habitat Compensation Channel (SEM 2013[xvii]). Wabush Mines initially monitored the effectiveness of this habitat compensation project and Tacora Resources will continue monitoring as required under the Fisheries Act Authorization (FAA) for the Vern-Hay Project.

### 3.4.4.2.5 Water and Effluent Quality Monitoring

TACORA, upon reactivation of the Scully Mine, will continue monitoring of effluent discharges and water quality as required under the federal (MMER, CCME guidelines) and provincial (CoA) criteria, including acute and sub-lethal biological testing. Table 3.3 provides a summary of sampling locations, as related to the applicable MMER and NDMAE regulations, and Figure 3.11 provides a map of the sampling locations.

Historically, the Long Lake (west pit dewatering settling basin) location was monitored for various water quality parameters required by the regulatory programs identified in Table 3.3. During previous Closure activities this location continued to be monitored under the MMER. This site was discontinued under the CofA once the pits were allowed to fill as part of the previous Closure activities. This monitoring activity will resume as part of the dewatering plan identified in Section 3.5 of this document. This location will continue to be monitored under the MMER after reactivation and TACORA will determine through discussion with DMAE if the location will be included in TACORA's CofA.

Table 3.3. Effluent and Water Quality Sampling Locations for Regulatory Compliance.

| Location (Site) | Regulatory Requirement | | | | | | |
|---|---|---|---|---|---|---|---|
| | MMER Water Quality | MMER EEM | MMER Sub-Lethal Toxicity Tests | Real Time Stream Flow and Water Quality[1] | NDMAE Effluent Quality | NDMAE Acute Lethality Toxicity Tests | NDMAE Water Quality |
| Jean River | X | | | | | | X |
| Walsh River | X | X | | | | | X |
| Virot Lake | X | X | | | | | X |

Table 3.3. Effluent and Water Quality Sampling Locations for Regulatory Compliance. (Cont'd)

| Location (Site) | Regulatory Requirement | | | | | | |
|---|---|---|---|---|---|---|---|
| | MMER Water Quality | MMER EEM | MMER Sub-Lethal Toxicity Tests | Real Time Stream Flow and Water Quality[1] | NDMAE Effluent Quality | NDMAE Acute Lethality Toxicity Tests | NDMAE Water Quality |
| Long Lake (West Pit Dewatering Settling Basin) | X | | | | X | | X |
| Wabush Narrows | X | | | | | | |
| Flora Outlet Arm | X | X | X | X | X | X | X |
| Tailings Line Emergency Dump Basin #1 | | | | | X | X | X |
| East Pit Dewatering (Sylvio Basin) | | | | | X | X | X |
| Knoll Lake | | | | | X | X | X |
| West Pit Extension Deep Well Discharge | | | | | | | X |
| [1] Real Time Stream Flow and Water Quality Monitoring Station operated as partnership between NDMAE, Environment and Climate Change Canada, and Wabush Mines. | | | | | | | |

### 3.4.4.2.6 Vegetation

The existing vegetation within and near the Scully Mine reflects the effects of other past and ongoing human activities in the region. The Scully Mine and adjacent tailings management area lies within the Wabush Ecodostrict within the McPhayden Plateau Ecoregion (Riley et al. 2013[xviii]). The Scully Mine and adjacent tailings management area is a landscape comprised of hills and valleys that trend northeast-southwest to north-south. Elevations range from 540 to 700 masl. Prevailing winds are from the west and south. The region is marked by cool summers and very cold winters with an average annual temperature of -3.1°C (EWG 1989[xix], CFS 2013[xx]). Average annual precipitation minus potential evapotranspiration is 612 mm. Permafrost is found in isolated patches and is sporadic and discontinuous.

Ground cover is primarily made up of coniferous vegetation with some isolated deciduous and alder growth covering areas of exposed soils and areas affected by recent forest fires. Open lichen woodlands are characteristic of this ecoregion. Extensive ribbed fen-string bog complexes, bordered by black spruce-sphagnum forest stands, dominate areas with little relief. The dominant tree species in areas adjacent to the Scully Mine include black spruce (*Picea mariana*), white spruce (*Picea glauca*), tamarack (*Larix laricina*), balsam fir (*Abies balsamea*),

with a more limited occurrence of shade-intolerant broadleaf trees like trembling aspen (*Populus tremuloides*), balsam poplar (*P. balsamifera*), and white birch (*Betula papyrifera*) (Lopoukhine et al. 1978[xxi], Meades 1990[xxii]). Trembling aspen reaches its northern limit and the only native population of jack pine occurs in this ecoregion. Common flowering plants include Labrador Tea (*Ledum groenlandicum*), Sheep Laurel (*Kalmia angustifolia*), Bunchberry (*Cornus canadensis*), Twinflower (*Linnea borealis*), Star flower (*Trientalis borealis*), Bluebead Lily (*Clintonia borealis*), Sweet Gale (*Myrica gale*), and Leatherleaf (*Chamaedaphne calyculata*). Wildfires are evident on 15.7 percent of the district and are a common occurrence.

Recent baseline surveys for the Kami Project (Alderon 2013[xxiii]) and the Wabush 3 Project (IOC 2013[xxiv]) did not observe any plant species listed as species at risk within the respective project area. Wetlands cover a sizable proportion of the natural landscape of Labrador and are common throughout areas adjacent to the Scully Mine and the TMA. Labrador City and Wabush have Municipal Wetland Stewardship Agreements with the provincial government which require wetland conservation in municipal planning.

Revegetation of tailings by Wabush Mines had focused on soil building to convert tailings to a soil capable of supporting plants. Climate is also a challenge requiring revegetation species to have outstanding winter hardiness and be able to survive minus 45 $^0$C. Microelements are also abundant limiting plant species that could tolerate high content in soil. Wabush Mines has developed various hydroseeding techniques, depending on the slope and surface conditions. The main approach involved broadcast spreading of seeds after harrowing the terrain with subsequent addition of fertilizer. A second approach involved spreading hay mulch coupled with direct, precision drill-seeding with broadcast fertilization. A third approach, when terrain did not permit safe equipment travel, was direct hydro-seeding applied as a number of coats of hydro-seeding slurry. Recent experience indicates irrigation can be limited to the year that seeding is done with good success. Over the years of revegetation, Wabush Mines has been successful in establishing self-sustaining vegetation covers on all surfaces including gentle sloped areas, high sloped dikes and horizontal benches. A typical annual revegetation program consists of seeding and fertilizing an area of approximately 40 ha and this will be an ongoing component of TACORA's progressive rehabilitation of the TMA.

#### 3.4.4.3 Wildlife

##### 3.4.4.3.1 Caribou

The Project area overlaps with the range of the migratory George River Caribou Herd (GRCH). Specifically, this area of western Labrador overlaps a portion of the herd's historic winter range[xxv]. Straddling the Quebec-Labrador peninsula (Ungava peninsula), the George River Herd was once one of the world's largest caribou populations, with estimates peaking at almost 800,000 individuals in the 1980's (Couturier et al. 1996[xxvi]; Russell et al. 1996[xxvii]; Rivest et al. 1998[xxviii]). More recently, a 2004 survey estimated the GRCH at 300,000 animals (Courturier et al 2004[xxix]) and a 2010 survey of the herd noted a substantial decline to

approximately 74,000 animals (NLDEC 2010[xxx]). A photo census completed in July 2012 estimated the herd at 24,300 animals, with projections for late fall 2012 around 22,000 animals (NLDEC, 2017[xxxi]). Further estimates based on surveys showed a further decline to 14,200 and 8,938 individuals in 2014 and 2016, respectively (NLDEC News Release, August 29, 2016). The initial decline can likely be attributed to wolf predation and both legal and illegal hunting (Hearn et al. 1990[xxxii]). Emigration to other herds has also been suggested as a possible reason for the decline (Boulet et al. 2007[xxxiii]).

The severity of this downward trend, indicators of poor herd health, and the potential for the combined effects of hunting, disease, predation, range condition, human activities and climate change, add complexity to the situation. The results of the census, biological health indicators, population modeling projections, and consultations with stakeholders have prompted the Provincial Government to initiate a five year caribou hunting ban in Labrador for conservation purposes. The hunting ban is intended to safeguard the viability of the herd and allow it to recover to a point where sustainable harvest can occur. The response of the remaining population to the closure of hunting will be monitored and an initial review of results conducted after two years (NLDEC 2017[xxxiv]).

Although there is no evidence of sedentary caribou near the Project area at present, they were reported historically (e.g., Caniapiscau or McPhadyen Herds) (LWCRT 2005[xxxv]; Bergerud et al. 2008[xxxvi]). The sedentary herds of this region have declined or disappeared since the 1960s with the advent of the snowmobile allowing greater access for hunting. The Committee on the Status of Endangered Wildlife in Canada listed the sedentary caribou populations of Labrador as “Threatened” (COSEWIC 2008[xxxvii], SARA 2008[xxxviii]). Hunting of sedentary herds is illegal.

For the migratory George River herd, habitat can be described as tundra, forest-tundra and boreal forest habitat characteristic of the Boreal and Taiga Shield Ecozones. Habitat use is affected seasonally as the ranges change from winter to summer. Following an increase in herd population, summer habitat is considered spatially limited and alternative summer range is not available (Messier et al. 1988[xxxix]). Animals tend to avoid areas grazed during the previous winter and select alternate sites with more abundant lichen cover (Schmelzer and Otto 2003[xl]) having a preference for Cladina spp. (Cote 1998[xli]).
Woodland caribou do not make migratory movements but there is a seasonal shift during calving and post-calving periods to such forest types as black spruce forest, scrub or bog (Nalcor Energy 2009[xlii]).

As the project area has been subject to mining activity over the past six decades, the area has not been utilized by woodland or migratory caribou for any sensitive life cycle stages (e.g., breeding or calving). Furthermore, the project area does not contain any critical habitat.

Various wildlife species occur in the Wabush region. Red fox (*Vulpus vulpus*) and snowshoe hare (*Lepus americanus*) are abundant throughout TACORA’s properties. Moose, (*Alces*

*alces*), black bear (*Ursus americanus*), and wolf (*Canis lupus*) are occasional visitors to the project area. Canada geese (*Branta Canadensis*) are common in the area and migrate through in large numbers. Other migratory avifauna (e.g., American robin (*Turdus migratorius*), common snipe (*Capella gallinago*) and various passerines are common throughout the area. Other commonly occurring species in the area would include river otter (*Lutra candensis*), lynx (*Lynx canadensis*), porcupine (*Erethizon dorsatum*), red squirrel (*Tamiasciurus hudsonicus*), marten (*Martes americana*), spruce grouse (*Falcipennis canadensis*), willow ptarmigan (*Lagopus lagopus*), golden eagle (*Aquila chrysaetos*), osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*) and American crow (*Corvus brachyrhynchos*).

Different species of small mammals (microtines) potentially present in the study area include the masked shrew (*Sorex cinerus*), the pygmy shrew (*Microsorex hoyi*), the northern water shrew (*Sorex palustris*), the black-backed shrew (*Sorex acrticus*), the Mountain Phenacomys (*Phenacomys intermedius*), as well as one species that is likely to be designated as threatened or vulnerable in Québec – the Rock Vole (*Microtus chrotorrhinus*). In addition, the star-nosed mole (*Condylura cristata*), the deer mouse (*Peromyscus maniculatus*), the southern red-backed vole (*Clethrionomys gapperi*), the meadow vole (*Microtus pennsylvanicus*), the northern bog lemming (*Synaptomys borealis*), the meadow jumping mouse (*Zapus hudsonius*) and the woodland jumping mouse (*Napaeozapus insignis*) may be present.

#### 3.4.4.3.2 Species at Risk

In Canada, since May 2000, the Woodland Caribou were designated as threatened, with the designation applying only to a widespread population ranging across the boreal forests of northern Canada (COSEWIC, 2008[xliii]). The same status has been given in 2002 by the Newfoundland and Labrador Department of Environment and Conservation. The boreal population has decreased throughout most of the range and is threatened from habitat loss and increased predation, the latter possibly facilitated by human activities (Festa-Bianchet et al., 2011[xliv]).

There has been no evidence that the study area was used by sedentary Woodland Caribou of the boreal population during the pre-calving period in recent years.

Wolverine (*Gulo gulo*) was designated endangered in Canada and in Newfoundland and Labrador in May 2003. Historically wolverine were trapped throughout most of Labrador; however numbers of animals trapped declined early in the 20th century. There have been no confirmed records in Labrador since the 1950s, although there continue to be occasional unconfirmed sightings (NLDEC 2017[xlv]).

## 3.5 REACTIVATION

The facilities and beneficiation process at this 50-year-old brownfield site will require significant work to return this plant to an operating condition, as it has been idled since February 2014.

### 3.5.1 Mine Preparation

#### 3.5.1.1 Pit Dewatering

The West Pit Extension (WPX) is the only area that will require dewatering with the existing equipment and discharge systems before mining operations resume. Eventually, the South Pit and East Pit (east) will resume dewatering activity, but that is not required prior to resuming facility operations. Mine Pit locations and designations are depicted in Figure 3.2.

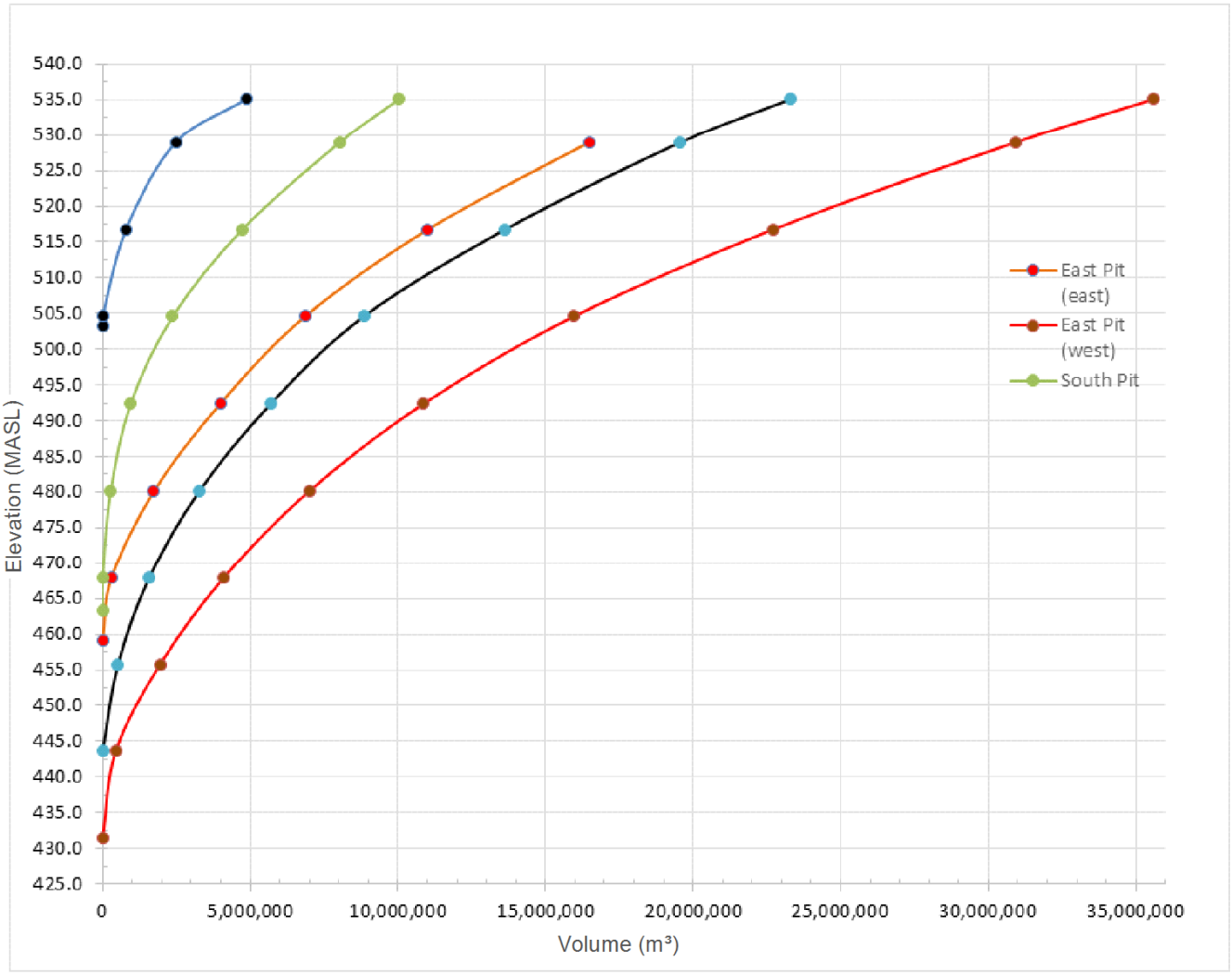
##### 3.5.1.1.1 Water Elevations

The facility has monitored pit water elevations during mining operations and since the plant was idled in February 2014. Table 3.4 lists the existing pit water level elevations as of August 2017, which is the most recent available data.

Table 3.4. Pit Water Elevations (masl)

| Pit designation | Water Elevation (masl) | | | | Anticipated highest elevation[xlvi] | Comment |
|---|---|---|---|---|---|---|
| | Dec 2013 | Sept 2015 | June 2016 | August 2017 | | |
| West | | 504 | 529 | 532 | 535 | Same elev. as Duley (Long) Lake |
| West Ext. | 451.8 | 529 | 530 | 532 | | |
| South | | | 494 | | | |
| East (west) | 449.7 | 469 | 486 | 514 | | |
| East (east) | 455.8 | 494 | 503 | 514 | 527 | Same elev. as Little Wabush Lake |

The water volumes for each pit at varying elevation levels are shown in Figure 3.12, and estimated in Table 3.5. This information was obtained from facility mining survey data and tabulated by Maptek as part of the mine development plan.




| | | | |
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.12** | PREPARED BY: SEM |
| | **Water Volume by Pit Elevation** | COORDINATE SYSTEM: **NAD83 UTM Zone 19** | DATE: **05/09/2017** |

Table 3.5. Estimated Pit Water Volumes

| Pit Designation | 9/1/2015 | | 6/1/2016 | | 8/17/2017 | |
|---|---|---|---|---|---|---|
| | MASL | $m^3$ | MASL | $m^3$ | MASL | $m^3$ |
| West Pit | 504 | 2,000 | 529 | 2,594,000 | 532 | 3,657,081 |
| West Pit Ext | 529 | 19,286,000 | 530 | 19,933,000 | 532 | 21,427,156 |
| South Pit | | - | 494 | 1,145,000 | | - |
| East Pit (w) | 469 | 3,940,000 | 486 | 8,567,000 | 514 | 20,868,888 |
| East Pit (e ) | 494 | 4,364,959 | 503 | 6,715,000 | 514 | 10,075,713 |

#### 3.5.1.1.2 Net Infiltration Rates

Based on the measured pit water elevation changed in the period from September 2015 to August 2017, and facility data that estimated water volume at the various elevation levels, an estimation of net water infiltration rates can be derived. This is an approximation at the range of water elevations shown, as the hydraulic head between associated surface water bodies and the respective mine pits will influence the groundwater infiltration rate. As pit water levels approach that of surrounding lakes, the infiltration rate should slow and conversely the infiltration rate should increase as hydraulic head differential increases. Table 3.6 shows the estimated net water infiltration rates based on periodic water level measurements within the various open pits. There was only one field measurement taken in the South Pit, thus it is excluded from Table 3.6.

Table 3.6. Pit Water Net Infiltration Rates

| Pit Designation | 2015 ~ 2016 | | | 2016 ~ 2017 | | | 2015 ~ 2017 | | |
|---|---|---|---|---|---|---|---|---|---|
| | days | $m^3$/min | US gpm | days | $m^3$/min | US gpm | days | $m^3$/min | US gpm |
| West Pit | 274 | 6.57 | 1,735 | 442 | 1.67 | 441 | 716 | 3.55 | 936 |
| West Pit Ext | 274 | 1.64 | 433 | 442 | 2.35 | 620 | 716 | 2.08 | 549 |
| East Pit (w) | 274 | 11.73 | 3,098 | 442 | 19.33 | 5,106 | 716 | 16.42 | 4,337 |
| East Pit (e ) | 274 | 5.96 | 1,573 | 442 | 5.28 | 1,395 | 716 | 5.54 | 1,463 |
| Total | | 25.89 | 6,840 | | 28.63 | 7,562 | | 27.58 | 7,286 |

Table 3.6 shows net infiltration rate variability due to weather patterns and hydraulic connectivity with adjacent lakes. It is noted that the cumulative water infiltration rate based on this limited site data should be viewed as an approximation in the range of 26 to 28 $m^3$/minute (6,800 to 7,400 US gpm).

#### 3.5.1.1.3 West Pit and West Pit Extension

Partial dewatering the West Pit and West Pit Extension to an elevation of 518 masl is the highest priority project for the site reactivation, as the initial mining plans focus on the North face of the West Pit Extension and south face of the West Pit. Pumping from the existing equipment will start as soon as the required governmental approvals are received. Dewatering activities for these two pits is a singular activity, as they are physically connected due to progressive mining and culvert systems. As such, there is approximately 9.883 million cubic meters of water to be removed, exclusive of ongoing pit infiltration. Infiltration for the combined West Pit and West Pit Expansion is estimated from Table 3.6 at a range of 4 to 8.2 $m^3$/minute (1,060 to 2,100 US gpm); with the longer-term rate estimates at 5.6 $m^3$/minute (1,500 US gpm).

Using the existing dewatering equipment for the west pit extension (a combination of deep groundwater wells and in-pit pumps, the facility has enough equipment to pump more than 75.7 $m^3$/minute (20,000 US gpm) via the existing discharge conveyances. Allowing for a high infiltration rate of 8.2 $m^3$/minute (2,100 US gpm), this dewatering system would have a net dewatering rate of 67.5 $m^3$/minute (17,900 US gpm). This theoretical best-case scenario would allow the West Pit and West Pit extension water levels to be lowered to the desired water level within **105** days.

A more conservative estimate uses five existing 140 HP submersible pumps in the West Pit extension and a number if the installed deep well groundwater pumps. Each submersible pump in this application can easily pump 7.6 $m^3$/minute (2,000 US gpm) and discharge into one of two existing settling basins before finally discharging into Duley Lake. The facility's 2014 dewatering plan showed each settling pond was intended to handle 23.4 $m^3$/minute (6,200 US gpm), thus there is more than adequate settling basin retention time for suspended solids removal. The deep well pumping system discharges directly into Duley Lake through an existing outfall structure. Previous rates from this existing system supported a consistent flow rate of 18.9 $m^3$/minute (5,000 US gpm), although the total installed pumping capacity in the deep well pumps alone exceeds 75.7 $m^3$/minute (20,000 US gpm). This second dewatering scenario allows the West Pit and West Pit Extension to be dewatered within **140** days.

Water quality sampling and criteria are discussed in Section 3.8.2.

### 3.5.1.2 Surface Overburden and Waste Rock

No additional surface or waste stripping will be required prior to plant start-up. As the plant is brought online, stripping will commence predominantly in the West Pit Extension (north face) and then in West Pit (south face).

### 3.5.2 Facilities Reactivation

There is a great deal of cleaning, inspection and repair to critical utility systems including electrical power distribution, process water supply, and steam system before the actual beneficiation processes can begin to be checked out for resumed production. There is also a plan to finish previously planned capital improvements and equipment upgrades prior to restarting the operations.

The facilities reactivation is planned in two larger groups of work. First of these will be the capital investment portion which contains the major component upgrades such as Manganese Reduction Line installation, fluidized bed dryer rebuilds, and tailings line upgrades. This work is scheduled to be completed in approximately 8 months and would begin long lead items shortly after approval of closure on the assets. The second group of work is summarized as plant start up and includes necessary items such as electrical equipment revitalization and test out, lubrication purges across the plant, mechanical checkouts and test starts of all necessary equipment. This work is scheduled to be completed in approximately 8 months and will overlap the capital investment work being performed.

#### 3.5.2.1 Electrical Power Distribution System

The initial priority is to get the substations and motor control centers reenergized and plant lighting restored.

#### 3.5.2.2 Water Supply and Distribution

Raw water piping inspection, pressurizing and inevitable repairs from the Little Wabush Lake intake structure to the plant site is the second activity, it can begin once electrical power to the affected plant areas is restored so needed repairs can be safely completed.

#### 3.5.2.3 Steam System

Once raw water and applicable electrical power has been restored to the plant site, the boiler systems can begin to be tested and reactivated. This will include physical inspections of all boilers and auxiliary equipment (fuel delivery, combustion fans, feed water pumps, heat exchangers, etc.), control systems checkout and repairs or upgrades as needed for safe boiler operations.

#### 3.5.2.4 Hot Water Building Heat

Before the boilers can be operated, the hot water building heat system must be restored to safe operating condition. Similar to the raw water piping system, this will involve inspection, pressurizing and repairs throughout the plant site.

#### 3.5.2.5 Beneficiation Equipment

Once electrical power distribution and lighting has been restored, repair and reactivation of the iron ore concentrating process can begin. The work will be completed in parallel with the steam and hot water building heat systems. Along with the repairs and equipment upgrades in these areas there will also be a replacement and upgrade of plant instrumentation for improved process control.

##### 3.5.2.5.1 Crushing

Crushers will need to be cleaned out as they were left full of material when shut down. New electric over hydraulic rock hammers will be installed to reduce down time when frozen material plugs the operation and the installation of a new belt magnet for removing tramp metal on conveyors. These upgrades will improve crusher availability and allow the desired ore throughput.

##### 3.5.2.5.2 Grinding

The #6 autogenous grinding mill will have the primary through pinion gearing replaced. A new feed chute design will be installed to prevent material plugging on five of the six mill lines similar to the successful modification to mill line #4. Replacement of the mill oversize return pumps to a more reliable and properly sized pump will be completed to allow oversize material to be recirculated to the mill feed chutes. Replacement of spiral feed pumps to a more reliable and properly sized pump will be added to increase availability.

##### 3.5.2.5.3 Primary Separation

The primary separation circuit consisting of spirals, hydrosizers, and two stages of cyclones are generally in good operating condition. This equipment will be inspected and any necessary repairs completed.

##### 3.5.2.5.4 Drying

Restarting the drying system will require a comprehensive rebuild of #2 dryer and an upgraded PLC and burner management system to all three dryers. Along with this work, a project to change the discharge dust collection isolation valves will be completed as well as necessary maintenance and repairs on the dust collection systems. Work on associated dust collection equipment is discussed further in Section 3.8.1.1.

##### 3.5.2.5.5 Manganese Reduction Circuit

The upgrade from the existing High Tension Separators to six lines of magnetic separators (Manganese reduction lines) will be completed prior to plant restart. Two of these six lines were

completed prior to the plant being closed. The installation of the final four lines will be completed as replicas of the first two. As a part of the replacement of this equipment, new electrical gear will be installed within the existing building footprint to upgrade the power supply to the new equipment.

#### 3.5.2.5.6 Scavenger Circuit

The scavenging circuit consists of a dry processing circuit and a wet processing circuit. The dry processing circuit of high tension separators finished with a magnetic separator will be restarted for additional iron recovery from the Manganese Reduction Circuit tailings and a separation of a high manganese waste stream. The wet scavenging circuit consisting of spirals, Wet Low Intensity Magnetic Separation drums, and Wet High Intensity Magnetic Separators are still in place and could be utilized. This will be evaluated and tested after startup as a potential future project to increase plant recovery.

#### 3.5.2.5.7 Rail Loadout

Reactivation of the rail loadout system will include equipment inspection and dust control systems inspection and repair. A planned upgrade to install additional storage capacity and associated equipment will be completed. This covered storage addition is to accommodate increased efficiencies on rail logistics.

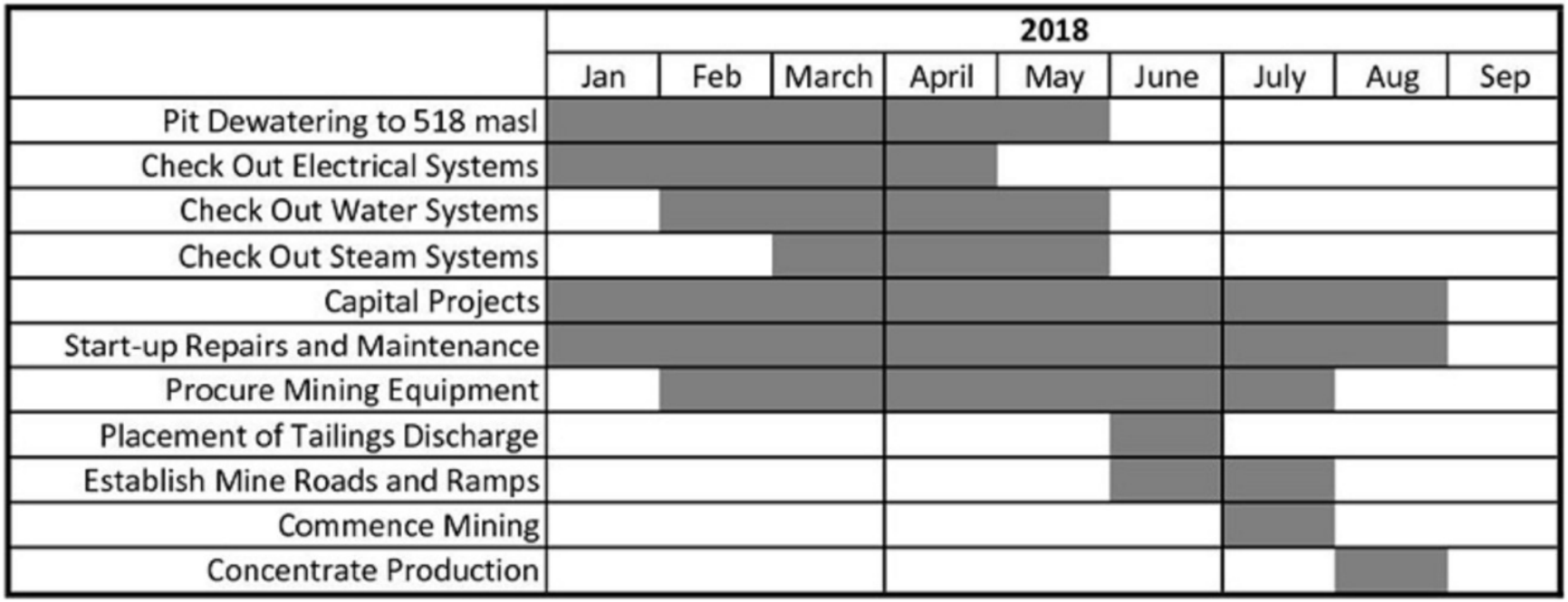
### 3.5.3 Timetable

The overall timeline for site reactivation is shown below in Figure 3.13. This schedule contemplated an eight month reactivation period, thus production could resume as early as the third quarter of 2018. The detailed schedule for facilities reactivation is given in Figure 3.14.

## 3.6 OPERATION

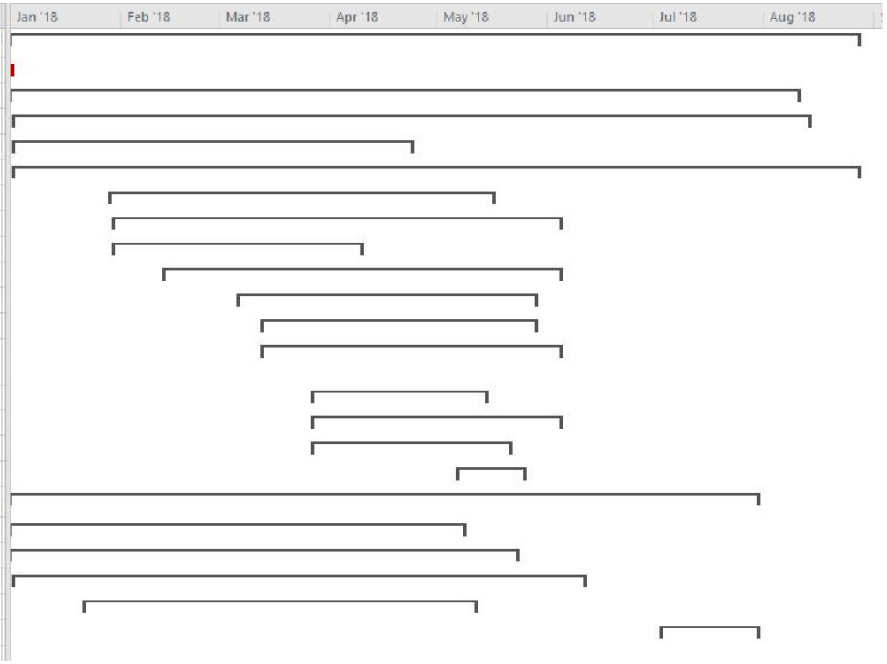
The Scully beneficiation plant and mine will operate on a continuous basis, with periodic maintenance outages that are typical for a large industrial mining operation.

Once reactivated, the Scully Mine will have annual production capacity reaching 6.25 million metric tonnes of iron concentrate by 2021. The concentrate will be shipped on the QNS&L Railway to SFP Pointe-Noire facilities in Quebec and then shipped throughout Europe and Asia. A revised mineral reserve estimate has been completed and projects mineral reserves that support mining operations for 22 years (2040), although current tailings storage in the Tailings Management Area supports operations for an additional 16 years (2033).




| | | | | |
|---|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: Figure 3.13 | PREPARED BY: SEM |
| | **2018 Schedule for Reactivation** | COORDINATE SYSTEM: UTM Zone 19 | DATE: 06/09/2017 |

| Task Name | Duration | Start | Finish |
|---|---|---|---|
| 1 Detailed Mill CapX and Repair Budgets | 171 days | Mon 1/1/18 | Mon 8/27/18 |
| 1.1 | 1 day | Mon 1/1/18 | Mon 1/1/18 |
| **1.6 Install rock hammers in primary crusher pockets** | **160 days** | **Mon 1/1/18** | **Fri 8/10/18** |
| 1.2 Proposal for MN reduction installation lines 3-6 | 160 days | Tue 1/2/18 | Mon 8/13/18 |
| **1.10 Cleaning and test out of electrical gear** | **80 days** | **Tue 1/2/18** | **Mon 4/23/18** |
| **1.16 Added loadout capacity** | **170 days** | **Tue 1/2/18** | **Mon 8/27/18** |
| **1.5 Plant structural repairs** | **78 days** | **Mon 1/29/18** | **Wed 5/16/18** |
| **1.3 #2 Dryer Rebuild** | **90 days** | **Tue 1/30/18** | **Mon 6/4/18** |
| **1.7 Fresh water header change out** | **50 days** | **Tue 1/30/18** | **Mon 4/9/18** |
| **1.14 Tails lines seal water upgrade** | **80 days** | **Tue 2/13/18** | **Mon 6/4/18** |
| **1.4 Finish PLC and burner conversion to dryer building** | **60 days** | **Tue 3/6/18** | **Mon 5/28/18** |
| **1.11 Install new instrumentation** | **55 days** | **Tue 3/13/18** | **Mon 5/28/18** |
| **1.12 Shorten belts and install new feed chutes on mill lines 1,2,3,5,6** | **60 days** | **Tue 3/13/18** | **Mon 6/4/18** |
| **1.8 Replace Broken and damaged small bore plant piping** | **35 days** | **Tue 3/27/18** | **Mon 5/14/18** |
| **1.13 Replace mill screen oversize and spiral feed pump case** | **50 days** | **Tue 3/27/18** | **Mon 6/4/18** |
| 1.15 Mill line 6 gear change out | 40 days | Tue 3/27/18 | Mon 5/21/18 |
| **1.9 Install 1B belt magnet and chute** | **15 days** | **Mon 5/7/18** | **Fri 5/25/18** |
| 2 Plant start up | 150.5 day | Mon 1/1/18 | Mon 7/30/18 |
| 2.2 Electrical items | 92 days | Mon 1/1/18 | Tue 5/8/18 |
| 2.4 Mechanical repairs (Not Capex) | 103 days | Mon 1/1/18 | Wed 5/23/18 |
| **2.1 Procurement for startup** | **115 days** | **Tue 1/2/18** | **Mon 6/11/18** |
| **2.3 Lubrication items** | **80 days** | **Mon 1/22/18** | **Fri 5/11/18** |
| **2.5 Test run of equipment and start up** | **19.5 days** | **Tue 7/3/18** | **Mon 7/30/18** |




TACORA RESOURCES

TACORA Environmental Assessment Registration

**Construction Schedule**

FIGURE NO: **Figure 3.14**

PREPARED BY: SEM

COORDINATE SYSTEM: **UTM Zone 19**

DATE: **05/09/2017**

### 3.6.1 Mining Methods and Rates

#### 3.6.1.1 Mine Preparation

Overburden and waste rock stripping will commence with the restart of mining operations. The focus will be restarting mining activities in West Pit South and West Pit Extension North.

##### 3.6.1.1.1 Overburden

Prior to the operations being shut down in 2014 overburden had been sufficiently removed to allow for a restart of ore mining. As such, overburden stripping is not planned to commence until plant operations are started. Stripping will start in two locations, first from the south face of West Pit which will be deposited to the south of the West Pit Extension. The second location is material from the north face of the West Pit Extension, which is to be deposited in the boot waste disposal area.

##### 3.6.1.1.2 Waste Rock

Waste rock stripping will not commence until plant operations have resumed. Waste rock stripping will start in two locations, first from the south face of West Pit which will be deposited to the south of the West Pit Extension. The second location is material from the north face of the West Pit Extension which is to be deposited in the boot waste disposal area.

#### 3.6.1.2 Pit Dewatering

Once the mine has resumed operations, dewatering requirements are a combination of maintenance activities to remove groundwater infiltration in the West Pit Extension and continued dewatering of the other mine pits. The routine surface water quality sampling and reporting from established monitoring points will be the means to ensure compliance with applicable water quality standards.

##### 3.6.1.2.1 West Pit and West Pit Extension

The West Pit and West Pit Extension water levels were reduced to 518 masl during the reactivation phase, during continued operations the existing pumping systems and discharge points will be operated to maintain this water elevation.

##### 3.6.1.2.2 South Pit

As of site shutdown in February 2014, there was no installed dewatering equipment in this pit as it was not accessible in 2013 due to stripping activity at the top of the pit. In the near term, electrical power and an in-pit surface water pumping system will be installed, the capacity of this system will be designed to provide moderate net dewatering to the pit while overburden removal

continues during the reactivation period and initial mining from other locations. The system will be sized to ensure that the discharge does not overload the existing water treatment and settling pond system that eventually discharges into Knoll Lake.

#### 3.6.1.2.3 East Pit (East)

The East Pit (east) is the third mining area where dewatering will resume, but it is not a prerequisite to resuming facility operations. Dewatering will occur using the existing pumping systems that discharge into the Sylvio settling basin and eventual surface drainage into Little Wabush Lake. There are six 140 HP and one 275 HP pumps that can move in excess of 25 $m^3$/minute (7,000 US gpm). This is more than adequate to have a net dewatering effect considering a potential infiltration rate given in Table 3.6 of 5.3 to 6 $m^3$/minute (1,400 to 1,600 US gpm).

#### 3.6.1.2.4 East Pit (West)

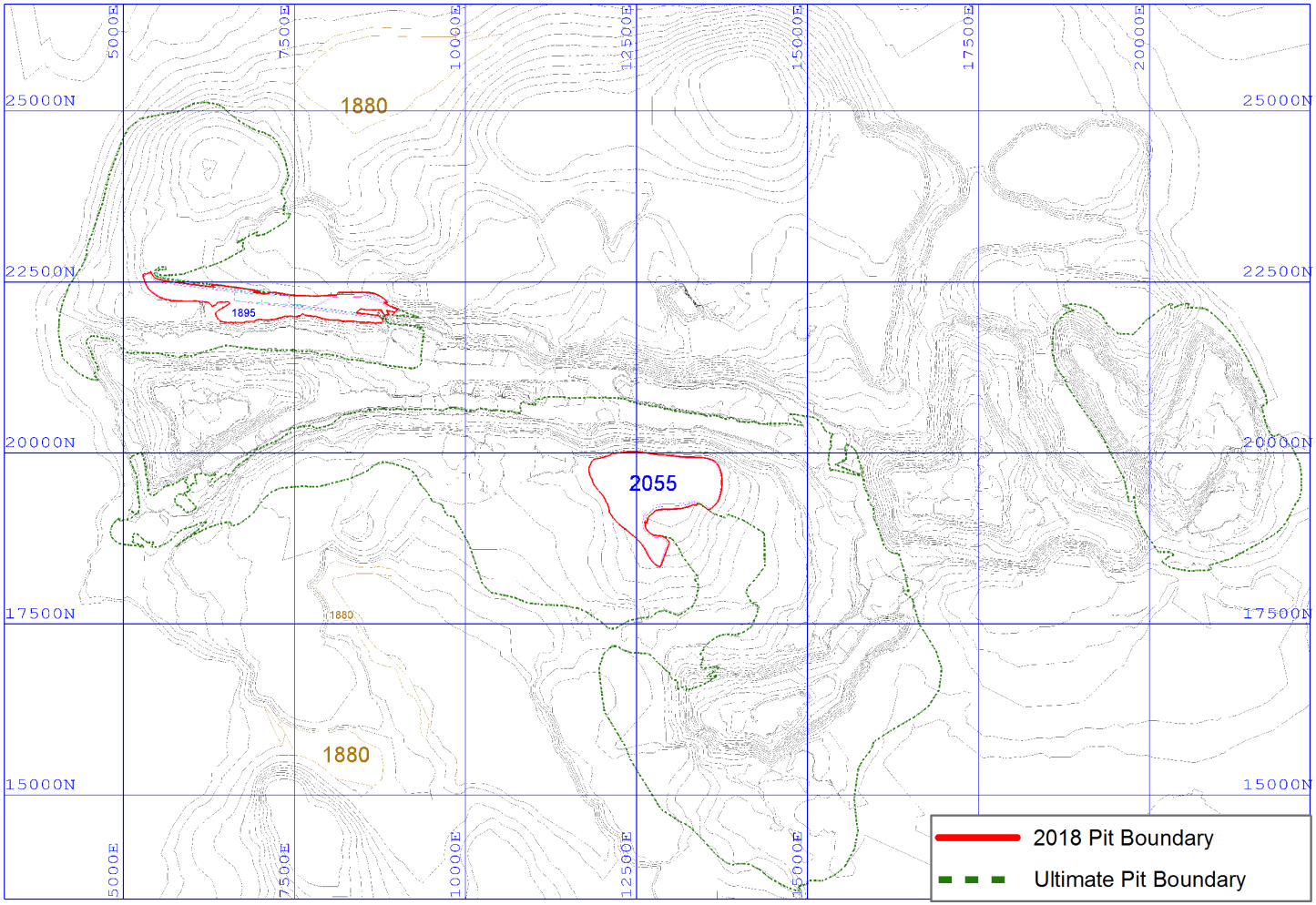
East Pit (west) dewatering occurs through the Knoll basin, a treatment system and eventually into Knoll Lake. There is no intended initial dewatering activity anticipated in this pit, as it will not be the focus of the site reactivation. The net infiltration rates shown in Table 3.6 are likely an indicator of the hydraulic connectivity between this pit and the West Pit. As dewatering occurs in West Pit and Wet Pit Extension, it is assumed that East Pit (west) will see a reduced water infiltration rate. TACORA will also investigate using this water as a potential process water source to reduce demands on the natural environment.

### 3.6.1.3 Mining Sequence

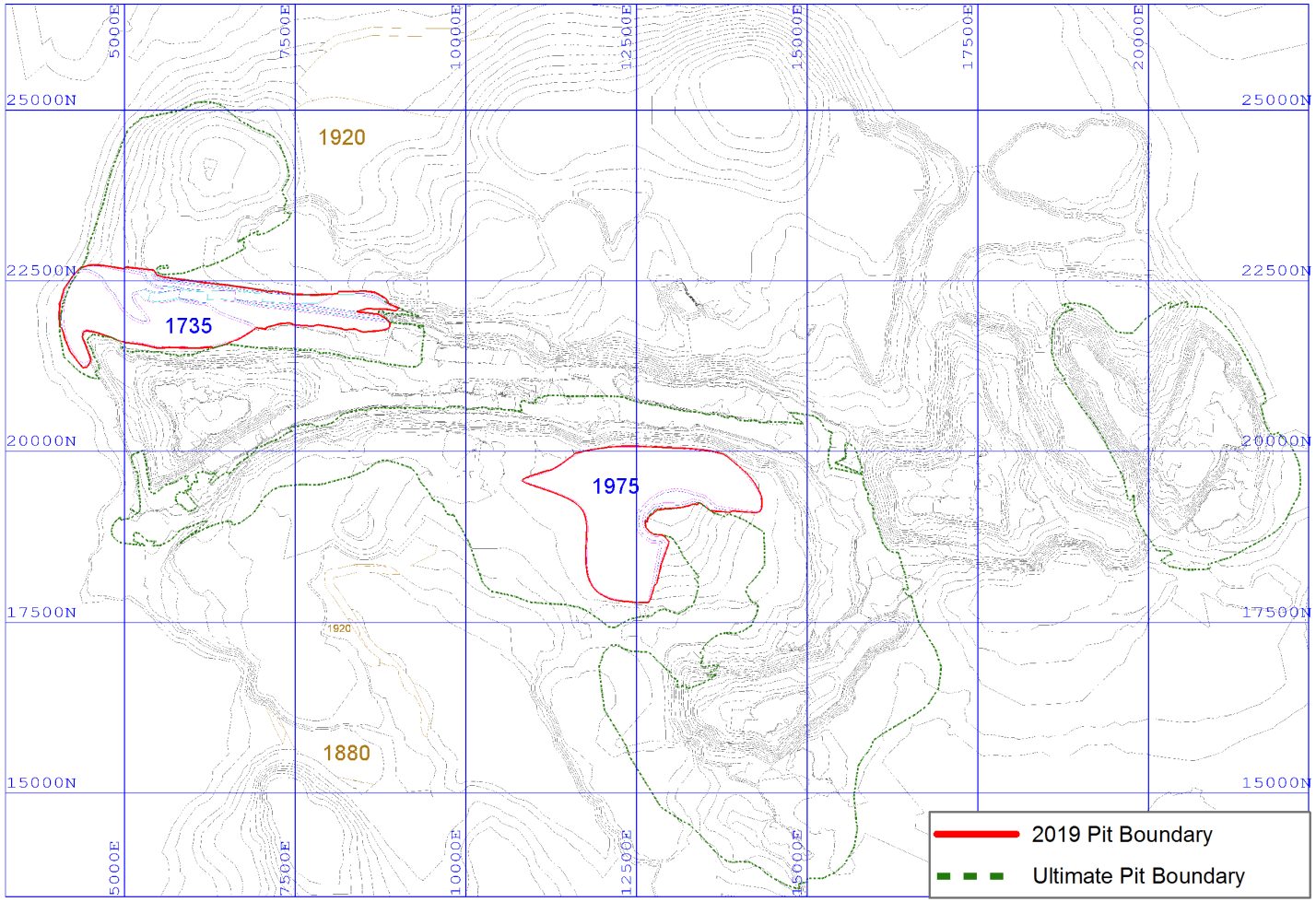
The ore mining sequence over the life of mine is shown in Figures 3.15 through 3.21. The first five years of mining after the reactivation are shown annually, then the figures progress in five year increments and finally the end of mine life is shown in Figure 3.22. That 2040 figure shows the final pit and waste dumps at the end of mine life prior to flooding the pits as part of the mine closure.

The areas to be mined over the initial five years, will concentrate on those areas most recently mined by the previous operator. The highlights of the projected mine plan are listed below.

- Ore will initially be mined from the north face of the West Pit Extension and south face of the West Pit;
- Eventually, mining will proceed into The Boot and additional mining will resume within South Pit;
- The south wall in the West Pit Extension will continue to be mined and pushed back;
- Mining will resume within East Pit (east); and
- East Pit West and eventually West Pit Extension will be considered depleted and subsequently backfilled with rock waste.




| | | | |
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.15** | PREPARED BY: SEM |
| | **Mine Sequence 2018** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **07/04/2017** |

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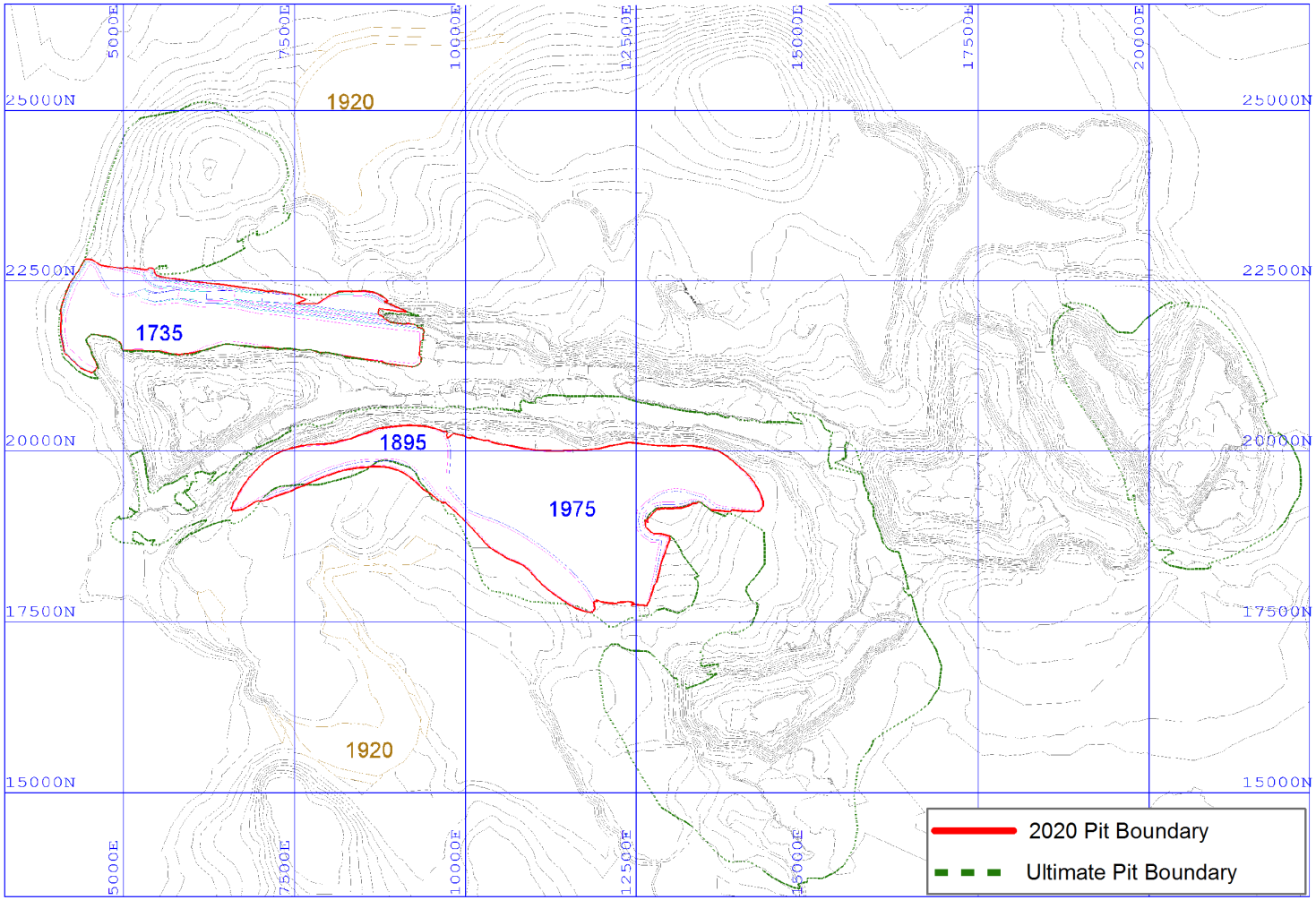
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.16** | PREPARED BY: SEM |
| | **Mine Sequence 2019** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **07/04/2017** |

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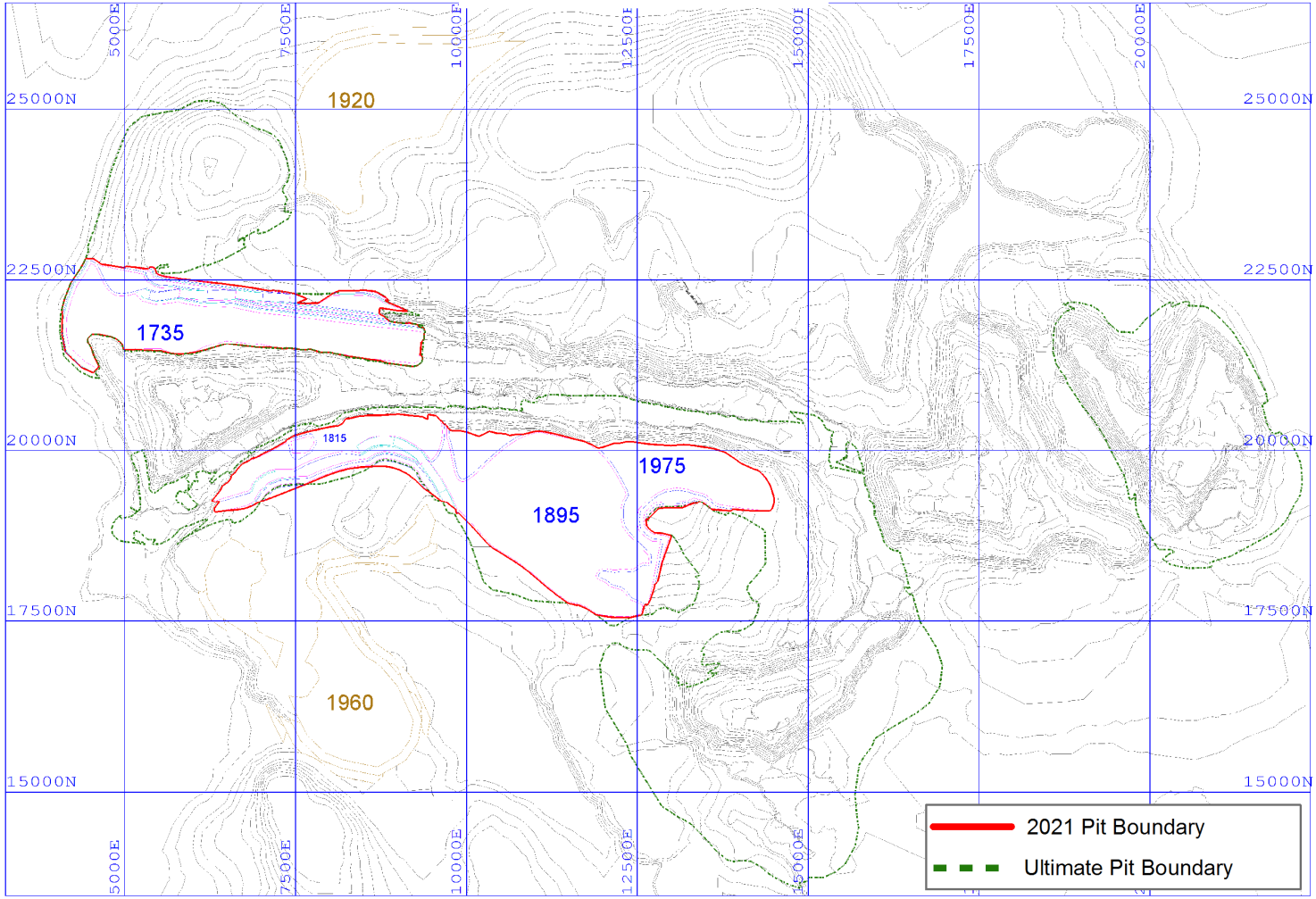
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.17** | PREPARED BY: SEM |
| | **Mine Sequence 2020** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **07/04/2017** |

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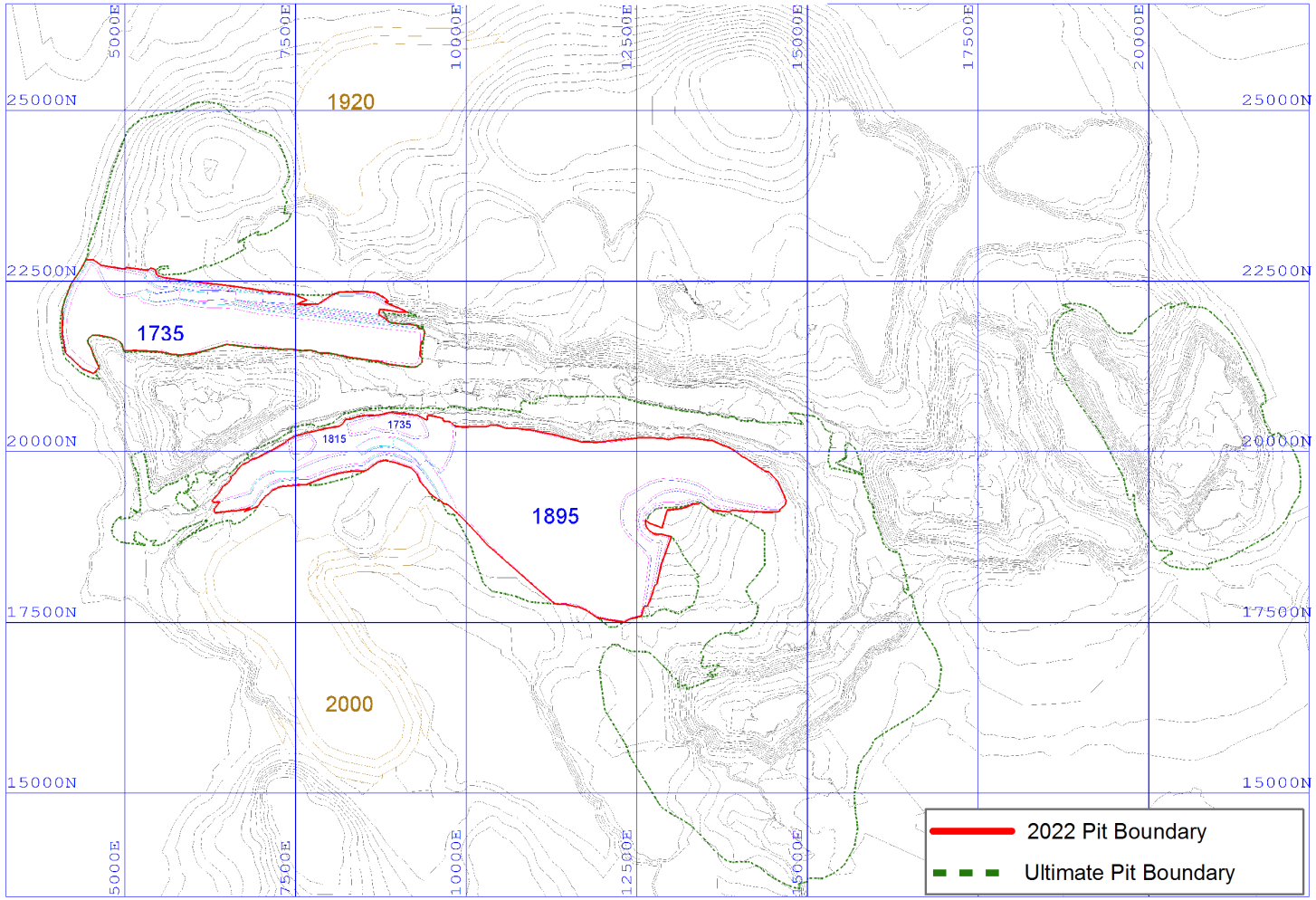
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.18** | PREPARED BY: SEM |
| | **Mine Sequence 2021** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **07/04/2017** |

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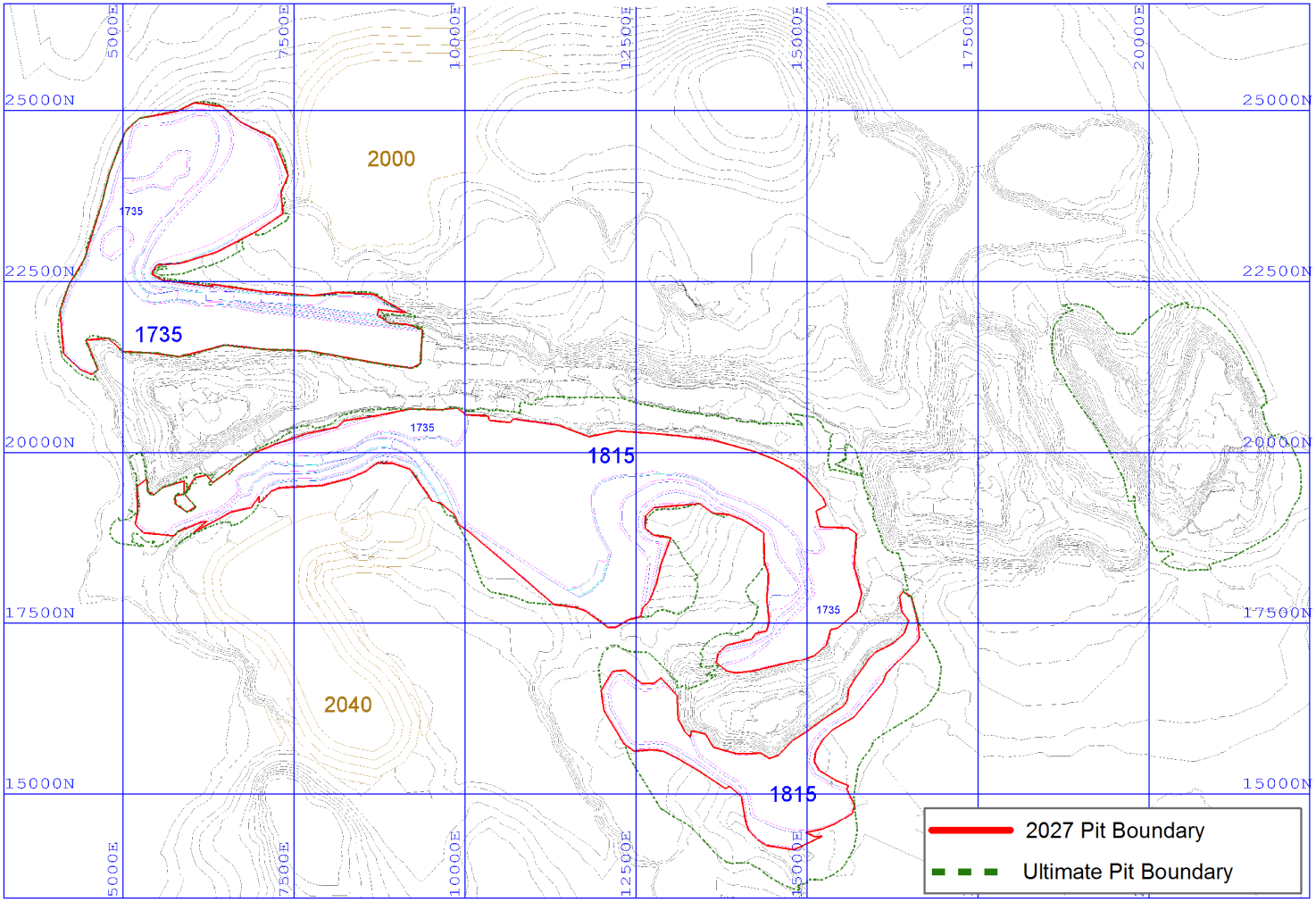
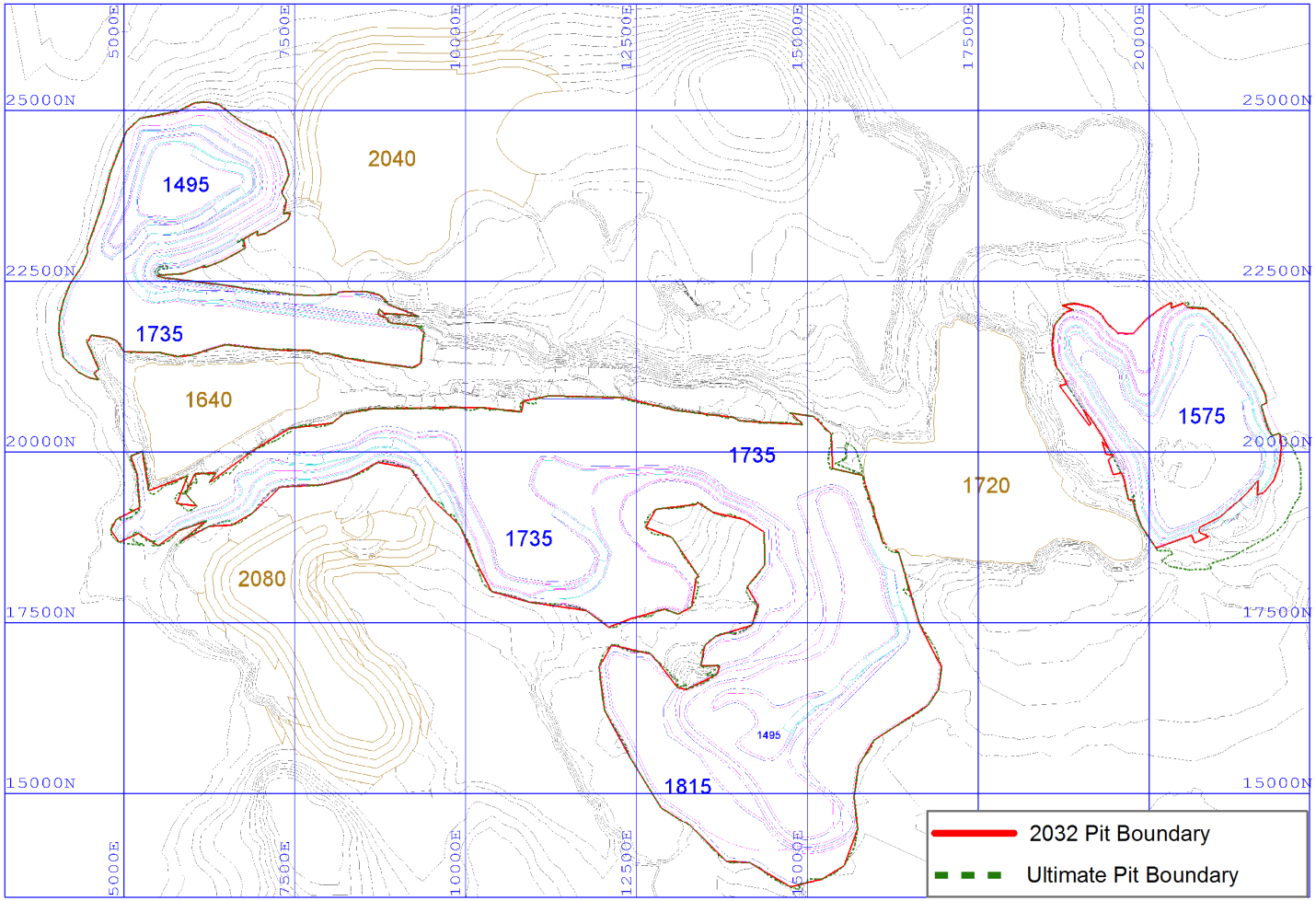
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.19** | PREPARED BY: SEM |
| | **Mine Sequence 2022** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **07/04/2017** |




| | | | |
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.20** | PREPARED BY: SEM |
| | **Mine Sequence 2027** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **07/04/2017** |

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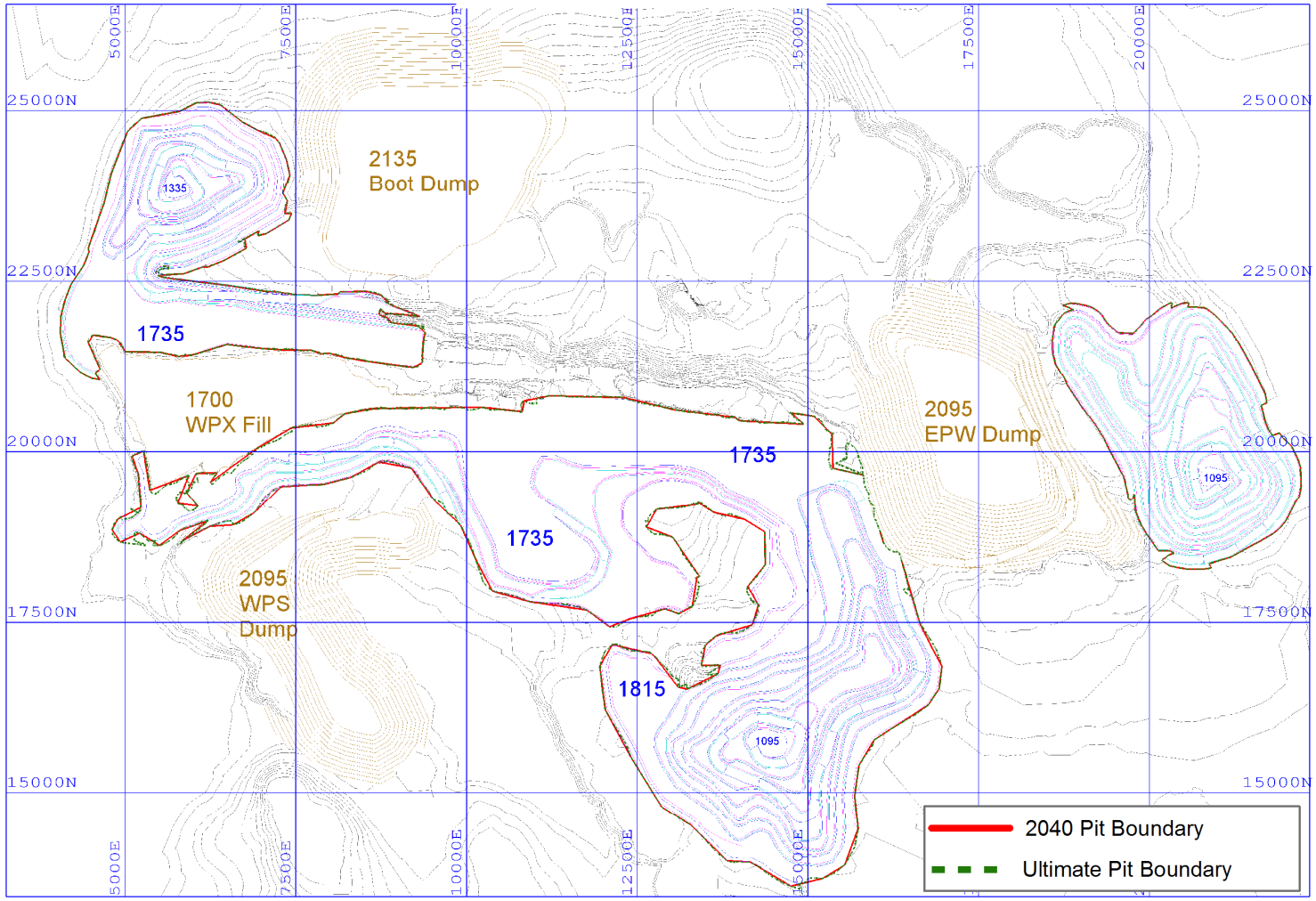
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.21** | PREPARED BY: SEM |
| | **Mine Sequence 2032** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **07/04/2017** |




| | | | |
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO.: **Figure 3.22** | PREPARED BY: SEM |
| | **Mine Sequence 2040** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **07/04/2017** |

Table 3.7 shows annualized material movements through the 16 years of anticipated tailings basin life (2033) and not the total projected mineral reserve life of 22 years (2040).

Table 3.7. Production Schedule 2018 – 2033

| Year | 2018 | 2019 | 2020 | 2021 | 2022 | 2024 |
|---|---|---|---|---|---|---|
| Months | 4 | 12 | 12 | 12 | 12 | 12 |
| Days | 122 | 365 | 365 | 365 | 365 | 365 |
| Material Movement (tonnes) | | | | | | |
| Ore | 3,167,349 | 14,268,199 | 16,116,631 | 17,070,000 | 16,710,000 | 17,400,000 |
| Rock | 1,711,390 | 11,454,351 | 14,207,445 | 16,060,000 | 12,290,000 | 11,630,000 |
| Surface | 725,425 | 900,052 | 610,552 | 570,000 | 130,000 | 930,000 |
| Total Waste | 2,436,815 | 12,354,404 | 14,817,997 | 16,630,000 | 12,420,000 | 12,560,000 |
| Total Material | 5,604,165 | 26,622,603 | 30,934,629 | 33,700,000 | 29,130,000 | 29,960,000 |
| Concentrate | 1,180,093 | 4,860,283 | 5,659,719 | 6,250,000 | 6,250,000 | 6,250,000 |
| Tailings Deposition | 1,987,256 | 9,407,916 | 10,456,912 | 10,820,000 | 10,460,000 | 11,150,000 |
| | | | | | | |
| **Year** | **2026** | **2028** | **2030** | **2032** | **2033** | **Totals (1)** |
| Months | 12 | 12 | 12 | 12 | 12 | 184 |
| Days | 365 | 365 | 365 | 365 | 365 | 5,597 |
| Material Movement (tonnes) | | | | | | 0 |
| Ore | 17,440,000 | 17,700,000 | 17,130,000 | 17,990,000 | 17,540,000 | 260,412,180 |
| Rock | 13,440,000 | 17,920,000 | 19,020,000 | 25,040,000 | 20,920,000 | 241,023,187 |
| Surface | 3,910,000 | 200,000 | 570,000 | 2,720,000 | 2,250,000 | 21,296,029 |
| Total Waste | 17,350,000 | 18,120,000 | 19,590,000 | 27,760,000 | 23,170,000 | 262,319,216 |
| Total Material | 34,790,000 | 35,820,000 | 36,720,000 | 45,750,000 | 40,710,000 | 522,731,396 |
| Concentrate | 6,250,000 | 6,250,000 | 6,250,000 | 6,250,000 | 6,250,000 | 92,950,095 |
| Tailings Deposition | 11,190,000 | 11,450,000 | 10,880,000 | 11,740,000 | 11,290,000 | 167,462,085 |

Note 1: Totals include all values from 2018 through 2033

### 3.6.2 Beneficiation

The reactivation of this existing beneficiation plant will require only one processing change, the replacement of the high tension separators with the remaining portions of the manganese reduction equipment. The previous owners had installed two of six manganese reduction lines and had purchased the other four lines but never completed the installation.

Crude ore is delivered by haul trucks to two gyratory crushers where the material is reduced to minus 8 inches. A conveyor system transfers the ore to a crude ore storage bin. From there, ore is fed onto mill feed conveyors by vibratory feeders onto fully autogenous mills for further

size reduction. Mill discharge is closed with a trommel screen where the screen undersize is fed into a wet vibrating screen. Screen undersize is pumped to spirals and screen oversize is pumped back into the mills.

Spiral tails go through cyclones where the underflow is pumped to the tailings basin and the cyclone overflow is pumped to a large tank where floocculent us used to increase the percentage of solids in the slurry before being pumped to the tailings basin with the cyclone underflow.

Spiral concentrate is processed by a hydrosizer to upgrade and eliminate water before being filtered in a drum filter. Drum filtercake is dried in three fluo-solid dryers where the dried concentrate is subsequently processed by two series stages of low intensity magnetic separation (LIMS), and the LIMS tails are processed by medium intensity magnetic separation (MIMS). The concentrate is conveyed to rail loadout silos and the tailings are processed by magnetic separators to reintroduce magnetic scavenger concentrate into the final product stream and a high Mn by product is stock piled outside of the mill building.

The process flow sheet is shown below in Figure 3.23.

### 3.6.3 Rail Transportation

The concentrate will be shipped on the QNS&L Railway to SFP Pointe-Noire facilities in Quebec. This is the same methodology and route that has been used for the entire life of the facility, there is no additional track necessary to resume operations at the site. The same covered concentrate cars will be used, each with a capacity of 98 metric tonnes. The intent is to begin with 154 car trains and ramp up to 168 car trains to be more efficient in transportation requirements. As shown in Table 3.8, the site will fluctuate between 20 and 32 trains per month during the first five years after reactivation and should stabilize at 30 to 32 cars per month when the mine is producing 6.25 million metric tonnes of concentrate per year.

Table 3.8. Rail Transportation

| Year | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|
| Months | 4 | 12 | 12 | 12 | 12 |
| # cars/train | 154 | 168 | 168 | 168 | 168 |
| Trains/month | 20 | 25 | 29 | 32 | 32 |

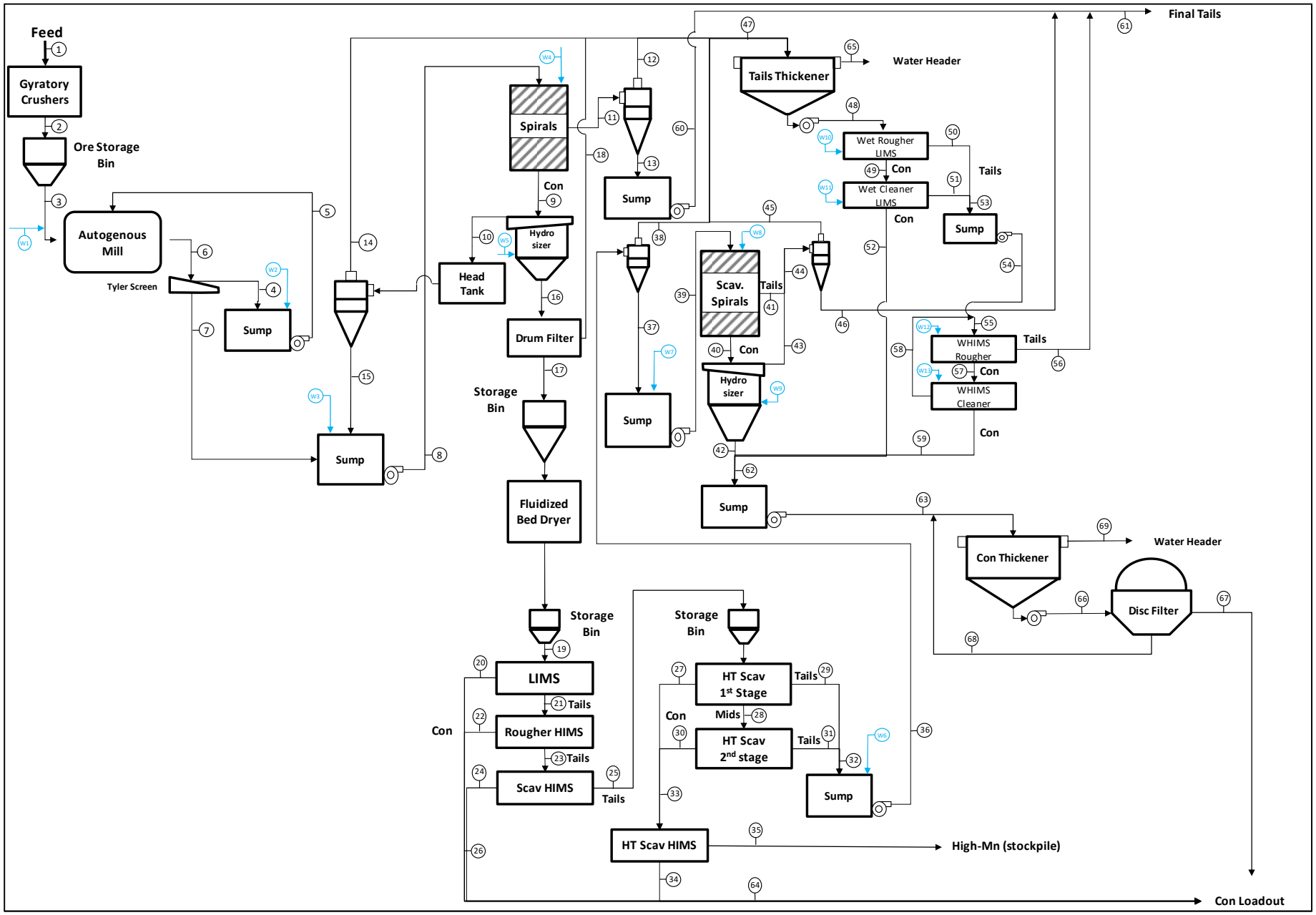



Figure 3.23. Process Flow Sheet

## 3.7 REHABILITATION AND CLOSURE

The Rehabilitation and Closure Plan (RCP) for the Scully Mine has been reviewed and approved by the Newfoundland and Labrador Department of Natural Resources as required under the Newfoundland and Labrador Mining Act, Chapter M-15.1. In accordance with the Act, the Plan details the rehabilitation processes to be implemented at each stage of the project up to and including closure.

The plan is considered a living document that will be reviewed and updated as necessary throughout the project life; RCP updates are required at a minimum of every five years. Each year, operation work plans, outlining schedule and planned rehabilitation activities for the Project, will be submitted to the Province in accordance with the provincial *Mining Act*.

### 3.7.1 Progressive Rehabilitation

TACORA intends to complete portions of the facility rehabilitation as business needs and opportunities become available. To that end, TACORA includes a specific progressive rehabilitation schedule for those rehabilitation and closure activities that are likely to occur before the end of mine life.

The Rehabilitation and Closure Plan requires periodic updates, TACORA will adjust anticipated Closure Costs to reflect rehabilitation work that has occurred since the previous document. The following general principles and updates are provided for reference:

- Revegetation of tailings. The annual tailings revegetation program is intended to keep pace with the tailings surface expansion. TACORA anticipates fertilizing or overseeding a portion of previously reclaimed tailings management area on a periodic basis,
- Revegetation of waste rock piles. Existing waste rock piles will be hydroseeded as soon as they are determined to be stable and no longer needed,
- Berm construction near mine pits. Any berm construction prior to closure will be conducted on an opportunistic basis,
- Clean-up and removal of hydrocarbon storage tanks. The quantity and capacity of storage tanks is evaluated on a regular frequency and tanks will be removed as business conditions dictate,
- Periodic disposal/sale of scrap and surplus equipment. This ongoing activity is subject to the scrap metal market. The scrap metal market has been strong enough that contractors pay for the material and remove it to market. TACORA will continue with this practice as long as the costs are neutral or better,
- Removal of buildings no longer required for operations. The removal of all buildings is currently planned for post closure. Should any buildings be declared redundant before closure, they will be removed,

- Soil contamination assessment and remediation. This work would be completed concurrent with exterior storage tank removal and in accordance with the existing provincial regulations and guidelines, and
- Asbestos inventory and removal. Annual inventories for asbestos were conducted as part of the operational programs.

### 3.7.2 Closure

After cessation of operations of the Scully Mine and the associated metallurgical facilities, TACORA will rehabilitate the land in a safe and environmentally sound manner to achieve the following objectives:

- to restore affected landscapes to a physically and chemically stable and safe environment, in order to protect public health and safety,
- to reduce or eliminate potential adverse environmental effects associated with each phase of the project,
- to create a post closure site where no permanent water treatment or other operational measures are necessary to ensure that acceptable water and air quality will continue in perpetuity, and
- to return the property to the Lessor, MFC Industrial Ltd., after monitoring demonstrates closure objectives have been met.

Wherever practical, rehabilitation measures will be implemented progressively during the remaining mine life. This will especially be demonstrated with the ongoing revegetation program in the tailings management area. Many aspects of the reclamation measures, however, will be implemented once the mine and associated metallurgical facilities are closed.

Closure of the site will consist of the following elements:

- Removal and appropriate disposal of all hazardous chemicals, reagents, materials from both the mine and surface facilities that could otherwise present a risk of future environmental harm,
- Demolition and removal of all above-grade buildings, foundations (to 300mm below grade) and other infrastructure (e.g., overhead piping, electrical cables) no longer required once the mine has closed,
- Shipping and sale of salvageable material if prevailing salvage markets and scrap prices and associated economics permit,
- Disposal of all non-salvageable, non-hazardous demolition debris into an approved on-site or near-site waste disposal site,
- Cleanup of all surface yards including removal and appropriate disposal of all materials,
- Assessment of soil contamination in the area of the surface facilities and implementation of appropriate management measures (i.e., remediation or Human Health and Ecological Risk Assessment) to address contaminated soils identified,

- Removal of fencing, recontouring of roadways and restoration of natural drainage patterns wherever practical,
- Decommissioning of seven tunnels,
- Re-vegetation of the tailings management area to control erosion and, where practical, re-vegetation of the plant and non-flooded mine site footprints (as dictated by soil availability). If soil availability is limited, other means such as hydroseeding will be used,
- Natural flooding of the open pits to enhance environmental stability and reestablish natural drainage patterns,
- Berming of the open pits to reduce accessibility,
- Berming of the waste dump crests and vegetating the dump slopes that are visible from the towns of Wabush and Labrador City as well as Duley Lake,
- Monitoring activities and programs to evaluate site erosion, pit wall stability, surface water and groundwater quality, pit infilling, site access control and treated and revegetated areas, including implementation of required corrective measures to deal with environmental concerns that may arise in the post-closure time period, and
- Preparing a Health and Safety Plan prior to the closure for use in implementing the Closure Plan.

Figure 3.24 illustrates the areas which will be rehabilitated during the closure activities; details on the approaches to types of rehabilitation and where they will be used are provided in the following sections.

### 3.7.3 Post Closure Monitoring

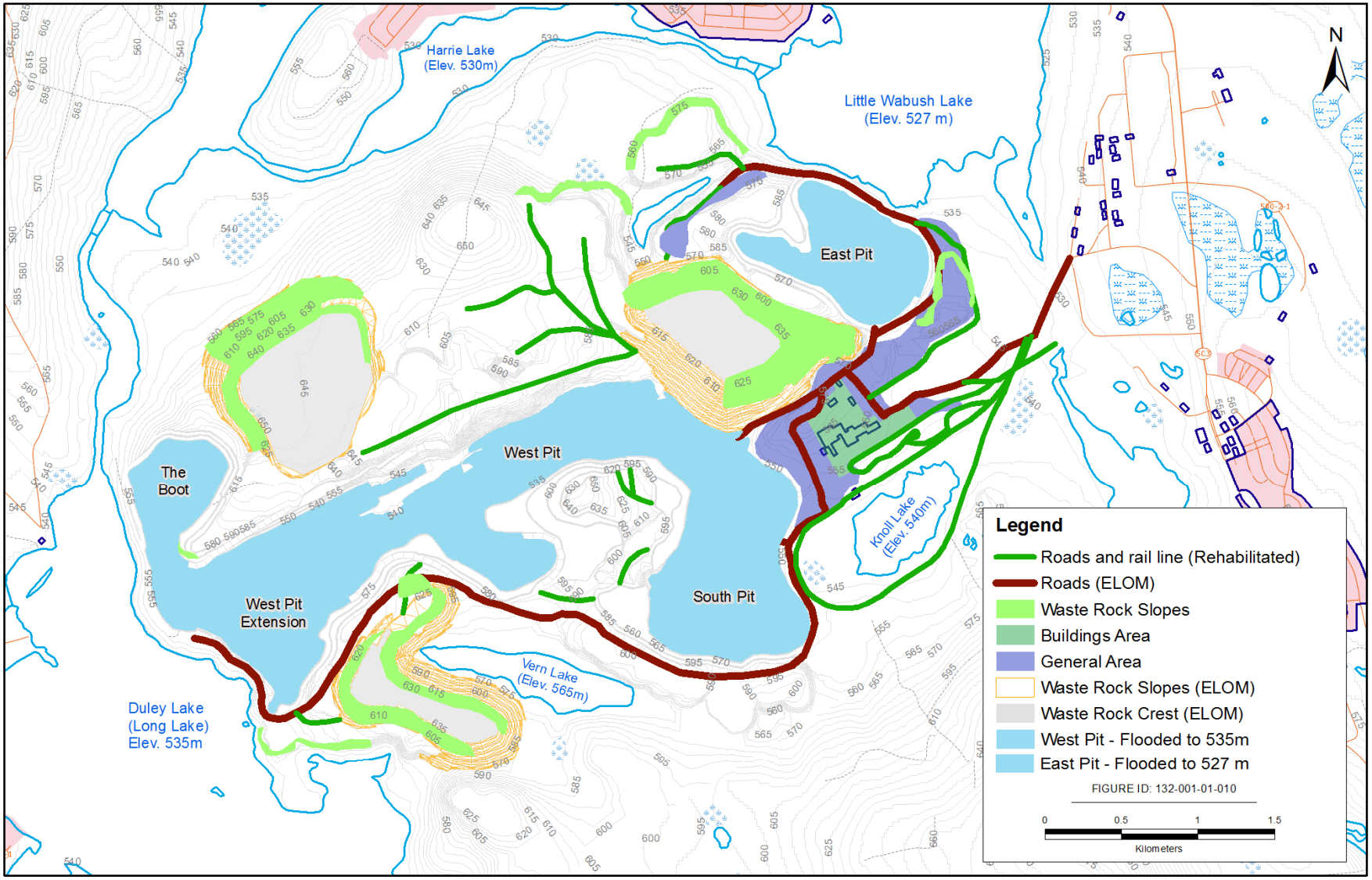
As required, a post-closure monitoring program will be designed and implemented in consultation with appropriate regulatory agencies. Once physical and chemical stability of the site has been achieved, the land will be relinquished to the Crown.

## 3.8 POTENTIAL SOURCES OF POLLUTANTS

There are potential pollutant sources associated with construction and ongoing operations. As these are environmental media specific topics, they will be addressed jointly in this section.

### 3.8.1 Airborne emissions

The reactivation of the Scully mine will result in airborne emissions from mining, processing ore, material handling operations and tailings disposal. These are all activities that have been associated with this mine site for the past 50 years, and airborne emissions challenges at the site are known, documented and must be managed to minimize any potential adverse environmental impact going forward.




| | | | |
|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.24** | PREPARED BY: SEM |
| | **Areas to be Rehabilitated** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **06/09/2017** |

There are existing air emissions test results[xlvii], air dispersion computer modeling results[xlviii] and two ambient air quality monitors that provide a picture of potential air quality concerns. This information can be used as a basis to provide a plan to manage emission sources to meet the requirements and ambient air quality standards within the Air Pollution Control Regulations.

In summary, the facility conducted air emissions testing to determine pollutant emission rates for various aspects of the facility operations (point sources), and these rates were then used as some of the input values into an air dispersion computer model that intends to simulate potential ambient air quality impacts to the local area from facility operations over many years. Other model inputs include fugitive emissions from other mining related activity such as storage piles and vehicular traffic.

Large industrial facilities that are significant air emission sources have been required by DMAE to establish an ambient air monitoring program for the purpose of ensuring that emissions of air contaminants are less than the ambient air quality standards prescribed in the *Air Pollution Control Regulations*. The data collected from the ambient air monitoring program is used for public awareness, ensuring environmental compliance is achieved and maintained in the vicinity of the monitors, and for validation of compliance modelling.

Since the monitors were installed and operating, the facility conducted additional emissions testing and conducted further dispersion modeling to incorporate updated emissions rates and use newer modeling procedures. This document speaks to the most recent emissions testing and the associated dispersion model predictions, summarized in Table 3.9.

TACORA is committed meeting all applicable environmental regulations and commits to conducting the appropriate source testing within the first 12 months of resumed plant operations. Once the test results are received and determined by DMAE and TACORA to be representative of sustained operations, TACORA will complete updated air dispersion modeling within following six months. If the actions, testing results and subsequent dispersion modeling do not meet the Provincial ambient air quality standards, TACORA will work cooperatively with DMAE to determine and execute an acceptable course of action.

TACORA will continue to operate the existing monitoring stations until such time as they are no longer deemed necessary by DMAE and TACORA.

Table 3.9. 2014 Air Dispersion Model Summary

| Pollutant | Avg. period | Ground Level Concentration (ug/m$^3$) | | | | Status |
|---|---|---|---|---|---|---|
| | | Point source | Fugitive | Permitted (point + fugitive) | Regulatory limit | |
| TSP | 1 hr. | 880 | 454 | 883 | | |
| | 24 hr. | 409 | 150 | 409 | 120 | Fail |
| | Annual | 41 | 12 | 42 | 60 | Pass |
| $PM_{10}$ | 1 hr. | 335 | 274 | 338 | | |
| | 24 hr. | 143 | 83 | 143 | 50 | Fail |
| $PM_{2.5}$ | 1 hr. | 184 | 43 | 184 | | |
| | 24 hr. | 76 | 13 | 76 | 25 | Fail |
| | Annual | 7 | 1 | 7 | | |
| $SO_2$ | 1 hr. | 113 | 0 | 113 | 900 | Pass |
| | 3 hr. | 91 | 0 | 91 | 600 | Pass |
| | 24 hr. | 42 | 0 | 42 | 300 | Pass |
| | Annual | 3 | 0 | 3 | 60 | Pass |
| $NO_2$ | 1 hr. | 187 | 0 | 187 | 400 | Pass |
| | 24 hr. | 74 | 0 | 74 | 200 | Pass |
| | Annual | 6 | 0 | 6 | 100 | Pass |
| CO | 1 hr. | 43 | 0 | 43 | 35,000 | Pass |
| | 8 hr. | 22 | 0 | 22 | 15,000 | Pass |

As the particulate modeling results above exceed the regulatory standards, the remainder of this section will speak to particulate emissions.

#### 3.8.1.1 Point Sources

There are fifteen (15) point sources at the Scully mine that have been included in previous emissions testing and subsequent dispersion models. These sources were determined in accordance with NL regulations and have remained constant over the past seven years. The model considers several point source parameters; mass based emission rate for a given pollutant, exhaust orientation, exhaust stream temperature, and exhaust stream velocity. These parameters are used in a model to define the plume characteristics per point source (see Table 3.10). As expected, a high temperature, high velocity vertical exhaust stream would predict a more disperse exhaust plume than would be predicted by a relatively cold, slow, horizontal exhaust.

Table 3.10. Point Source Parameters – January 2014 Dispersion Model

| Source | Exhaust parameters | | | Emission rates (g/s) | | | Note |
|---|---|---|---|---|---|---|---|
| | Temp (°C) | Velocity (m/s) | Orientation | TSP | $PM_{10}$ | $PM_{2.5}$ | |
| Boiler 1 | 277 | 8.7 | Vertical | 1.21 | 0.604 | 0.331 | 1 |
| Boiler 3 | 327 | 10.7 | Vertical | 1.36 | 0.544 | 0.306 | 1 |
| Dryer 1 | 58 | 4.0 | Vertical | **7.6** | ***7.0*** | *4.0* | 2, 3 |
| Dryer 2 | 73 | 4.9 | Vertical | **5.0** | ***4.6*** | *2.6* | 2 |
| Dryer 3 | 72 | 4.8 | Vertical | **6.1** | ***5.7*** | *3.2* | 2 |
| Dryer Dust Collector | 20 | 21.5 | Horizontal | ***25.3*** | 0.23 | 0.14 | 4, 5 |
| Crusher | 20 | 17.3 | Horizontal | 0.27 | 0.04 | 0.01 | 4 |
| Classifier | 20 | 11.3 | Horizontal | 0.37 | 0.05 | 0.01 | 4 |
| High Tension 1 | 20 | 29.7 | Vertical w/cap | 0.84 | 0.30 | 0.15 | 4 |
| High Tension 2 | 20 | 25.3 | Vertical w/cap | 0.17 | 0.32 | 0.20 | 4 |
| High Tension 3 | 20 | 19.5 | Vertical w/cap | 0.22 | 0.42 | 0.21 | 4 |
| High Tension 4 | 20 | 27.3 | Vertical w/cap | 1.27 | 0.58 | 0.29 | 4 |
| High Tension 5 | 20 | 17.2 | Vertical w/cap | **6.06** | 0.50 | 0.11 | 4 |
| Train Loadout 1 | 20 | 21.3 | Horizontal | 0.86 | 0.25 | 0.08 | 4 |
| Train Loadout 2 | 20 | 22.4 | Horizontal | **8.12** | **1.64** | 0.45 | 4 |

Notes:

(1) For the two oil-fired boilers, the modulated emission rates used in the model were adjusted from that shown in the table to account for boiler load distribution and seasonality, thus a more accurate representation of actual operations and potential emissions from these two sources.

(2) Dryers were only tested for TSP due to higher moisture content in these exhaust streams. $PM_{10}$/TSP and $PM_{2.5}$/TSP concentrations were estimated at 93% and 53% during past dispersion modeling and NPRI emissions reporting. Dryers have also been tested while reclaiming concentrate from a stockpile; results were even higher in that scenario.

(3) Dryer #1 emissions data was from 2008 test report; it was not tested in 2011.

(4) For horizontal and capped exhaust stacks, plume velocity was modeled at 0.1 m/s to effectively remove any vertical momentum component.

(5) One of the three stack test runs for TSP had an obvious process upset that should have negated that run. It biased the test average high by a factor of 10x. Excluding that run, the average TSP mass emission rate would have been 2.46 g/s.

The following subsections describe the point source modeling emission rates in greater detail, investigations and mitigative measures that have been employed since this modelling was done and those that TACORA intends to complete prior to the re-start of the facility. Table 3.11 summarizes the anticipated particulate matter emission rate changes anticipated by executing the corrective actions described in the following subsections.

Table 3.11. Anticipated Particulate Matter Emission Rates

| Source | 2011 ~ 2012 Emission Rates (g/s) | | | Anticipated Emission Rates (g/s) | | | Note |
|---|---|---|---|---|---|---|---|
| | TSP | $PM_{10}$ | $PM_{2.5}$ | TSP | $PM_{10}$ | $PM_{2.5}$ | |
| Boiler 1 | 1.21 | 0.60 | 0.33 | 1.21 | 0.60 | 0.33 | |
| Boiler 3 | 1.36 | 0.54 | 0.31 | 1.36 | 0.54 | 0.31 | |
| Dryer 1 | 7.6 | 7.0 | 4.0 | 1.67 | 1.55 | 0.88 | 1 |
| Dryer 2 | 5.0 | 4.6 | 2.6 | 1.67 | 1.55 | 0.88 | 1 |
| Dryer 3 | 6.1 | 5.7 | 3.2 | 1.67 | 1.55 | 0.88 | 1 |
| Dryer Dust Collector | 25.3 | 0.23 | 0.14 | 0.67 | 0.23 | 0.14 | 2 |
| Crusher | 0.27 | 0.04 | 0.01 | 0.27 | 0.04 | 0.01 | |
| Classifier | 0.37 | 0.05 | 0.01 | 0.37 | 0.05 | 0.01 | |
| High Tension 1 | 0.84 | 0.30 | 0.15 | 0.15 | 0.15 | 0.15 | 3 |
| High Tension 2 | 0.17 | 0.32 | 0.20 | 0.15 | 0.15 | 0.15 | 3 |
| High Tension 3 | 0.22 | 0.42 | 0.21 | 0.15 | 0.15 | 0.15 | 3 |
| High Tension 4 | 1.27 | 0.58 | 0.29 | 0.15 | 0.15 | 0.15 | 3 |
| High Tension 5 | 6.06 | 0.50 | 0.11 | | | | 4 |
| Train Loadout 1 | 0.86 | 0.25 | 0.08 | 0.80 | 0.19 | 0.08 | 5 |
| Train Loadout 2 | 8.12 | 1.64 | 0.45 | 1.19 | 0.24 | 0.24 | 6 |
| **Total** | 64.8 | 22.8 | 12.1 | **11.4** | **7.15** | **4.37** | |
| Change from 2011~2012 | | | | -82% | -69% | -64% | |

Notes:

(1) Assumes 100 mg/$DSm^3$ and 60,000 $DSm^3$/hr; $PM_{10}$/TSP and $PM_{2.5}$/TSP concentrations were previously estimated at 93% and 53%; current analysis retains these estimated ratios.
(2) Assumes 75 mg/$DSm^3$ and 32,000 $DSm^3$/hr; no change in $PM_{10}$ or $PM_{2.5}$
(3) Assumes 21 mg/$DSm^3$ and 25,000 $DSm^3$/hr per unit; assumes all remaining particulate is less than 2.5 microns.
(4) High Tension unit #5 is removed.
(5) Assumes 100 mg/$DSm^3$ and airflows consistent with 2011 test data; adjusted $PM_{10}$ mass rates proportionally, no change in $PM_{2.5}$.
(6) Assumes 100 mg/$DSm^3$ and airflows consistent with 2011 test data; adjusted $PM_{10}$ mass rates proportionally, $PM_{10} = PM_{2.5}$

#### 3.8.1.1.1 Boilers

The boiler particulate emission rates from 2008 and 2011 were reasonable consistent, thus are considered representative of this equipment. No recent inspection reports or upgrade recommendations have been located, thus it is anticipated that the mass based TSP emissions rates observed in 2011 are expected in future testing.

TACORA will clean, inspect and repair any identified material issues in these boilers before recommissioning this equipment before the facility resumes operations. Any potential emissions improvements are likely to be related to burner management systems improvements.

#### 3.8.1.1.2 Dryers

TSP emission rates from the 2008 and 2011 testing indicate 5.0~7.6 g/s or 18~27 kg/hr. of particulate matter, this is clearly unacceptable system performance and excessive amounts of product loss. Dryer #1 was only tested in 2008, dryer #2 had been tested in 2008 and 2011 and dryer #3 has only been tested in 2011. The dispersion model used the most recent data for each of the three dryers. The 2011 test data for dryers #2 and #3 indicate TSP particulate loading of 296 ~361 mg/DSm$^3$, which is abnormally high for equipment that has a cyclone and wet scrubber for particulate control.

There are no specific condition reports or equipment assessments that speak to the material condition of the dryers and associated scrubbers. One can only assume that these scrubbers were in an operating condition similar to that of the Dryer dust collector and thus not operating within the prescribed operating parameters. Regarding the dryers' material condition, Dryer #2 will require a full outage to replace refractory, repair internal components, and conduct required preventative maintenance on the burner system. The other dryers will also receive internal inspections and repairs as necessary before being brought back into service. TACORA assumes that this work will result in TSP emission concentrations from these dryers will be reduced to less than 100 mg/DSm$^3$.

The January 2014 dispersion modeling report indicates that for the three dryers, $PM_{10}$ and $PM_{2.5}$ concentrations were estimated as a percentage of TSP emissions, set at 93% and 53% respectively. These ratios were also applied to the CY2014 NPRI emissions reporting with the following comment *"the breakdown of $PM_{10}$ and $PM_{2.5}$ for dryers and other dust collectors were set arbitrarily, but by using conservative values."* A site-specific value can be derived from two representative test runs of the Dryer Dust Collector, the next location in the dried concentrate process flow. That data[xlix] supports $PM_{10}$ and $PM_{2.5}$ concentrations as a percent of TSP at 52% and 32% respectively. For this analysis, the previously used estimated of 93% and 53% are retained.

Any potential emissions improvements beyond those described above are likely to be related to burner management systems improvements.

#### 3.8.1.1.3 Material Handling Dust Collectors

Material handling dust collection at this mine are predominately wet scrubber design, with only two dry fabric filters in use.

#### 3.8.1.1.3.1 Dryer Dust Collector

The dryer dust collector was tested in January 2012 and the test results were flawed by one run conducted during an obvious process upset as indicated by a temperature spike and particulate loading more than ten times that seen during the other two test runs. The resultant TSP emission rate of 91 kg./hr. is not representative of historical operations for this equipment. However, considering only the two other test runs gives a particulate concentration of 221 mg/DSm$^3$ or a mass emissions rate of 2.46 g/s (8.9 kg./hr.) which remains too high for this process.

The test report does not include the operating parameters of the wet scrubber at that time. However, the facility retained a third party engineering firm to complete an equipment assessment of the dust collection system; the results are documented in a Wet Scrubber in the Drying Area Status Report[lh] dated August 3, 2012.

This multi venturi designed wet scrubber is installed to collect material screening and handling locations after the concentrate is discharged from the dryers. In this design, the dust-laden air is soaked with water fed through a spray header, pulled through a horizontal bed of round rods set in a way to create a venturi effect. Then, the air decelerates and changed direction hitting various turning vanes and two sets of demisters to remove the water/dust contained in the airflow. The status report indicated internal wear and maladjustment in the horizontal rod bed, damaged turning vanes and general control valve repairs are needed to return the scrubber to proper operating condition.

TACORA will clean, inspect and complete the repairs identified in the 2012 condition report before the facility resumes operations. TACORA will also install the appropriate dump valves in the product separation cyclone that precedes this scrubber, which will allow for further reductions in needed airflow from 39,600 DSm$^3$/hr (as tested) to approximately 32,000 DSm$^3$/hr. to further reduce the potential entrainment of dried concentrate. This work alone should allow the scrubber to meet a particulate discharge of 75 mg/DSm$^3$; coupled with lower airflows this would result in a TSP emission rate of 0.67 g/sec (73% reduction). Once additional air emissions testing is complete and new emission rates are quantified, TACORA may adjust exhaust stacks to gain upward velocity component to improve dispersion characteristics.

#### 3.8.1.1.3.2 Crusher Dust Collector

The crusher dust collector was tested in November 2011, with a mass based TSP emission rate of 0.27 g/s or 0.97 kg/kr. The test report does not include the operating parameters of the Doyle wet scrubber at that time. However, the facility retained a third party engineering firm to complete an equipment assessment of the dust collection system; the results are documented in a Crusher scrubber condition report[li] dated October 9, 2012. The assessment identified material deficiencies in two areas, collection ductwork and scrubber water level control. In addition to a general cleaning, there are several ductwork actuators, dampers and ductwork

repairs needed to improve the dust collection capability of this system. Secondly, there are valves and controllers that are either broken or missing that prevent the system from maintaining a proper water level, a critical operating parameter for this equipment. There is no indication that any of these repairs have been completed.

TACORA will clean, inspect and complete the repairs identified in the 2012 condition report before the facility resumes operations. This work alone should easily improve the capture efficiency of this equipment; this actually increases inlet particulate loading conditions to the scrubber. Scrubber performance improvements offset the increased inlet loading conditions, thus we anticipate consistent exhaust emission rates from this equipment.

Once additional air emissions testing is complete and new emission rates are quantified, TACORA may adjust exhaust stacks to gain upward velocity component to improve dispersion characteristics.

#### 3.8.1.1.3.3 Classifier Dust Collector

The classifier dust collector was tested in November 2011, with a mass based TSP emission rate of 0.37 g/s or 1.31 kg/kr. The test report does not include the operating parameters of the wet scrubber at that time. TACORA has been unable to determine if any inspection reports or repairs have been conducted on this equipment subsequent to the 2011 air emissions testing.

TACORA will clean, inspect and complete any identified repairs for this scrubber before the facility resumes operations, as it is likely that the material condition of this equipment is similar to that of the crusher dust collector. This work alone should ensure that the equipment performs better than documented in the 2011 testing program. As the improvements cannot be fully quantified, we will assume consistent emission rates from this source.

Once additional air emissions testing is complete and new emission rates are quantified, TACORA may adjust exhaust stacks to gain upward velocity component to improve dispersion characteristics.

#### 3.8.1.1.3.4 High Tension System

Currently, the high tension magnetic separation system has five exhaust points, all controlled with wet scrubbers. There is 200,025 $DSm^3$/hr. of exhaust airflow to manage 51 discrete high tension iron ore separators. The varying airflows and individual emission rates indicate the system was not evenly balanced; for example, the TSP emission rate for HT4 alone was larger than the sum of HT1, HT2 and HT3. The combined TSP mass emission rate for all five points was 8.6 g/s or 30.8 kg./hr.

There are no available records of specific scrubber inspections or condition assessments. TACORA intends on replacing all existing high tension separators with the remaining

Manganese reduction separators. The result of this work will keep the dust control equipment referred to as HT1 through HT4 in service but reduce overall system airflow by half. TACORA will inspect, clean and implement any required repairs to ensure the scrubbers are operating properly before resuming operations. Improving scrubber reliability and performance will reduce TSP concentrations to no more than that tested in the second best performing unit (HT3) of 21 mg/DSm$^3$. As a result, TACORA anticipates each of the four scrubbers will have a mass based TSP emission rate of 0.15 g/s or 0.53 kg/hr.

#### 3.8.1.1.3.5 Train Loading

Both emission points from the material handling systems in the train loadout area are controlled by cartridge style dry fabric filters. The 2011 testing was hampered by operational problems that made gathering particulate data during steady state operations very difficult, but regardless of these challenges, the baghouses performed poorly with discharge TSP mass concentrations for Loadout #1 and Loadout #2 of 111 mg/DSm$^3$ and 646 mg/DSm$^3$ respectively. The associated mass emission rates for TSP are 0.86 g/s or 3.1 kg./hr. for Loadout #1 and 8.12 g/s or 29.2 kg.hr. for Loadout #2. Loadout #2 was clearly operating in a failed condition during the 2011 emissions testing program.

There are no available records of specific inspections or condition assessments for these dust collectors. TACORA will clean, inspect and complete any identified repairs for these fabric filters and associated ductwork the facility resumes operations. This work should support these fabric filters achieving the modest discharge TSP mass concentrations of 100 mg/DSm$^3$. The associated mass emission rates for TSP would then be 0.8 g/s or 2.8 kg/hr. for Loadout #1 and 1.2 g/s or 4.2 kg/hr. for Loadout #2.

If the operational environment for these systems indicate that the inlet conditions are simply too high for the collector to work properly, TACORA will design and likely install some cyclone separators in front of the fabric filters to reduce the filter's inlet loading conditions. There may be a need for additional dust collection capacity, but that cannot be determined in advance of resuming facility operations. Additional improvements in dispersion modeling impacts can be achieved by adjusting the exhaust stack orientation upward to improve exhaust plume characteristics.

### 3.8.1.2 Fugitive Dust

Fugitive dust emissions estimates from the Scully Mine are a combination of unpaved haul road traffic, wind erosion from the tailings management area, and blasting activity. The 2014 air dispersion modeling results summary shown earlier in Table 3.11 indicates that TSP and $PM_{10}$ particulate emissions from the unpaved road traffic and wind erosion may exceed allowable ambient air quality standards.

TACORA remains committed to properly managing potential fugitive dust emission sources to the extent reasonably possible. The following subsection will describe these sources in detail.

#### 3.8.1.2.1 Unpaved Haul Roads

Haul truck traffic is the largest potential contributor towards potential particulate emissions. These estimated are based on a US-EPA/AP-42 methodology[lii] that consider distances traveled, vehicle weights, road watering effectiveness, road silt content, and weather conditions (snow cover, rain etc.).

Minimizing haul truck distances traveled has many benefits for the mining operation beyond estimating particulate emissions for dispersion model purposes. While using larger trucks (240 tonne vs. 100 tonne) increases the average vehicle weight, the distance reduction results in a net reduction in the derived particulate emissions. TACORA intends on using 240 tonne haul trucks going forward.

The frequency of road watering and weather conditions also are used as attenuating factors in estimating unpaved road particulate emissions. These are seasonal inputs to a dispersion model and only the road watering impact is manageable by the facility. The 2014 dispersion model used a conservative control efficiency value associated with road watering of 55%, This can be increased to 75% with implementation of a more formal fugitive dust control plan that includes both routine road watering in unfrozen conditions and posted vehicle speeds for all unpaved roads.

#### 3.8.1.2.2 Wind Erosion

Potential sources of particulate emissions related to wind erosion are those from actively worked surface stockpiles (waste rock and concentrate) and dried portions of the tailings management area that have not established sustaining ground cover. These particulate emissions estimates are a calculated value that is also determined using methodologies from Environment Canada's NPRI toolbox and another document from US-EPA/AP-42[liii]. Variables include amount of time that local wind speeds exceed certain thresholds, moisture content and areas of the exposed materials. TACORA commits to minimizing the amount of exterior material stockpiles, and continue with the Progressive Rehabilitation work in the tailings Management area.

### 3.8.2 Water

#### 3.8.2.1 Surface water

Surface water drainage patterns will not materially change during the site reactivation period. We anticipate any reactivation related grading changes will be temporary in nature and the surface watersheds will remain as with previous operations. For the plant site itself, surface

water runoff drains into the Settling basins south of the plant, then is treated and eventually released into Knoll Lake. There are no planned modifications to any watershed associated with the plant site. Figure 3.25 depicts existing natural surface water drainage patterns.

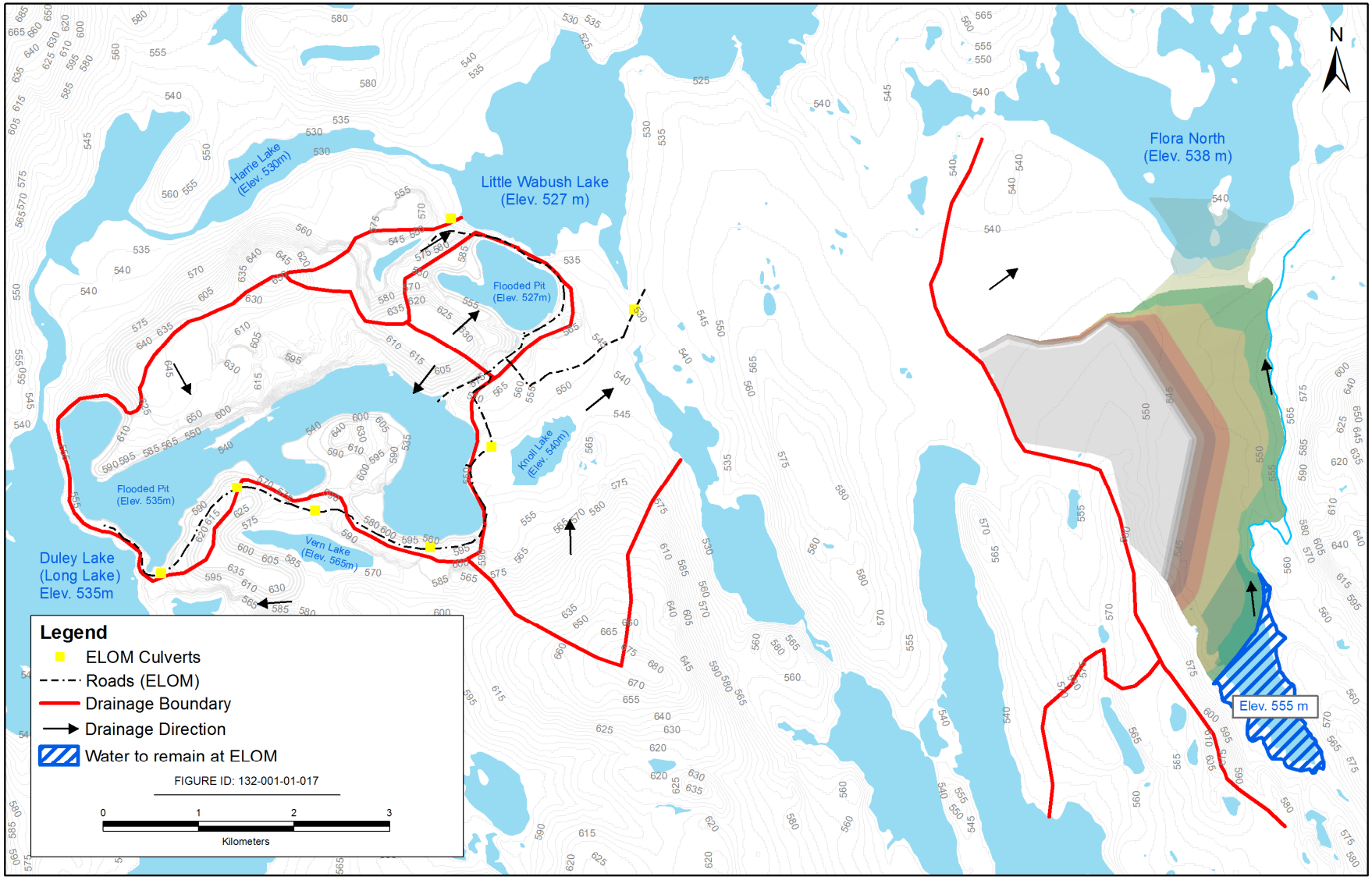
Water treatment associated with tailings management consists of natural (unaided) settling of solids in Flora Lake, approved under *MMER* for tailings management. Water quality in Flora Lake, as measured at its discharge (Final Discharge Point under *MMER*) at the Flora Lake Outlet Arm to Flora River and then Wabush Lake, is consistently in compliance with the metal and suspended solids criteria in the *MMER* and *ECWSR* and the acute lethality criteria in the *MMER*. The typical water quality as measured and reported also meets or exceeds the CCME criteria for Protection of Freshwater Aquatic Life.

TACORA will implement a TSS sampling program during the reactivation period that will involve regular sampling of effluent within the channel and directly where the channel flows into Flora North. TACORA will also purchase and analyze satellite imagery and compare to past datasets to determine if the channel is stabilizing.

#### 3.8.2.1.1 Knoll Lake

A series of settling basins, including five primary and three secondary basins, have been constructed between inflows from the plant concentrator and the MMER Final Discharge Point into Knoll Lake (Figure 3.26). A water treatment system was installed between the plant site and Knoll Lake was used to receive the mine water from the East Pit West and mill upset overflows. This water treatment system had been operated in a pilot mode by Wabush Mines to supplement water treatment achieved by the settling basins. TACORA will redesign and commission this water treatment plant and have it operational upon reactivation of the mine.

Regarding the other surface drainage in the Knoll Lake area as shown in Figures 3.25 and 3.26, the area south of the rail loop drains to the east along surface ditches outboard of the rail loop. There are two intermittent tributaries from the south that remain connected to the lake through culverts underneath the rail loop and access road. Knoll Lake flows to the east, draining through existing culverts under the railway into a small stream that connects to Jean River. Over the past many years, there is no record of any localized flooding due to the rail loop and access road. Knoll Lake was flooded in 2007 due to a beaver dam at the culverts on the Knoll Lake outlet. The beavers were live trapped and relocated and the dam was removed from the culverts and the lake level subsequently returned to normal.

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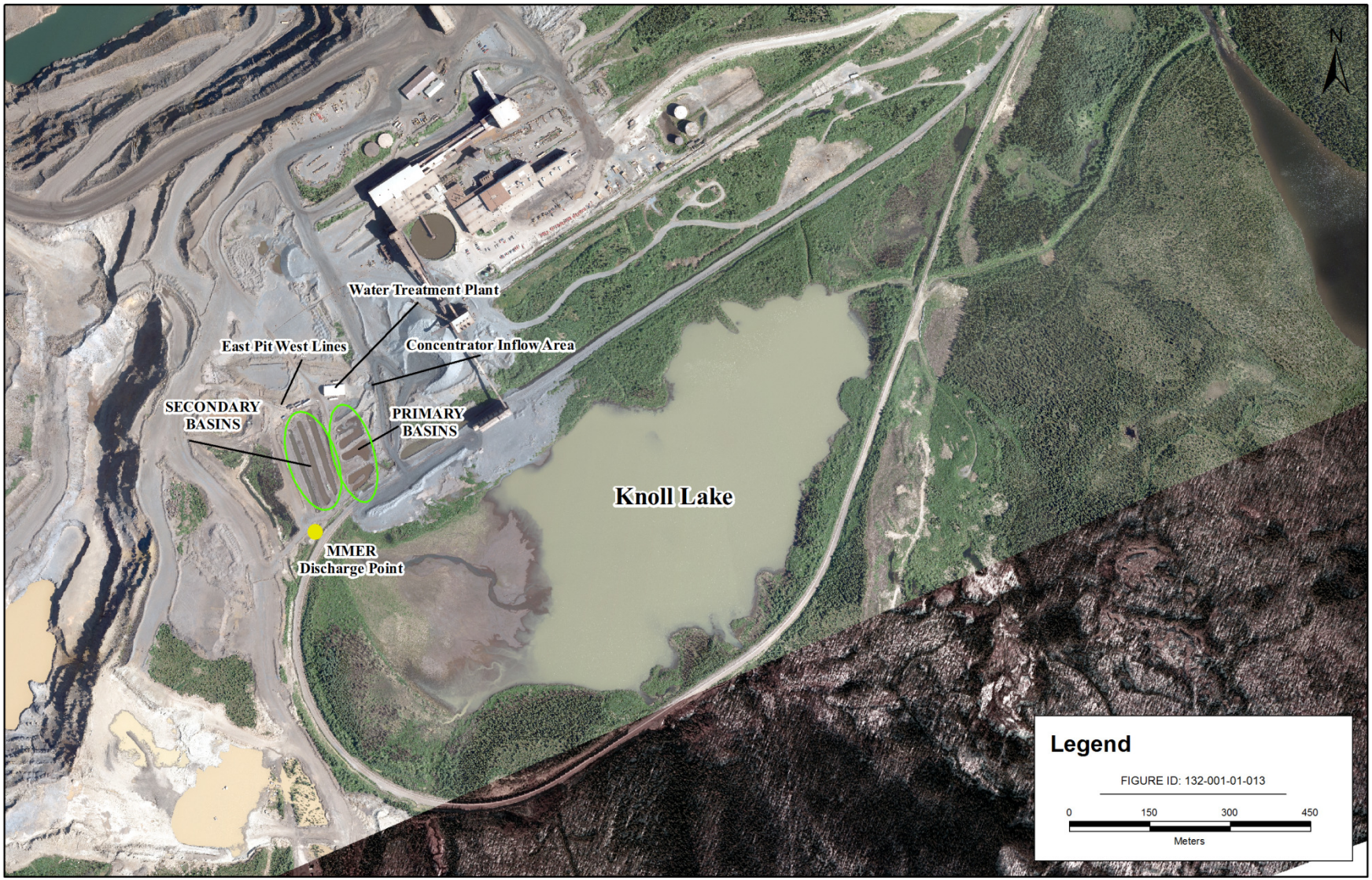
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3-25** | PREPARED BY: SEM |
| | **Natural Surface Water Drainage** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **06/09/2017** |

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| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 3.26** | PREPARED BY: SEM |
| | **Contributors to Knoll Lake** | COORDINATE SYSTEM: **UTM Zone 19** | DATE: **05/09/2017** |

#### 3.8.2.1.2 Pit Dewatering

As discussed in Sections 3.5.1.2 (Reactivation Phase) and 3.6.1.2 (Operations phase), pit dewatering is an ongoing part of this facility that has the potential to impact surface water quality at the associated discharge points. There are no anticipated concerns with pollutants during reactivation as all discharges will be pumped water from the pits with no mineral processing activity.

#### 3.8.2.1.3 Surface Water Monitoring

The Scully Mine site has conducted surface water monitoring for many years and there is a long, well documented history of water quality monitoring results. Water quality monitoring has been conducted to address requirements under the federal Metal Mining Effluent Regulations (MMER) and includes monitoring effluent quality and water quality in receiving waters and at reference locations on a schedule as specified in the MMER. This also includes sub-lethal toxicity testing annually for the Flora Lake FDP. Monitoring results are reported to Environment and Climate Change Canada through their online Regulatory Information Submission System (RISS). Environmental Effects Monitoring (EEM) is also conducted under the MMER on a three-year cycle with the most recent cycle (Cycle 5) to be reported in 2017.

Metal mining environmental effects monitoring data are submitted into the Regulatory Information Submission System (RISS) maintained by Environment and Climate Change Canada. TACORA has reviewed historical data in RISS for exposure (Wabush Narrows, Long Lake, and Flora Outlet Arm) and reference sites (Walsh River and Jean River) for exceedances of MMER authorized limits of arsenic, copper, lead, nickel, zinc and total suspended solids (TSS). The only exceedances in that database for the period 2004 to 2016 are for TSS (> 30 mg/L) at Flora Outlet Arm.

Water and effluent quality monitoring is conducted under the mine's Certificate of Operations (CoA), including acute lethality biological testing. Monitoring results are reported to the NDMAE through their Environmental Database Management System (EDMS).

TACORA will continue to implement the existing sampling and reporting program that was in effect with the previous mine operations, including assuming the Real Time water quality monitoring station at the Flora Lake outlet. The sampling locations listed in Table 3.3 and shown in Figure 3.11 will continue to be monitored throughout the reactivation period and subsequent operations. The specific parameters and sampling frequency may change, depending on the final CofA for plant operations issued by NDMAE.

#### 3.8.2.1.4 Sewage

Domestic sewage and grey water from the mine is treated in a dedicated sewage treatment plant located on the mine site. There is no anticipated change in the quantity or effluent water

quality from historical site operations. Sludge from the sewage treatment plant will be disposed of consistent with past practices and in accordance with the provincial Environmental Control Water and Sewage Regulations (2003). If applicable and within disposal regulations, the sludge may be incorporated into the tailing vegetation program.

#### 3.8.2.2 Groundwater

Inferred from topography, groundwater from the plant site is suspected to naturally drain towards Knoll Lake, the East Pit and the South Pit. Groundwater quality monitoring at the site has been restricted to a monitoring program in the tank farm area associated with requirements from the ESAs previously completed in this area. There are 18 monitoring wells associated with the program and the numerous assessments conclude that there are small areas of petroleum-contaminated groundwater that will be monitored as part of a contaminated soil Remediation Action Plan (RAP) for this fueling area. Groundwater quality is also monitored in the West Pit Extension area associated with the perimeter groundwater pumping and discharge to Duley Lake.

Groundwater has not been monitored in the TMA area during previous operations. The town of Wabush's water supply is surface water from Wahnahnish Lake. The Flora Lake TMA is adjacent to the watershed of Wahnahnish Lake however, all of the tailings dewater into the Flora Basins. Over the fifty years of the facility's operations and use of the TMA, there has been no indication that the TMA has had any adverse impact on the town of Wabush's potable water supply.

### 3.8.3 Solid waste

The mine site has a previously approved WMWDF, a permanent non-hazardous solid waste disposal site in the area of the East Pit, which has been mined out. The previous owners and Waste Management Section of DOEC (now DMAE) met in the summer of 2016 to discuss the approach to waste management associated with the decommissioning activity. The relevant portions of those meeting agreements are listed below:

- In-pit disposal of the building demolition debris is not deemed acceptable. Non-hazardous waste not suitable for recycling and asbestos waste will be managed in the current WMWDF.
- Comments received from the Town of Labrador City during the November 2015 EA Registration process, that the use of the Labrador West Regional Waste Disposal Facility (LWRWDF) is not a viable option. Accordingly, TACORA will submit to Service NL and DMAE an application for an amendment to the existing C of A (LB-WMS17-01001G) for the WMWDF to accommodate any needed changes that support this Closure Plan.
- The existing asbestos disposal area in the WMWDF has been closed. A new site has been chosen in the western end of the WMWDF and will be described in the C of A amendment process.

The site is approximately 4 hectares in size and is located above the proposed flood levels of the surrounding pits. Pit flood levels are predicted to be approximately 535m and the WMWDF is currently at an elevation of 570 m. The site has capacity for growth both to the south, as well as increasing its depth or elevation with extension to the west. According the RCP plan submitted to NR in November 2016, the area of the site that had been used up to December 2014 is 2.4 ha. The area to the southwest that is available for expansion is 1.6 ha with an estimated volume of 220,000 $m^3$ and a length of approximately 220 m. The used area of the site can be elevated by approximately 3 m for an additional usable volume of 72,000$m^3$. Thus the existing site footprint has up to 292,000 $m^3$ of existing capacity.

The landfill currently operates under the Certificate of Approval (LB-WMS08-01001E) and cannot accept highway tires, hazardous materials, petroleum contaminated soil and liquid phase petroleum. Special wastes disposal must be approved by Service NL and shall be disposed of in a selected area designated for this purpose only.

This landfill has effectively been progressively reclaimed as it has advanced by covering exposed debris with a layer of waste rock.

- The existing asbestos disposal area in the WMWDF has not been used in recent years and has been closed. Asbestos Containing Materials will be managed via off-site licensed waste management companies at licensed waste management facilities, until such time as the WMWDF C of A is amended to accept this material,
- Options for disposal of all salvageable (recyclable) metals and other typical recyclable materials will be limited by the expectations for waste management expressed by the DMAE,
- Progressive rehabilitation of non-hazardous solid waste will be managed at the WMWDF and recyclable wastes will be removed from site by licensed waste management companies for acceptable management,

Any expansion of the WMWDF would be done after the expansion design has been submitted to and approved by DMAE.

### 3.8.4 Hazardous Waste

It is not expected that the mine will generate large quantities of hazardous waste. However, should any hazardous wastes be generated, they will be stored, transported, and disposed of according to federal and provincial regulations. Licensed contractors, experienced in the management and transportation of these types of waste to an approved facility, have indicated availability to offer this service to LIM operations, if needed. LIM will require contractors to follow provincial waste diversion regulations or policies, including provincial programs for beverage containers, tires and waste oil and other petroleum products.

The existing maintenance workshops will require onsite storage of small quantities of hydraulic oils and other materials may be required for mine vehicle/equipment maintenance. In addition, diesel fuel storage associated with plant operations are required. Petroleum/oil/lubricant (POL) transport, storage, use and disposal will be conducted in accordance with applicable legislation and all workers will be trained in the appropriate Environmental, Health & Safety (EHS) approach to working with these materials. Spill kits will be available at key locations on site and workers will be trained in their use and other emergency response procedures. Any required fuel storage would be constructed and operated in accordance with applicable regulations and secondary containment methods.

Discarded tires will be handled according to the requirements of the provincial tire recycling program established by the Waste Management Regulations and used oil will be collected for recycling or reuse according to the Used Oil Control Regulations. In addition, any scrap metals will be taken to a scrap metal recycling operation.

### 3.8.5 Noise

Noise is not expected to materially different from when the facility operated for the past 50 years. The use of industry standard equipment compliant with all applicable noise regulations and effective maintenance systems including regular inspections of all noise suppression equipment will be conducted.

### 3.8.6 Blasting

It is anticipated that once operating, mine blasting requirements will be similar to that previously experienced at the Scully Mine. There will not be a dedicated explosives storage facility for the Scully mine in the foreseeable future.

## 3.9 POTENTIAL RESOURCE CONFLICTS

The potential resource conflicts during construction and operation include interactions with wildlife: water resources; fish and fish habitat; land use; and vegetation.

### 3.9.1 Wildlife

The project site is situated in a region with typical boreal forest ecosystems and wildlife communities. Given that the area has been subjected to industrial activity for over 50 years, wildlife has adapted to either avoid the area or to conduct some or all of their life cycle stages within the suitable areas of the mine site. Large mammals rarely occur in the mine site and no hunting is permitted within the boundaries therefore no anticipates resource conflicts are expected with respect to big game. Minimal clearing and grubbing is required, however, to avoid adverse effects on migratory birds and bird species of special conservation concern, all clearing activities will be conducted in accordance with accepted protocols related to avoidance of disturbing

nesting sites. TACORA's no hunting, fishing, or trapping policy will be implemented throughout the construction and operation of the Project, therefore no other wildlife conflicts are anticipated.

Wabush entered into a habitat stewardship agreement with the government of Newfoundland and Labrador in March 2005. The Town pledged their commitment to conservation and protection of wetlands within designated areas known as "Management Units" as well as promoting 'wise use' of other wildlife habitat within the vicinity of the Town. As a result, Wabush has developed and committed to implementing a Habitat Conservation Plan[liv] that is focused on maintaining and enhancing wetlands for the benefit of wildlife habitat. None of the habitat management units identified in this plan are located within the or downstream of the Project area.

### 3.9.2 Water Resources, Fish and Fish Habitat

The project site is situated in a region with abundant aquatic resources including many small and large lakes, rivers, and associated streams and fish communities within Tacora resources operations are typical of the region. The area affected by Tacora's operations has been subjected to industrial activity for over 50 years, and fish resources have been able to conduct some or all of their life cycle stages within suitable areas of the mine site. There will be no additional physical alteration of fish habitat or reduction in fisheries productivity associated with the re-activation of the Scully Mine. TACORA is fully compliant with all fisheries compensation and offsetting required under the Fisheries Act as related to historical and planned reactivation of the mine as related to mining and processing activities within the mine infrastructure (i.e. the Vern-Hay Project) and associated with deposition of mine tailings and associated effluents (i.e. the Flora Basins Habitat Compensation Plan). TACORA is also continuing all required monitoring of effluent discharges and water quality as required under the federal (MMER, CCME guidelines) and provincial (CoA) criteria including acute and sub-lethal biological testing. TACORA will implement a no fishing policy throughout the operation of the mine, therefore no fisheries productivity conflicts are anticipated.

### 3.9.3 Land Use

The site has been used for mining and related industrial activities for over 50 years, as mining is the primary industry in the immediate area. The Government of Newfoundland and Labrador considers that the Wabush/Labrador City area will remain as a mining center for many years into the future, well beyond the mineral reserves indicated for the Scully mine. This site has always been and remains zoned for this type of land use. Wabush's municipal plan for 2016 – 2026 shows the mine site and tailings management area designated as a combination of General Industrial or Mineral Workings.

As stated in the Rehabilitation and Closure Pan, is not practical or feasible that the site be it be returned to its pre-mining condition. Thus the RCP objectives include rehabilitation efforts to ensure that the site has been rehabilitated to a condition that protects public safety and health

and to a condition where no further environmental degradation takes place. The post-closure rehabilitated mine site will, over time, blend into the surrounding environment and will become increasingly more visibly compatible with the existing surrounding land use. Disturbances caused by mining such as the open pits, waste rock dumps and tailings management area will remain following the cessation of mining. However, one of the objectives proposed in the Plan is to implement appropriate reclamation measures that will see the areas disturbed by mining activity both physically and chemically stabilized. This will minimize post closure intervention and/or maintenance by either TACORA, any successors or by the Province of Newfoundland and Labrador.

The existing land use of the area surrounding the mine is primarily wilderness land supporting a variety of natural wildlife. The area is remote and consequently is not currently being used for other resource harvesting, tourism or recreational purposes with the exception of harvesting of firewood and recreational use by local residents who are typically living in the area due to their employment at the local iron ore mines or in the service sector providing support to these mines.

### 3.9.4 Vegetation

The site has been used for mining and related industrial activities for over 50 years, as mining is the primary industry in the immediate area. As stated above, the Wabush/Labrador City area will remain as a mining center for many years into the future, well beyond the mineral reserves indicated for the Scully mine. There is no foreseeable conflict with vegetation needs related to the reactivation of this mine.

### 3.9.5 Socio-economic

Reactivation and resumed operations at the Scully Mine is not anticipated to cause any socioeconomic conflicts. This project returns many career opportunities to a region that was severely impacted when the mine closed in 2014. Beyond the direct impact of increased employment opportunities in the Labrador West region, this Project will influence the associated support service sector (contractors, suppliers, etc.) that exist in the area but have been operating at a reduced capacity for the past several years.

## 3.10 OCCUPATIONS

The Scully Mine reactivation has the ability to bring many family supporting careers to the Labrador West Region. While the proposed staffing levels are not as high as the site had historically maintained, it remains an infusion of work opportunities that have been absent for the past four years.

### 3.10.1 Potential Employment

During the reactivation process, staffing levels will change as various aspects of the reactivation work is completed. These activities are described in Section 3.5. Preliminary employment estimates indicate the potential for approximately 260 positions directly associated with the ongoing operation of the site. This is a combination of bargaining unit employees, non-bargaining unit employees and contracted services. The distribution of positions between these three groups is not fully quantified and will be an evolutionary task as mine operations resume. The initial estimates are shown below in Table 3.12.

Table 3.12. Employee Summary, Operations

| **Concentrator** | | | **Mine** | | |
|---|---|---|---|---|---|
| NOC | 106 Positions | Qty | NOC | 136 Positions | Qty |
| 0811 | Concentrator Manager | 1 | 0811 | Mine Manager | 1 |
| 7302 | Ops Supervisor | 4 | 8221 | Mine Supervisors | 4 |
| 2243 | Process Control Tech | 4 | 1525 | Mine Dispatch | 4 |
| 9611 | Operators | 32 | 8614 | Mine Operators | 68 |
| 7612 | Shift Maintenance | 8 | 7612 | Shift Maintenance | 8 |
| 2141 | Operations Coordinator | 1 | 7312 | Diesel Mechanics | 22 |
| 0714 | Concentrator Maintenance Superintendent | 1 | 7372 | Drill & Blast | 8 |
| 0714 | Maintenance Planner | 1 | 9611 | Tailings/Dewatering Operations | 4 |
| 7301 | Maintenance Supervisor | 1 | 0211 | Chief Mine Engineer | 1 |
| 2232 | Mechanical Maintenance | 27 | 2143 | Mine Engineer | 1 |
| 0711 | Project Manager | 1 | 2113 | Geologist | 1 |
| 2132 | Mechanical Engineer | 1 | 2212 | Mine Engineer Tech | 2 |
| 2133 | Electrical Supervisor | 1 | 0714 | Mine Maintenance Superintedent | 1 |
| 7242 | Electrical Maintenance | 12 | 7301 | Maintenance Supervisor | 1 |
| 0211 | Process Superintendent | 1 | 7242 | Electrical Maintenance | 4 |
| 2134 | Process Engineer | 1 | 2232 | Mechanical Maintenance | 4 |
| 2211 | Lab Supervisor | 1 | 0714 | Mine Maintenance Planner | 1 |
| 2212 | Lab Techs | 8 | 7301 | Mobile Maintenance Supervisor | 1 |
| **General Operating** | | | **Finance** | | |
| NOC | 10 Positions | Qty | NOC | 8 Positions | Qty |
| 0016 | General Manager | 1 | 0111 | Controller | 1 |
| 2141 | Safety Area Manager | 1 | 1111 | Accountant | 1 |
| 2263 | Safety Tech | 2 | 0714 | Warehouse Manager | 1 |
| 0112 | Human Resources Manager | 1 | 2281 | I. T. Tech | 1 |
| 1121 | Human Resources Representative | 2 | 1552 | Warehouse Attendant | 1 |
| 0212 | Environmental Manager | 1 | 1225 | Purchaser | 1 |
| 2131 | Environmental Engineer | 1 | 1552 | Warehouse Operators | 2 |
| 2231 | Environmental Tech | 1 | | | |
| **Total Employees: 260** | | | | | |

#### 3.10.1.1 Direct Hiring and Contracting

During the reactivation process, the majority of work will initially be accomplished with external contractors, as the work scope and duration will fluctuate. Direct employee hiring and training will begin during the reactivation period.

TACORA anticipated a methodical transition from contracted services towards internal positions, once production operations stabilize and various positions and staffing levels are reviewed and classified as core competencies that need to be held as internal positions.

#### 3.10.1.2 Employment Equity

TACORA's leadership and hiring practices are firmly rooted the philosophy of finding the best qualified person for a specific position and is blind to any discriminatory influences on that process; discrimination is simply not tolerated. TACORA defines discrimination as "Any action, inaction or behaviour which intentionally or unintentionally denies a right, benefit or opportunity or status of an employee, or the unequal treatment of an employee or harassment on the basis of prohibitive grounds as defined under the Human Rights Act[lv] including race, religion, religious creed, political opinion, source of income, color, nationality, ethnic origin, social origin, age, sex, sexual orientation, marital status, family status, disfigurement, disability, age, gender identity, gender expression, and conviction of a criminal offence unrelated to employment."

Workplace diversity is achieved when all employees, regardless of sex, gender, race, ethnicity, ability, sexual orientation, and age, receive equal respect and recognition and are able to access and benefit from the same rewards, resources and opportunities. TACORA strives to enhance workplace diversity is all aspects of the business; recruitment, work force development, promotion opportunities, the working environment and business access for external companies.

Although efforts have been made generally to improve the participation of women in the workplace, inequity persists particularly in science, trade and technology occupations. Much of what is needed to address the challenges that women face in securing employment in non-traditional occupations requires an integrated strategy in which all stakeholders have a role to play. TACORA is cognizant of the need to participate along with others, in developing concrete initiatives targeted at addressing the underlying issues which have contributed to this situation. TACORA also recognizes that over time women will take up opportunities presented in non-traditional occupations. TACORA is also committed to working with governments, educational institutions, women's organizations, organized labour and industry associations to advance gender diversity in the workplace and to see that more women take advantage of employment opportunities in the Canadian mining industry. Child and elder care is often cited as a major constraint to women's employment in Newfoundland and Labrador, with a limited availability of good quality facilities. Given this, TACORA will assist its employees in accessing appropriate, affordable, quality child and elder care to the extent feasible.

# 4.0 Approvals

## 4.1 APPLICABLE FEDERAL AND PROVINCIAL REGULATIONS

Criteria are established in the following Newfoundland and Labrador and Federal legislation:

- *Water Resources Act*
  - *Environmental Control Water and Sewer Regulations, 2003* (ECWSR)
- *Environmental Protection Act*
  - *Air Pollution Control Regulations, 2004*;
  - *Halocarbon Regulations*;
  - *Storage and Handling of Gasoline & Associated Products Regulations*;
  - *Used Oil Control Regulations*;
  - *Heating Oil Storage Tank System Regulations*;
  - *Storage of PCB Waste Regulations*
  - *Waste Management Regulations*
- *Occupational Health and Safety Act*
  - *Occupational Health and Safety Regulations, 2012*
- *Mining Act*
  - *Mining Regulations*
  - Draft Mining Act Guidelines (2010)
- Federal *Fisheries Act*
  - *Metal Mining Effluent Regulations* (MMER)
  - Federal *Transportation of Dangerous Goods Act*

## 4.2 REGULATORY AUTHORIZATIONS

The Project requires several regulatory authorizations before mining operations can resume. Table 4.1 lists these approvals, applicable dates and issuing authority.

Table 4.1. Scully Mine Permits

| Issuing Department | Title | Date Issued | Expiry Date |
|---|---|---|---|
| **Federal** | | | |
| Environment and Climate Change Canada (ECCC) | Amendment To The Metal Mining Effluent Regulations Designating Flora Lake and Three Streams as a Tailings Impoundment Area (TIA) | Feb 5, 2009 | N/A (ECCC will be notified of the change in mine ownership as per requirements under the MMER) |
| Fisheries and Oceans Canada (DFO) | Fisheries Act Authorization (FAA) for the Vern-Hay Project | Amended Mar 4, 2016 | N/A (Wabush Mines to complete monitoring of effectiveness of the fish offset as required in the FAA) |
| **Provincial** | | | |
| Department of Municipal Affairs and Environment | Water Use License (WUL-03-067) | Aug 12, 2008 | Jul 1, 2014 |
| Department of Municipal Affairs and Environment | Certificate of Approval (C of A), (#AA12-055569) | May 21, 2012 | May 31, 2016 |
| Department of Municipal Affairs and Environment | Memorandum of Understanding to Operate a Hydrometric Station | May 23, 2013 | Mar 31, 2016 |
| Services NL | Certificate of Approval(C of A), Waste Management (LB-WMS17-01001G) | Feb 10, 2017 | Dec 31, 2017 |
| Department of Natural Resources | Mill License (ML-WM-02) | Oct 29, 2010 | Oct 29, 2015 |

# 5.0 Schedule

Subject to regulatory and environmental approvals, mine reactivation is anticipated to start in 2018.

Site preparation, infrastructure reactivation and full start-up (ready for production) are anticipated to take up to eight months. This schedule is further described in Section 3.5.3. Mining is scheduled to commence in the third quarter of 2018 and the estimated production schedule predicts production out to the year 2033. The preliminary production schedule shown in Section 3.6.1 is based on TACORA reserve estimates, i.e., not on NI 43-101 resource or reserve estimates. The schedule is also subject to geotechnical engineering study, resource estimation, mine planning and additional financing.

# 6.0 Funding

The Project will be funded by share capital and will not involve any government funding.

# 7.0 Consultations

Consultation is a central objective of the environmental assessment process; the goal is to identify and address issues and concerns related to the Project.

Since the Scully Mine was acquired by TACORA on July 18, 2017, TACORA has been in regular contact with the non-Aboriginal communities as well as with the Aboriginal governments and organizations having a stated interest to the area. These community and stakeholder consultation activities have included frequent meetings with Mayors and Councils, local businesses, Aboriginal leaders, local political representatives, local interest groups, provincial and federal regulators. TACORA is dedicated to providing early and clear information to the community and working with all communities towards the common goal of positive, respectful and sustainable development in the area.

Project design and implementation will include consideration of information resulting from ongoing consultation with the communities, traditional environmental knowledge, engineering considerations and best management practices. These consultations will ensure a close working relationship with the local communities with respect to their involvement in the provision of labor, goods and services to the Project.

## 7.1 LOCAL COMMUNITIES

Discussions with all the communities has been detailed and ongoing. Through regular meetings with Mayors, Councils, town administrators, other representatives and community organizations, the communities are being continuously apprised of the on-going development of each stage of the Project.

### 7.1.1 Municipalities

TACORA met with elected officials from Labrador City and Wabush on July 25, 2017 to provide an introduction to the company and business overview of the mine. Also attending were elected provincial and federal representatives. TACORA has met privately with Wabush elected officials on July 25 and August 15, 2017 to discuss matters of mutual importance.

### 7.1.2 Community Organizations

TACORA and the United Steelworkers (USW) District 6 leadership held a joint informational session with 168 members of the United Steelworkers on 8/14/2017. A joint USW/TACORA contracts highlights information package[lvi] was presented to attendees and also posted on TACORA's Facebook page where it was viewed by 20,000 people in 30 days.

TACORA then presented our business overview to a combined group of the Labrador West Chamber of Commerce and Rotary Club on August 15, 2017. An additional business overview

presentation was made to attendees at the 2017 MINEx conference held in Labrador City on September 12, 2017.

## 7.2 ABORIGINAL GOVERNMENTS AND ORGANIZATIONS

The Quebec-Labrador Peninsula area has five distinct Aboriginal groups claiming traditional and Aboriginal rights to all or part of the Project area. The communities served by these groups and organizations are shown in Figure 7.1. Several of the Aboriginal governments and organizations have overlapping territorial or land claims. This regional overlapping of Aboriginal rights prompted the Government of Canada to establish an Overlapping Commission in November 2010. This Commission will provide a forum to address the issues of jurisdictional overlap for the territories and the sharing of economic development initiatives as a result of mining and hydro-electric development in the region.

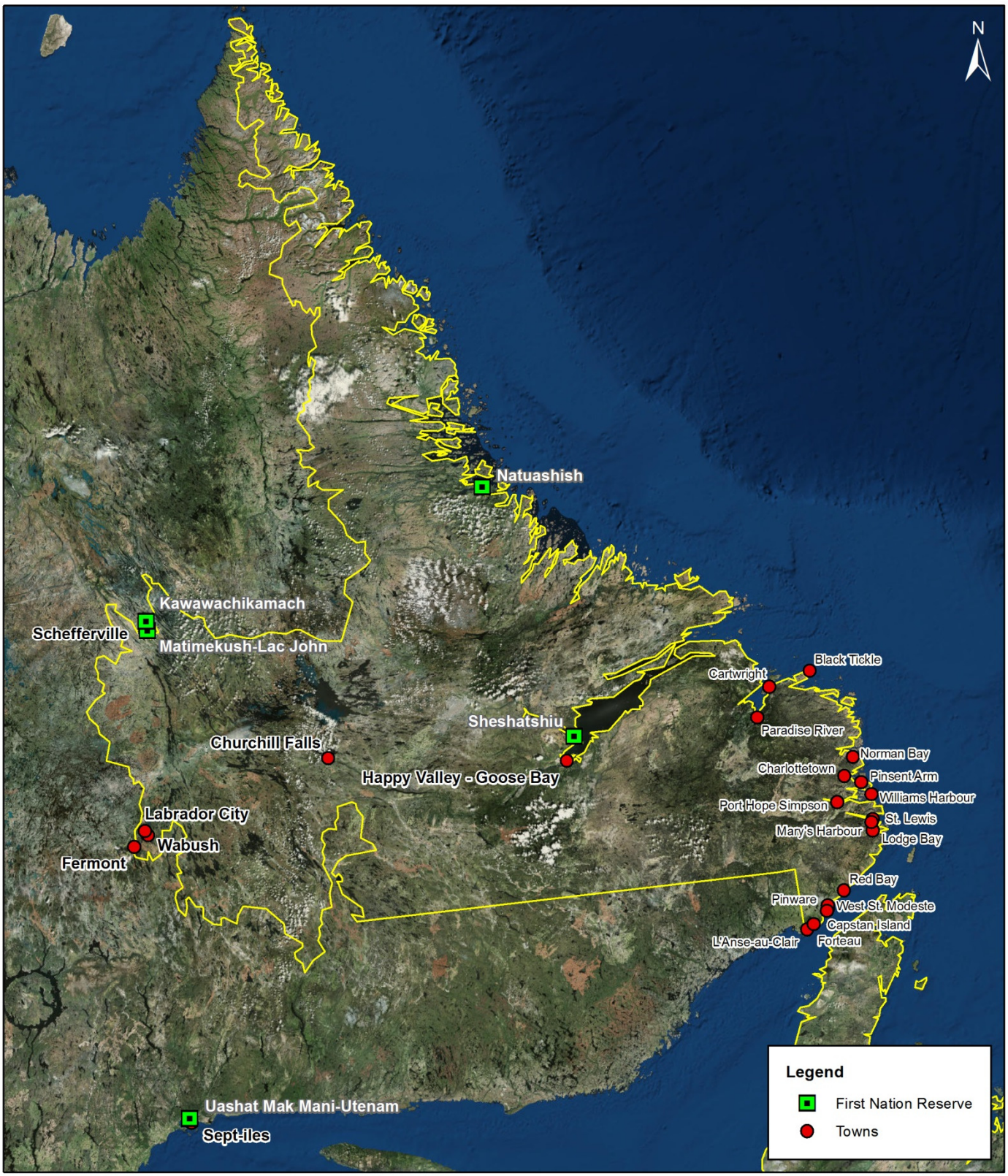
The Aboriginal governments/organizations potentially affected by the Project are the Innu Nation of Labrador, the Naskapi Nation of Kawawachikamach (NNK), the Innu Nation of Matimekush-Lac John (MLJ), the Innu Nation of Takuaikan Uashat Mak Mani-Utenam (ITUM) and NunatuKavut Community Council (NCC, formerly the Labrador Métis Nation). These groups may have overlapping land claims covering western Labrador. The Naskapi Nation is the only group with a finalized comprehensive land claim agreement; the others are in various stages of negotiation with the federal and provincial governments. However, the land claims of Quebec Aboriginal groups in Labrador have not been accepted for negotiation by the Government of Newfoundland and Labrador.

As this Project is reactivating an existing mine site that has operated for over 50 years, and will continue to operate within the same areal extent of the historic operations, TACORA has focused the consultation process on Project awareness to ensure that no Aboriginal rights have been infringed upon as a result of reactivating the mine.

### 7.2.1 Labrador Innu Nation

The Innu of Labrador primarily reside in two communities in central and coastal Labrador: the coastal community of Natuashish, and the Upper Lake Melville community of Sheshatshiu. Members of the Mushuau Innu First Nation reside in Natuashish, and members of Sheshatshiu Innu First Nation reside in Sheshatshiu. Each community is governed by an elected Chief and Band Council. The two communities are represented by the Labrador Innu Nation, which is led by an elected Grand Chief.

The Labrador Innu claim Aboriginal rights and title to most of Labrador. Their land claim was accepted for negotiation by the Government of Canada and the Government of Newfoundland and Labrador, with formal negotiations beginning in 1991. An Agreement-in-Principle was signed in November 2011 and a Final Agreement is presently being negotiated.

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|---|---|---|---|
| TACORA RESOURCES | TACORA Environmental Assessment Registration | FIGURE NO: **Figure 7-1** | PREPARED BY: SEM |
| | **Community Reference** | COORDINATE SYSTEM: **NAD83 UTM Zone 19** | DATE: **06/09/2017** |

In 1998, the Mushuau and Sheshatshiu Band Councils formed the Innu Development Limited Partnership, a for profit corporation registered with the Province. It is committed to creating opportunities for employment and economic development for private Innu businesses by creating and managing equity ownership and partnerships in strategic industries.

The following is a summary of consultations to date, it is an ongoing process.

- 7/26/2017: TACORA sent an introduction letter to the Chief and others as identified by DMAE, EA Division.
- 8/4/17: Eric Coombs contacted a third party consultant (Strategic Concepts, Inc. or SCI) looking for our contact information. Mr. Coombs is reportedly the financial negotiator for the Labrador Innu Nation. SCI is a consulting firm that was looking to represent TACORA in potential Aboriginal consultations.
- 8/7/17: TACORA contact information was forwarded to Eric Coombs via TACORA's Lobbyist.
- 8/16/17: TACORA reaffirmed to SCI that their consulting proposal was received.

#### 7.2.1.1 Issues / Resolution

To date, there have been no issues identified with the Labrador Innu Nation.

### 7.2.2 Innu Nation of Matimekush-Lac John

The Innu Nation of Matimekush-Lac John, also known as the Montagnais Innu, live primarily in the northeastern Quebec towns of Matimekush and Lac-John, near Schefferville. The community is governed by an elected Band Council consisting of a Chief and Councilors.

The Montagnais Innu voluntarily moved to the Schefferville region in the early 1950s when the Quebec North Shore & Labrador (QNS&L) Railroad was completed. The people were traditionally members of the Innu Nation of Takuaikan Uashat Mak Mani-Utenam located adjacent to Sept-Iles. Initially the Montagnais shared the community at Lac-John with the Naskapi who arrived in the region at the same time. The Montagnais have historical and traditional interests in the region, having historically travelled to the region from Sept-Iles to trap and hunt. The community includes the reserve of Matimekush, adjacent to Schefferville, and the reserve of Lac-John, 3.5 km from Matimekush. When IOC's Schefferville mines closed in the early 1980s, the Montagnais extended the reserve of Lac-John into the town of Schefferville, to avail of the existing infrastructure no longer in use by the town (sewer and water system, school and arena).

The following is a summary of consultations to date, it is an ongoing process.

- 7/26/2017: TACORA sent an introduction letter to the Chief and others as identified by DMAE, EA Division.
- 7/27/17: TACORA and Lac John representative Mr. Francois Levesque passed several emails to organize a meeting in Wabush, NL for 8/14/2017.

- 8/1/17: Additional emails between TACORA and Mr. Levesque, scheduled a conference call to review TACORA's business presentation materials.
- 8/2/17: Conference call with Lac John Nation leadership (Chief Ambrosie, Councilor Vachon, Mr. Levesque)
- 8/3/17: Email from TACORA to Mr. Levesque naming the firm that TACORA retained to complete the Feasibility Study.
- 8/11/17: Email from Mr. Levesque, band will like to have further discussions about environmental protection, as it is of prime importance to the band.
- 8/16/2017: Mr. Levesque sent a draft Memorandum of Understanding regarding Flora Lake and Scully Mine.
- 8/21/17: TACORA email to Mr. Levesque that the draft MOU has been received and being reviewed. TACORA is beginning consultations with several groups, so the review may take some time.
- 9/12/17: Email from Mr. Levesque inquiring about "any news". TACORA responded that representatives would be in Lab West all week and hoped to have feedback soon.
- 9/27/17: TACORA provided initial MOU feedback to Mr. Levesque.

#### 7.2.2.1 Issues / Resolution

To date, there have been no issues identified with the Innu Nation of Matimekush-Lac John. Both parties are preparing for further discussions regarding a potential MOU.

### 7.2.3 Innu Nation of Takuaikan Uashat Mak Mani-Utenam

The Innu Nation of Takuaikan Uashat Mak Mani-Utenam are closely related to the Montagnais Innu of Matimekush-Lac John. The former have historical and traditional interests in the Project area, as do the latter, having traditionally used the area for hunting and trapping. The Innu Nation of Takuaikan Uashat Mak Mani-Utenam live in two settlements within their reserve, Uashat and Maliotenam, both on the Quebec North Shore, near Sept-Iles. The communities are administered by a Band Council comprised of an elected Chief and Councilors. In addition to typical administrative duties, the Band Council also operates the local police force.

The Innu of Takuaikan Uashat Mak Mani-Utenam joined the Matimekush-Lac John Innu in 2005 to create the Ashuanipi Corporation initially to represent them in comprehensive claims negotiations. This arrangement has been dissolved but the corporation has been revived by the Innu Nation of Takuaikan Uashat Mak Mani-Utenam to pursue economic development opportunities.

Together with the Naskapi Nation of Kawawachikamach and Innu Nation of Matimekush-Lac John, the Innu Nation of Takuaikan Uashat Mak Mani-Utenam have acquired in interest in Tshiuetin Rail Transportation Inc. (TSH), an Indigenous-owned corporation which owns and operates the northern portion of the former QNS&L rail line between Ross Bay Junction and Schefferville.

The following is a summary of consultations to date, it is an ongoing process.

- 7/26/2017: TACORA sent an introduction letter to the Chief and others as identified by DMAE, EA Division.
- 8/7/17: email response from Mr. Jean-Claude Therrien-Pinette that acknowledged TACORA's letter and stated TACORA would provide a written proposal by the end of the month.

#### 7.2.3.1 Issues / Resolution

To date, there have been no issues identified with the Innu Nation of Takuaikan Uashat Mak Mani-Utenam.

### 7.2.4 Naskapi Nation of Kawawachikamach

The Naskapi Nation of Kawawachikamach was originally a small nomadic tribe, settling in Fort Chimo in the mid-1800s, before moving to Schefferville in the 1950s. The Naskapi relocated to the present site of Kawawachikamach, approximately 16 km north of Schefferville in the 1980s following the James Bay Settlement.

Between 1981 and 1984, self-government legislation was negotiated with the federal government. These negotiations resulted in the Cree-Naskapi (of Quebec) Act and led to the formation of the Naskapi Band of Quebec in 1984. The Naskapi Band of Quebec was one of the first self-governing Bands in Canada. The name was changed to Naskapi Nation of Kawawachikamach in 1999.

The community of Kawawachikamach is administered by the Band Council, consisting of an elected Chief and Councilors. In addition to typical municipal duties, the Band Council is responsible for maintaining the local police force, the local volunteer fire department, local childcare center, and local school.

The following is a summary of consultations to date, it is an ongoing process.

- 7/26/2017: TACORA sent an introduction letter to the Chief and others as identified by DMAE, EA Division. Email response from Chris Coggan (Montreal), would like to meet in Schefferville or Montreal. TACORA proposed Labrador West on 8/14 ~8/15 or future time in Montreal.
- 7/28/17: Email from Mr. Coggan, Labrador West dates in August will not work; better would be Montreal or Sept-Iles.
- 9/12/17: Email from Mr. Coggan asking about TACORA availability to meet in the upcoming month. TACORA responded that its representatives would be in Labrador West though 8/14, then Montreal that evening, if he could meet.
- 9/14/17: Email from Mr. Coggan, proposed dates and times do not work. Once he better understands the Chief's traveling plans, he will offer some possible meeting dates.

#### 7.2.4.1 Issues / Resolution

To date, there have been no issues identified with the Naskapi Nation of Kawawachikamach.

### 7.2.5 NunatuKavut Community Council

Membership of the NunatuKavut Community Council (NCC), also identified as NunatuKavut, self-identify as Southern Inuit, as per the 2010 land claim document entitled Unveiling NunatuKavut. NunatuKavut states that its 6,000 members live in 23 Labrador communities, seventeen of which are on the southeast coast from Paradise River to L'Anse au Clair. It also states that members reside in six other communities in central and western Labrador, including Happy Valley-Goose Bay and Labrador City.

NunatuKavut is led by a President and Council. Since its formation as a society in 1981 (as LMN – Labrador Metis Nation), and its incorporation under provincial law in 1985, NunatuKavut has grown to become the largest Aboriginal group in Labrador. As a not-for-profit organization, NunatuKavut is committed to promoting and ensuring the basic human rights of its members as Aboriginal persons, and the collective recognition of these rights by all levels of government. NunatuKavut is an affiliate of a national Aboriginal organization, the Congress of Aboriginal Peoples.

NunatuKavut has filed a comprehensive land claim with the province of Newfoundland and Labrador as well as with the Federal government of Canada.

The following is a summary of consultations to date, it is an ongoing process.

- 7/26/2017: TACORA sent an introduction letter to the President and others as identified by DMAE, EA Division.
- 8/14/17: email from Mr. George Russell (NCC Environment & Resource Manager) acknowledging TACORA's letter, stated NCC is available later in August. TACORA response stated that its representatives would be in Labrador West through 8/15/17 and then next back in the area on September 11 through 14. Mr. Russell responded with possible dates at end of August. TACORA responded with two possibilities but travel plans were not confirmed.
- 8/18/17: Mr. Russel inquired about a meeting on August 28 or 29.
- 8/21/17: TACORA responded that the late August trip to Labrador West was cancelled, but suggested a telephone call to start the conversations and possibly meet the week of September 11, 2017 during the MINEx convention in Labrador West.
- 9/7/17: Mr. Russell responded that he would not be attending the MINEx convention but could coordinate something later.

#### 7.2.5.1 Issues / Resolution

To date, there have been no issues identified with the NunatuKavut Community Council.

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