Klohn Crippen Berger

Copy No. ___

Yukon Government

Faro Mine Complex, Yukon Territory

Emergency Response Plan for Major Dams and Diversions

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M09770A06.730

April 2017

Klohn Crippen Berger

April 5, 2017

Yukon Government
Faro Mine Remediation Project
Suite 2C-4114-4th Ave
PO Box 2703 (K-419)
Whitehorse, Yukon
Y1A 2C6

Carrie Gillis
A/Project Manager - Faro Mine Remediation Project

Dear Ms. Gillis:

Faro Mine Complex
Emergency Response Plan for Major Dams and Diversions

We are pleased to submit the Emergency Response Plan (ERP) for: Intermediate Dam, Cross Valley Dam, Little Creek Dam, Secondary Tailings Dam, Faro Creek Diversion Channel, Rose Creek Diversion Channel and Vangorda Creek Diversion Flume. It represents the result of a joint effort by the Yukon Government (YG), Parsons Corporation (Parsons), and Klohn Crippen Berger (KCB).

The ERP provides relevant information, guiding the response of site staff in an emergency at the above-mentioned dams and diversion structures, including procedures for notifying responders in the affected community.

Yours truly,
KLOHN CRIPPEN BERGER LTD.

David Willms, P.Eng.
Project Manager

KP/DW/DH:dl/jcp

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Yukon Government

Faro Mine Complex, Yukon Territory

Emergency Response Plan for Major Dams and Diversions

EMERGENCY RESPONSE PLAN – RECORD TABLES

The following tables shall be maintained by the responsible parties

Record of Emergency Response Plan Holders

Name	Copy No.	Position	Organization	Location	Contact Info
Carrie Gillis	1	A/Project Manager	YG AAM	Whitehorse, YT	867-456-6764
Thaidra Sloane	2	Senior Project Manager	YG AAM	Whitehorse, YT	(867) 456-6117
Stu Waring	3	Site Manager	Parsons	Faro, YT	867-689-0455
David Willms	4	KCB Project Manager/Geotechnical Engineer	KCB	Vancouver	604-251-8529
Kate Patterson	5	Hydrotechnical Engineer	KCB	Vancouver	604-251-8487
Jesse Devost	6	Director, Communications	Yukon Government	Whitehorse, YT	867-667-5307
Michael Templeton	7	Manager, Emergency Measures Organization	Yukon Government	Whitehorse, YT	867-667-5220
Jim Cassie	8 (electronic copy)	Vice President/Specialist Geotechnical Engineer	BGC	Calgary	587-894-2664

Record of Revisions to Emergency Response Plan

Date	Author(s)	Reason	Person Requesting Change	Position
2008	BGC	Historical	-	-
2014	YG/TEES/KCB	Under YG Management	Karen Furlong	YG Project Manager
2015	YG/TEES/KCB	Recommended By 2014 DSR	Karen Furlong	YG Project Manager
2016	YG/Parsons/KCB	New Care and Maintenance Contractor	Carrie Gillis	YG Project Manager

AAM – YG Contact Information

(Assessment and Abandoned Mines – Government of Yukon)

AAM Contacts	Position	Office #	Mobile #
Carrie Gillis	Project Manager	1-867-456-6764	(867) 332-4431
Thaidra Sloane	Senior Project Manager (Care and Maintenance)	1-867-456-6117	867-332-4155
Joshua Ojierenem	Project Manager (Operations and Maintenance)	1-867-456-6163	867-332-9019
During working hours: YG Communications Branch	Communications Desk	867-667-3123	
After working hours: Jesse Devost	YG Communications Director	867-332-1177	

Additional Contacts

Emergency contacts and technical support (external consultant) contacts are provided in Appendix I.

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1 INTRODUCTION

1.1 Purpose

This document is an Emergency Response Plan (ERP) for the following dams and diversion structures on the Faro Mine Complex (FMC), located near Faro, Yukon Territory as shown in Figure A-001:

- **Intermediate Dam** (ID) located near the downstream end of the Rose Creek Diversion Channel, shown on Figures B-003 and B-004.
- **Cross Valley Dam** (CVD) located immediately downstream from the Intermediate Dam, shown on Figures B-003 and B-004.
- **Little Creek Dam** (LCD) located on the Vangorda Plateau, just below the Vangorda rock dump, as shown on Figures B-005 and B-006.
- **Secondary Tailings Dam** (SD) located between the intermediate and secondary tailings impoundments, upstream of the intermediate impoundment as shown on Figures B-003 and B-004.
- **Rose Creek Diversion Channel** (RCDC) located south of the tailings impoundment, which includes the Intermediate and Cross Valley Dams, as shown on Figures B-003 and B-004.
- **Faro Creek Diversion Channel** (FCDC) located to the north of the Faro Pit, shown on Figures B-003 and B-004.
- **Vangorda Creek Diversion Flume** (VCDF) located north east of Vangorda Pit, shown on Figures B-005 and B-006.

This ERP provides an action and notification plan to be used to respond to an emergency affecting any of the above listed dams and water diversion structures. For additional information on the facilities the reader should refer to the following reports:

- Operations Maintenance and Surveillance (OMS) Manual (KCB 2017b);
- Annual Geotechnical Review (KCB 2017a); and
- Dam Breach and Inundation Study report (KCB 2014a and KCB 2017d).

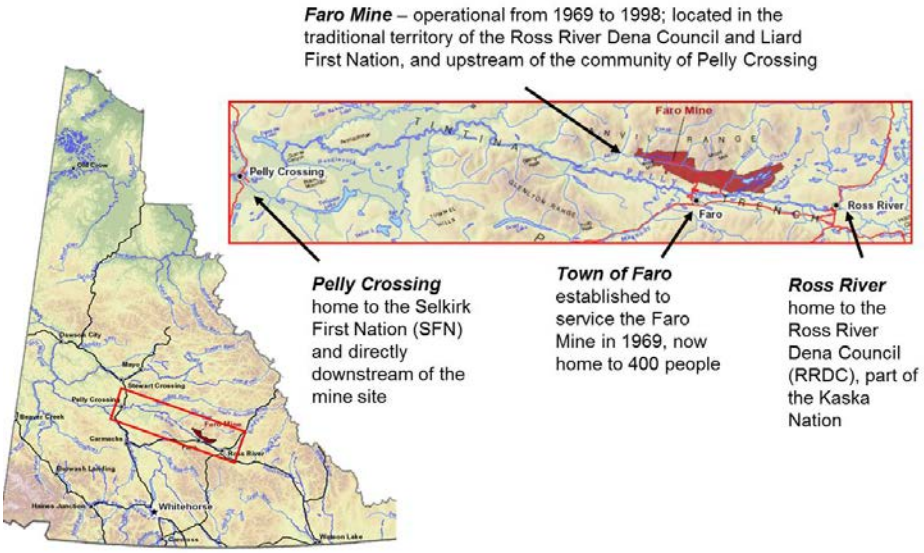
1.2 Site Description and Access

The Faro Mine Complex (FMC) is located at 62.233° N, 133.333° W, about 200 km north-northeast of Whitehorse, Yukon, as shown on the site location plan in Figure 1.1. Lead and zinc were the primary metals produced during operation. The FMC consists of two inactive mining areas (Faro and Vangorda) separated by a 12 km long haul road.

The site is accessed by an all-weather road that connects to the Robert Campbell Highway (HWY 4) from Carmacks.

Road Maintenance is carried out by the Yukon Government Highway and Public Works up to the security gate. Telephone and internet communication is provided via microwave system from the town of Faro. Power is provided via powerlines from the town of Faro with backup diesel generators on site.

Figure 1.1 Site Location



1.3 Administration of Faro Mine Complex

The care and maintenance activities at Faro Mine Complex are administered by Assessment and Abandoned Mines - Government of Yukon (AAM) under the Faro Mine Remediation Project. Parties involved in site activities are summarized in Table 1.1.

Table 1.1 Involved Parties

Organization	Involvement
Government of Yukon – Assessment and Abandoned Mines	▪ Site owner ▪ Site administration
Parsons	▪ Contracted to AAM ▪ Site manager ▪ Care and maintenance contractor
Klohn Crippen Berger	▪ Contracted to AAM ▪ Geotechnical and hydrotechnical consultant
Golder Associates	▪ Contracted to AAM ▪ Pit wall stability consultant
BGC Engineering	▪ Design engineer
DST Consulting Engineers	▪ Owner's engineer

2 EMERGENCY RESPONSE PLAN ROLES AND RESPONSIBILITIES

Care and Maintenance Contractor - Site Manager

The responsibilities of the Site Manager are to:

- Make all personnel from the Site Manager's team familiar with the ERP.
- Activate the ERP.
- Take immediate action as prescribed by procedures contained within this plan to protect themselves, others, the environment and site assets, in that order.
- Oversee the emergency response including coordinating safety, security, communications, resources and administrative duties during the Emergency response.
  - Administrative duties include notification of required parties and documenting of: communications, observations, events and arrival/departure of personnel/resources until they are relieved of duty.
- Arrange engineering support and other resources as required to resolve the emergency in a timely manner.
- Provide a site briefing to all new authorized personnel entering the site.

As AAM's on-site representative, the Site Manager's responsibilities also include:

- Assessment and determination of the alert level for an observed condition and the course of action if an alert level is reached (based on the pre-determined action plans in this ERP).
- Overseeing the repair work required to mitigate further deterioration of the situation and ensuring the safety of personnel and property while doing so.
- Ensuring accurate documentation, coordination of situation reports and documenting events, ensuring precise timeline in conjunction with written, photo or video resources.

Observer

The Observer is the site person who first discovers the need for an emergency response. The responsibilities of the Observer are to:

- Ensure personal safety and the safety of others. This may require erecting barricades, warning indicators or posting guards to prevent or control access and record observations.
- Simultaneously notify the Care and Maintenance Contractor Site Manager or his/her designate providing details of the observed condition.
- Remain at or near the location, if safe to do so, providing timely information until the Site Manager arrives.
- Document all communications, observations, events and arrival/departure of personnel at location, chronologically. This information will be given to the Site Manager.

Yukon Government

The Yukon Government is responsible for the safety of the dams and has granted the care and maintenance contractor the authority to carry out the actions in this ERP to prevent or mitigate dam safety issues.

External Authorities

External authorities such as police and fire protection are responsible for:

- Activating their emergency response plans as appropriate for the level of response.

All Persons on Site

The responsibilities of all persons on site including site operations personnel, consultants, contractors, and other authorized personnel are to:

- Follow the instructions of the site manager during an emergency.
- Be aware that the preservation of their own safety is their first priority and to not place themselves in danger.
- Be aware of site activities for which there is a reasonable cause to believe there is potential for an emergency event to occur.

3 ALERT LEVEL CONDITIONS

Alert conditions may be categorized into those that threaten the safety of the dams and the major diversion channels and those that do not. Conditions that threaten the safety of the dams and the major channels are the focus of this ERP. Conditions can be classified into the following three categories based on the level of response action that will be required:

- Yellow Alert
- Orange Alert
- Red Alert

Further explanation of each of these categories is provided in the following sections.

3.1 Yellow Alert

The Yellow Alert level is the first or lowest level requiring action for a given condition. This level of alert is managed using normal operations and maintenance procedures. The Site Manager must notify the geotechnical and hydrotechnical consultant and YG to jointly determine a course of action. Typical conditions that may be observed at the Yellow Alert level may include the following:

- seasonal frost cracking at the dam crest or its upstream/downstream berms;
- minor seepage;
- piezometer readings outside typical seasonal variations;
- minor erosion gullies due to runoff;
- diversion channel flowing within design capacity with no erosion; and
- roads which provide access to the dams and diversions are washed out or otherwise inaccessible.

The OMS Manual provides guidelines and protocols for prompt action in dealing with these "routine" conditions and system failures that can be easily and quickly corrected or repaired. Some of these conditions, if ignored, may develop into emergency situations that must be dealt with outside of the normal scope of OMS activities. The OMS Manual identifies the alert levels at which the ERP plan is put into action.

As part of this documentation, a record should be kept of the Yellow Alert conditions that occur on the site. This record can then be reviewed to evaluate how often conditions at this level occur for understanding of the overall performance of the system and potentially resetting the circumstances corresponding to the alert level in the future.

3.2 Orange Alert

The Orange Alert level is a condition where non-compliant water is or will soon be flowing to the environment in an uncontrolled manner. The mechanisms for this include:

- Spillway flow at the Cross Valley Dam, Intermediate Dam, or Little Creek Dam.
- Flow from the Rose Creek Diversion into the Intermediate Pond or Cross Valley Pond.
- Failure of the Faro Creek Diversion or the Vangorda Creek diversion into the respective pits.

Under an Orange Alert, immediate action would be required to plan and execute remedial action and repairs. The required remedial measures and actions should be initiated and completed within a short time frame to eliminate the immediate threat, or prevent it from getting worse.

The condition level may be downgraded from Orange Alert to Yellow Alert or upgraded to Red Alert depending on the change in conditions at the structure or as new information or analysis becomes available.

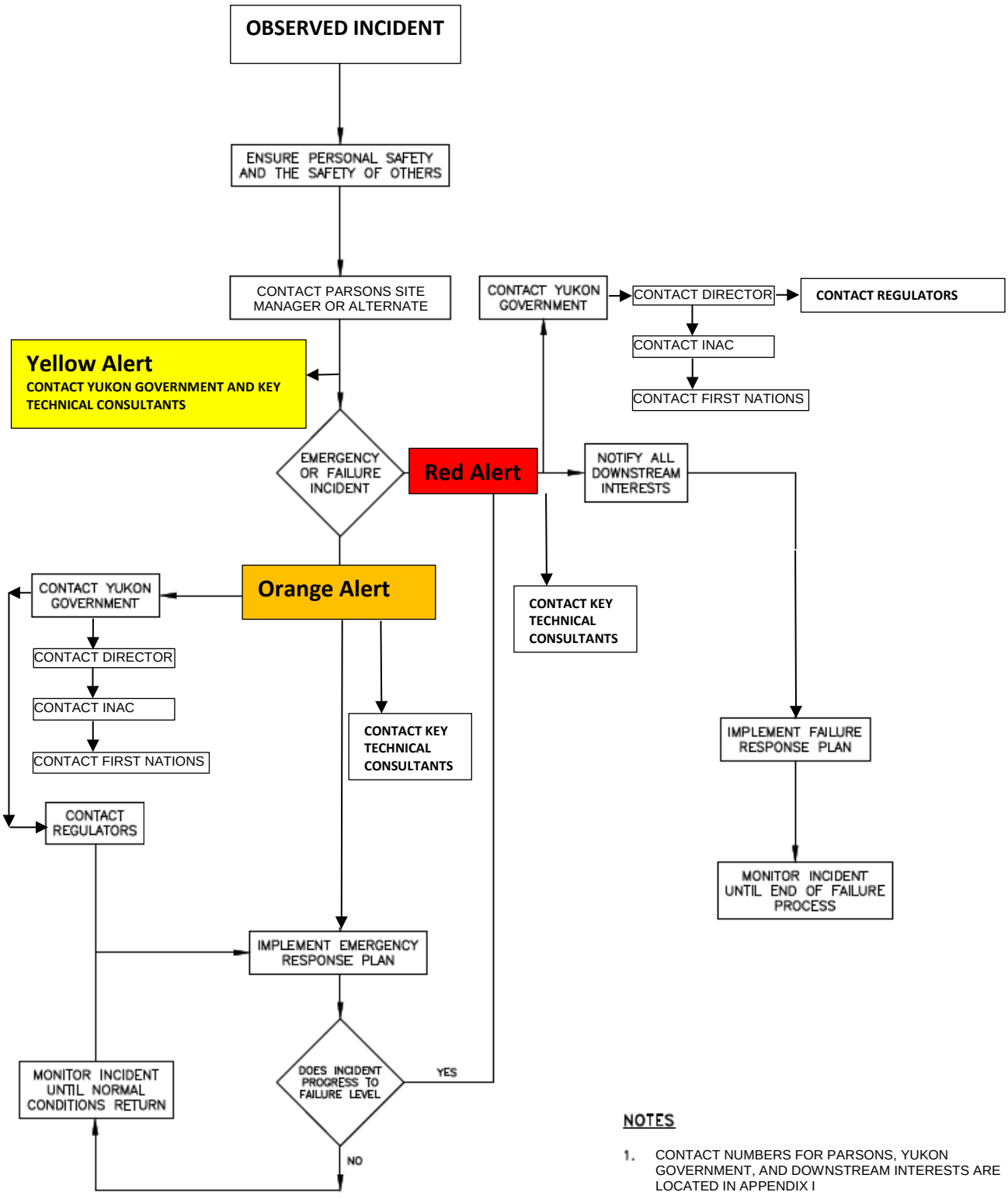
3.3 Red Alert

At the Red Alert level, there is an immediate and significant threat to the physical safety of the structure and would therefore involve activation of the ERP. A Red Alert condition for dams or major diversion channels would require immediate notification of any downstream impacted area by means of the general and local warning systems. The Red Alert response (as outlined in Figure A-007) should be implemented immediately upon verification of one of the following conditions:

- a dam or major channel is failing;
- a dam or major channel is about to fail; or
- as a precaution, when there is a significant probability that a dam or major channel will fail.

Any emergency repair measure that has some potential to avert, delay, or retard the rate of failure should be initiated. In addition, measures for post-failure monitoring and assessment should be initiated by the site manager in consultation with the Yukon Government and the geotechnical and hydrotechnical consultant.

Figure 3.1 Emergency Notification Plan (Copy of Figure A-007)



4 EMERGENCY IDENTIFICATION AND RESPONSE

This section contains procedures for identifying and responding to potential emergency conditions. Potential constraints on action plan implementation are discussed in Section 6. Notification plans referred to in this section are described in detail in Section 7. Equipment, operators, supplies and materials available for response to an emergency condition are listed in Section 8. Some of the response actions involve obtaining and placing rock and soil materials. Figures B-008 to B-010 show the surficial geology and locations of soil and rock borrow areas within the mine site area.

For the scenarios discussed further in these sections, it has been assumed that despite reaching the Red Alert level, the loss of the specific dam or diversion channel has not yet occurred. Thus, the following recommendations for the Red Alert are actions that can be taken to prevent the dam or channel from complete failure and/or to reduce the downstream loss from the evolving condition. If a complete failure of the dam or diversion channel does occur, actions by site staff should be focused on mitigating any danger to site personnel and downstream population and minimizing the failure impact, both on site and downstream to reduce environmental and property damage.

4.1 Flooding or Washing out of Access Roads

4.1.1 Condition

Access roads both on and off the mine site may be damaged or washed out during floods, due to landslides or due to other geohazards. Damaged, flooded or washed out access roads may impede or prevent site access and response to emergency situations.

4.1.2 Alert Levels

Yellow Alert

- Access roads are eroding or being damaged. Access to parts of the site is lost or in imminent danger of being lost.

4.1.3 Response

Yellow Alert

- Notify YG (AAM).
- Maintain road trafficability by repairing damaged roads and ditches, and directing water off roads in eroding areas.
- Visually inspect roads, dams and ponds for other emergency conditions and, for ditches and diversions, obstructions (including ice blockages) that may reduce their capacity.
- If access to site infrastructure is likely to be lost for a significant period, make alternate arrangements (e.g. ATVs) to continue monitoring dams, diversions and other infrastructure.

- If monitoring of dams and other infrastructure cannot be restored for a significant period either by restoring road access or using other available equipment to access, additional measures may be necessary in consultation with YG and the Geotechnical Consultant.

4.2 Dam Overtopping/High Water Levels

4.2.1 Condition

Dam overtopping occurs when water flows over the top of the dam, which occurs when the combined capacity of the spillway and pond storage is exceeded. Potential causes include flood events, spillway blockage, diversion channel failure, upstream beaver dam failure, poor water management, wave action under reduced freeboard and landslide generated waves. In some cases, the pond operating level may have exceeded the normal operating range due to poor control, resulting in reduced pond storage capacity. Failure of a mine water reclaim system due to mechanical problem, power outage, pipeline rupture or sinking of a pump barge may also lead to a hazardous rise in pond water level.

4.2.2 Alert Levels

Pond alert levels for the four dams are provided in Table 4.1.

Table 4.1 Pond Alert Levels

Alert Level	Intermediate Dam	Cross Valley Dam	Little Creek Dam	Secondary Tailings Dam
(0.5 m below Full Supply Level) - Yellow	1047.2 m	1030.28 m	1112.3 m	N/A
Full Supply Level – Orange	1047.7 m	1030.78 m	1112.8 m	Spillway obstructed, not able to drain water from secondary impoundment
Top of Core – Red	1048.5 m	1032.5 m	1113.8 m	Spillway capacity being exceeded. Water pond forming in Secondary Impoundment.
Failure	1048.8 m	1032.7 m	1114.5 m	Dam overtopping.

Yellow Alert

- If pond water levels are within 0.5 m of spillway invert, develop a plan to lower pond levels which may include increasing treatment of surplus water, pumping to Faro Pit or other storage locations, discharge (if water meets discharge criteria), or waiting for the pond to drop because of normal seepage and treatment activities (if inflows have subsided).

Orange Alert

- Pond level is greater than the full supply level but lower than the top of the core of the dam, i.e., the emergency spillway is operating within the design limit.

Red Alert

- Pond level begins to rise above the top of the core of the dam but is still below the dam crest elevation. The emergency spillway is in operation beyond its design limit.

4.2.3 Response

Yellow Alert

- Notify YG and the Geotechnical Consultant immediately.

Orange Alert

- Execute Emergency Notification Plan (as outlined in Figure A-007).
- Lower pond level with siphons, pumps or both. Sample and test water for environmental monitoring purposes. Spill reporting (Faro Mine Complex spill procedure) will be required if quality of spilled water is non-compliant. Pump water from the Intermediate Pond (IP) and Cross Valley Pond (CVP) to Faro Pit in an emergency.
- Visually inspect dam for potential erosion and/or reduction of freeboard.
- Monitor water quality both upstream and downstream of spill if safe to do so. Water quality should be monitored for the parameters in the Faro Effluent Quality Standards (Table 3.6) Note: for a dam failure the area downstream of the dam will be subject to rapidly changing water levels and will not be safe to access during flooding. Furthermore, failure of the Cross Valley Dam and subsequent rapid draining of the Polishing Pond could destabilize the Intermediate Dam creating the potential for a second flood wave if the Intermediate Dam were to fail, thus the area downstream of the Intermediate Dam should be avoided for a failure of the Cross Valley Dam.
- Notify the Town of Faro for release of non-compliant water from the Little Creek Pond.
- Spillway discharge can be reduced by pumping water from the Intermediate Pond (IP) and Cross Valley Pond (CVP) to Faro Pit as required.
- For a failure of the Cross Valley Dam, Intermediate Dam or Little Creek Dam, or for a failure of Rose Creek Diversion Channel into the Intermediate Pond or Cross Valley Pond, there is likely little that could be done by site personnel to significantly reduce the amount of treatment sludge, tailings, or contaminated water released, thus immediate responses should be focused on activating the emergency notification plan, as shown in Figure A-007.
- The Canadian Environmental Quality Guidelines (CCME 2016) are used for the protection of aquatic life. However, in some instances, the Faro Effluent Quality Standards (Table 3.6) are used.

Table 4.2 Faro Effluent Quality Standards

Parameter	FEQS	Units
TSS	15	mg/L
Turbidity	15	NTU
Colour	20	Pt-Co units
pH	6.5	less than or equal to
Ammonia-N	1.3	mg/L
Antimony	0.1	mg/L
Arsenic	0.05	mg/L
Barium	1	mg/L
Cadmium	0.02	mg/L
Copper	0.2	mg/L
Cyanide (as CN)	0.05	mg/L
Lead	0.2	mg/L
Mercury	0.005	mg/L
Molybdenum	0.5	mg/L
Nickel	0.5	mg/L
Selenium	0.05	mg/L
Silver	0.1	mg/L
Zinc	0.5	mg/L
Bioassay	Pass 100% 96 hour LC50	
Oil or Grease	No visible or floating	

Red Alert

- Execute Failure Notification Plan (as outlined in Figure A-007).
- Lower pond level with pumps, siphons or both. Sample and test water for environmental monitoring purposes. Spill reporting will be required if quality of spilled water is non-compliant. Pump water from the IP or CVP to the Faro Pit.
- Where feasible and safe to do, attempt to increase spillway discharge capacity by clearing out any new debris arriving in the channel, widening existing spillway channel or excavating a new channel, with riprap protection, through an abutment area to prevent dam overtopping to preserve integrity of embankment dam.
- Maintain 24-hour/7-day vigilance of pond level until safe level is restored to below the maximum operating level as defined in the OMS Manual for the specific structure.
- Maintain 24-hour/7-day vigilance of pond level, until safe level is restored to below the maximum operating level as defined in the OMS Manual for the specific structure.
- Visually inspect dam for potential erosion and/or reduction of freeboard.
- Repair affected areas of dam and its appurtenant structures as per recommendations of Geotechnical Consultant.

4.3 Dam Embankment Instability

4.3.1 Condition

Signs of dam instability include: appearance of tension cracks on the crest or upstream/downstream face of dam, development of a head scarp with vertical and/or horizontal displacement, bulging of the dam face or other abnormal appearances. Significant changes in pore pressures, seepage rates or seepage locations, or murky seepage may also indicate instability.

Events that may lead to embankment instability include a rapid drop in pond water level (rapid drawdown), an earthquake, extreme precipitation or rapid snowmelt and piping erosion. These events should trigger an immediate visual inspection of the dam.

Visual inspection of the dam crest, both dam faces and toe area from a safe vantage point is the first step to assess dam instability. Detailed close inspection of the dam and reading of the piezometers should follow, once the personal safety of the observer is assured. The observer should know that the zone of dam instability may not coincide with the area covered by dam instrumentation.

4.3.2 Alert Levels

Yellow Alert

- Warning signs include: appearance of new cracks or the opening of existing cracks on the dam crest and/or upstream/downstream dam faces, slope slumps, or significant trend of increasing pore pressures in several piezometers or high one-time reading from a single piezometer or unusual movement in an inclinometer (only for Canal Dyke).

Red Alert

- Continuing and accelerating growth of cracks and slope slumps in length and width, observation of toe bulges, continuing rapid rise of piezometric levels, continuing increase of seepage rate and/or seepage turbidity, and/or increasing trend of observed dam or channel-retention dyke deformation.
- Continuing deterioration of dam leading to potential collapse of dam crest due to crest settlement and/or slope failures. Upstream slope failure with attendant erosion of dam materials and/or any slope failure involving the dam crest are signs of severe dam distress.

4.3.3 Response

Yellow Alert

- Notify YG and the Geotechnical Consultant immediately.

Red Alert

- Execute Emergency Notification Plan (as outlined in Figure A-007).

- Lower pond level using siphons, pumps or both. Sample and test water for environmental monitoring purposes. Spill reporting will be required if quality of spilled water is non-compliant. Pump water from the IP or CVP to the Faro Pit.
- Initiate daily inspections and readings of all instruments, or as required by the Geotechnical Consultant.
- Undertake remedial repairs as recommended by the Geotechnical Consultant.
- Likely repair measures include: construction of a stabilizing buttress berm at the area of concern and placement of erosion-resistant earth/rock fill in areas of dam distress.
- Maintain 24-hour/7-day vigilance of distressed structure as directed by Geotechnical Consultant.
- Continue and adjust repair work based on observation of dam performance in response to the fill placement in the repaired area.

4.4 Piping – Internal Erosion of Dam

4.4.1 Condition

Seepage water visibly coloured by suspended sediment or in excessive or abnormal quantities, and sinkholes anywhere on the dam or in the upstream tailings are signs of internal erosion. Seepage would typically occur at localized exit points on the downstream face or toe of a dam, but may also be visible in the dam foundation, abutment and toe areas downstream of the dam itself. Due to the high seepage gradient, a cavity or "pipe" may develop at the location of the exit point, which gradually progresses in an upstream direction along the seepage path. As it progresses, the rate of seepage and amount of transported sediment through internal erosion will increase. With time, the “pipe” could potentially connect to the water body of the upstream pond. Left uncontrolled, the rapid growth and enlargement of the “pipe” could eventually lead to a breach of the dam.

Abnormal seepage conditions should be noted as part of the daily dam inspections, including an indication of the magnitude of change in seepage rate and seepage water quality. Abnormal seepage should trigger a Yellow Alert at minimum.

4.4.2 Alert Levels

Yellow Alert

- Potential signs of “piping” development include: appearance of new seepage discharge location, increase of monitored seepage turbidity and/or seepage rate, decreased piezometric level in piezometers near the downstream toe. Judgment and comparison to previous observations are required to differentiate normal changes related to recent precipitation, change in pond level or influence of surface runoff on observed seepage.

Red Alert

- Rapid increase in seepage turbidity and/or seepage rate, or development of sinkholes on dam crest or upstream/downstream dam face.
- Development of sand boils in the tailings or downstream of the dam.
- Development of sinkholes anywhere on the dam, abutments or tailings beach.
- Progressive enlargement of sinkholes on the dam, abutments or tailings beach, sand "boils" downstream of the dam toe, or whirlpools in the pond are signs of imminent dam failure. At the advanced stage, dam failure may be accompanied by slope failures resulting from erosion of dam materials by seepage flow, and eventually lead to dam breach by overtopping.

4.4.3 Response

Yellow Alert

- Notify YG and the Geotechnical Consultant immediately.

Red Alert

- Execute Emergency Notification Plan (as outlined in Figure A-007).
- Lower pond level with pumps and/or siphons. Sample and test water for environmental monitoring purposes. Spill reporting will be required if quality of released water is non-compliant.
- For an isolated, relatively low-head seep in an area beyond the dam toe, construct a sand-bag dyke enclosure to contain the flow exit area. Fill the dyked-in space with free-draining filter material, as required, to stop piping at the flow exit, as directed by the Geotechnical Consultant.
- Construct weighted filters with sand and gravel/cobbles/rock fill over the seepage discharge area on a dam slope with progressively coarser material over the finer material beneath, or as directed by the Geotechnical Consultant.
- Where feasible and safe to do, dump filter material (preferably medium to coarse sand) into any sinkholes on the dam, including the upstream slope and beach area as directed by the Geotechnical Consultant.
- Repair or construct upstream impervious blanket as directed by Geotechnical Consultant.
- Initiate daily readings of all relevant instrumentation, or as directed by Geotechnical Consultant.
- Maintain 24-hour/7-day vigilance in dam inspection until remedial measures arrest the progress of internal erosion.

4.5 Seismic Instability and Large Earthquake Events

4.5.1 Condition

Any seismic event that is felt by the on-site staff warrants an immediate visual inspection of all significant tailings, water retaining and water diversion structures and reading of all the piezometers and weir flows. The Natural Resources Canada (NRCAN) Pacific Geoscience Centre (PGC), located in Sidney, B.C., and operated by the Geological Survey of Canada (GSC), monitors earthquake activity around the world and includes virtually real-time information on earthquake activity in western Canada. This information is available on their website:

http://www.earthquakescanada.nrcan.gc.ca/

Site staff can obtain information updates regarding distant as well as local events. The Site Manager or designate should monitor for site seismic activity and should subscribe to their RSS feed.

Earthquake information is also available from the US Geological Survey website:

http://earthquake.usgs.gov/earthquakes/map/

The person monitoring for site seismic activity should also subscribe to the following automated earthquake notification service:

https://sslearthquake.usgs.gov/ens/

4.5.2 Alert Levels

Yellow Alert

- An earthquake event is felt at the mine site or in the Town of Faro or the earthquake is within 100 km of the mine site and with a magnitude greater than 3, based on the PGC.

Red Alert

- Significant physical damage occurs at a dam or a diversion channel following the seismic event.

4.5.3 Response

Yellow Alert

- Notify YG and the Geotechnical Consultant immediately.
- Immediately inspect significant tailings, water retaining and water diversion structures and read all piezometers.
- Consider the need for additional measures in consultation with YG and the Geotechnical Consultant depending on the nature of the event and current conditions (i.e. pond levels, diversion flows, etc.) on site.

Red Alert

- Execute Emergency Notification Plan (as outlined in Figure A-007).
- Lower the pond level using pumps and/or siphons. Sample and test water for environmental monitoring purposes. Spill reporting will be required if quality of released water is non-compliant.
- Conduct visual inspection of all dams and relevant diversion channels and report to Geotechnical Consultant.
- Monitor all piezometers, inclinometers, survey prisms, survey reference rods and pins.
- Undertake initial repairs of dams and channels, as required.
- Undertake any additional remedial work as recommended by Geotechnical Consultant after the post-earthquake inspection.

4.6 Diversion Channel Overtopping

4.6.1 Condition

Diversion channel overtopping occurs when the water level in the channel exceeds the level of the banks, either due to flood events larger than design values or due to blockage of the channel.

The resulting spill of water from the Faro or Vangorda Flume diversion channel would enter the respective pit lake (see Figure B-003 and B-005) and increase the amount of water that must be treated before its release into the environment. In a worst-case scenario, the channel overtopping event could continue until the affected open pit overflows, resulting in the release of non-compliant water from the overflowing pit lake.

As shown in Figure B-003, an overtopping event at the Rose Creek Diversion Channel would lead to additional flow into the Intermediate tailings impoundment area and/or Cross Valley Pond (also called Polishing Pond). There is the potential for overtopping into the Intermediate Pond to cascade into the Cross Valley Pond. The excess inflow to the impoundment(s) and/or pond(s) must be treated before its release to the environment. If the additional inflow uses up the storage capacity of the impoundment(s) and/or pond(s), it would cause the release of non-compliant water over the emergency spillway(s). In a worst-case scenario, the channel overtopping event has the potential to cause the overtopping of the Intermediate and/or Cross Valley Dam.

4.6.2 Alert Levels

Yellow Alert

- For the Rose Creek Diversion Channel, the Yellow Alert level is reached when the water reaches 0.5 m below the crest of the Canal Dyke.
- For the Faro Creek Diversion Channel, the Yellow Alert level is reached when the water is 0.8 m below the adjacent road surface.

- For the Vangorda Diversion Flume, the Yellow Alert level is reached when the overall flume is full or near full and still rising (i.e. in imminent danger of overflowing).

Orange Alert

- For the Rose Creek Diversion Channel, the orange alert level is defined by the water being within 0.25 m of the crest of the Canal Dyke, or if water is flowing over the emergency overflow at the (fuse-plug) diversion dam (see Figure B-003) adjacent to the Secondary Tailings Dam.
- For the Faro Creek Diversion Channel (Fig. B-004), the orange alert level is reached if the water level is within 0.2 m of overtopping the adjacent road.
- For the Vangorda Diversion Flume (Fig. B-005), the orange alert level is reached when the water level is within 0.2 m of overtopping the adjacent road.

Red Alert

- Red Alert is reached for the Rose Creek Diversion Channel when the water begins to overtop the containment dyke or road.

4.6.3 Response

Consequence of Failure vs. Response

The consequence of failure is not the same for all channels. For example, a failure of the Rose Creek Diversion Channel could have serious consequences because it has the potential to cause the overtopping of the Intermediate Dam and the Cross Valley Dam, particularly if overtopping coincides with an extreme rainfall/snowmelt event. Alternatively, a failure of the Faro Creek Diversion Channel or the Vangorda Diversion Flume would not be as serious because it would take time for their respective pits to fill up before pit overflow occurs, and pit overflow would be a gradual spill rather than a sudden release of water and is unlikely to cause loss of life. The consequence of failure should be taken into consideration when deciding upon the response measures outlined in the following sections.

The Failure Notification Plans should be used for a failure of the Rose Creek Diversion but not the other diversions unless there is an immediate danger of a large spill of contaminated water to the environment.

Channel Overtopping Response

Yellow Alert

- Notify YG and the Geotechnical Consultant immediately.

Orange Alert

- Execute Emergency Notification Plan (only for a failure of the Rose Creek Diversion) (as outlined in Figure A-007).

- Attempt to remove channel obstruction, if practical. Consider possible diversion of channel flow to facilitate channel clearance and/or repair work.
- If there are low areas of the roads or dykes that are close to overtopping, place sand and gravel and rockfill to prevent or slow erosion.
- For pits, place crushed rock or rock fill in areas of erosion and sand/gravel with riprap protection in low-bank areas of pits to maintain freeboard as required.
- Maintain on-going, visual inspection of downhill pit-lake/pond level and begin planning for emergency operation of pit-lake/pond dewatering system. If pumping is initiated, monitor flow rates.
- Consider potential options for excavating a cut in the channel bank slope at a strategic location to effect a temporary controlled breach of the channel in order to reduce the channel flow during the emergency, if water from the breach can be managed in a compliant manner.
- Maintain 24-hr/7-day vigilance in monitoring channel condition.
- Monitor water quality both upstream and downstream of spill if safe to do so. Note: for a dam failure the area downstream of the dam will be subject to rapidly changing water levels and will not be safe to access during flooding. Furthermore, failure of the Cross Valley Dam and subsequent rapid draining of the Polishing Pond could destabilize the Intermediate Dam creating the potential for a second flood wave if the Intermediate Dam were to fail, thus the area downstream of the Intermediate Dam should be avoided for a failure of the Cross Valley Dam.
- For a failure of the Cross Valley Dam, Intermediate Dam or Little Creek Dam, or for a failure of Rose Creek Diversion Channel into the Intermediate Pond or Cross Valley Pond, there is likely little that could be done by site personnel to reduce the amount of treatment sludge, tailings or contaminated water released, thus immediate responses should be focused on activating the emergency notification plan, as shown in Figure A-007.

Red Alert

- Execute Failure Notification Plan (only for a failure of the Rose Creek Diversion) (as outlined in Figure A-007).
- Continue channel repair, clearance and diversion work as outlined above.
- Continue monitoring pit-lake/pond level and carrying out pumping from the pit/pond, as required.
- Geotechnical Consultant to conduct site inspection and recommend additional repair work.
- Maintain 24-hr/7-day vigilance in monitoring channel condition, and ongoing review update with Geotechnical Consultant.

4.7 Diversion Channel Slope Instability

4.7.1 Condition

Slope instability events impacting diversions include: ground movement or slope failures on the downslope containment dyke of the diversion that may result in breach of the diversion or reduced freeboard, rock fall or soil slumps above or inside the diversion that may partially or completely obstruct the channel, and signs of instability in the containment dyke of a diversion. Signs of slope instability that do not immediately impact the diversion may indicate the potential for similar future events to impact the diversion. Signs of instability may occur both slowly or rapidly depending on a variety of factors.

The Failure Notification Plans should be used for a failure of the Rose Creek Diversion but not the other diversions unless there is an immediate danger of a large spill of contaminated water to the environment.

4.7.2 Alert Levels

Yellow Alert

- Slumping occurs on the downhill side of the diversion channel, but does not interfere with road access. New tension cracks, either parallel or perpendicular to the channel alignment, are observed on either side of the channel slopes and/or below the diversion channel. Significant rock fall events. Minor slope failures in pit walls below diversion channels. Evidence of ground thawing at depth along the Rose Creek Diversion Channel, accompanied by shear displacement detected in the slope inclinometer at similar depth.

Orange Alert

- Large slope slump occurs on the access road downhill of the diversion channel. Growth of monitored tension cracks in terms of width, depth and length. Slide debris accumulated in the channel reaches about 1/3 of its original overall sectional area. Increased shear displacement occurs at the slope inclinometers installed along the Rose Creek Diversion Channel.

Red Alert

- Blockage of diversion channel by debris from slope slump or rock fall leads to channel overtopping. Slope failure on the downhill side of the diversion channel removes any portion of the channel section along its reach adjacent to the pit-lake, tailings impoundment or pond.

4.7.3 Response

Yellow Alert

- Notify YG and the Geotechnical Consultant immediately.

Orange Alert

- Execute Emergency Notification Plan (only for a failure of the Rose Creek Diversion) (as outlined in Figure A-007).
- Contact Geotechnical Consultant for directions on stabilizing options.
- Check condition of side slopes and channel near unstable areas to assess safety precautions required, before entering and undertaking slope stabilizing work.
- Consider temporary diversion of channel flow to facilitate access and construction.
- Remove slope-slump debris from channel and stabilize the area of concern by flattening slope, adding drain holes or slope reinforcement such as rock anchors and wire mesh.
- Place buttressing rock fill in local areas as required to prevent further erosion and slope undercutting.
- Place rock fill to buttress Canal Dyke along Rose Creek Diversion Channel, if required.
- Maintain daily visual inspection of channel condition.
- Maintain on-going, visual inspection of downhill pit-lake/pond level and begin to plan for emergency operation of pit dewatering system. If pumping is initiated, monitor flow rates.
- Take action if the diversion failure will result in non-compliant water being released to the environment.

Red Alert

- Execute Failure Notification Plan (only for a failure of the Rose Creek Diversion) (as outlined in Figure A-007).
- Ensure personnel safety and the safety of adjacent critical structures.
- Continue channel bank slope repair, channel clearance and diversion work as outlined above.
- Contact Geotechnical Consultant for site inspection and advice regarding immediate stabilization options.
- Maintain daily visual inspection of channel condition and ongoing update review with Geotechnical Consultant.
- Maintain on-going, visual inspection of downhill pit-lake/pond level and begin planning for emergency operation of pit/pond dewatering system. If pumping is initiated, monitor flow rates.

5 POTENTIAL DOWNSTREAM IMPACT OF DAM FAILURE

5.1 Secondary Dam, Intermediate Dam and Cross Valley Dam

Inundation maps for the rainy-day failure (overtopping during a storm event) are included in Appendix V.

The Secondary, Intermediate and Cross Valley dams are located on Rose Creek. A failure of the Cross Valley Dam would not necessarily cause a failure of the Intermediate Dam. A failure of the Intermediate Dam would likely cause a failure of the Cross Valley Dam. A failure of the Secondary Dam could cause a cascade failure of the Intermediate and Cross Valley dams if sufficient volume of water and tailings is released to overtop the Intermediate Dam.

Since there are no public infrastructure or population centres within the potential inundation area downstream of the dam, the consequence of a dam failure would mostly be related to environmental impacts. The flood wave would travel along the following path before dissipating:

- Along Rose Creek for 16 km to Anvil Creek.
- Along Anvil Creek for 34 km to Pelly River downstream of the Town of Faro.
- Along Pelly River for 90 km dissipating approximately 140 km downstream of the Town of Faro.

There would be significant flooding along Rose Creek, Anvil Creek and Pelly River, and water quality impact to fish and wildlife. No infrastructure was identified within the potential flood zone. The nearest community on Pelly River downstream of Faro is Pelly Crossing, about 180 km (straight distance) west of Faro.

5.2 Little Creek Dam

An inundation map for the sunny day failure (failure under normal weather conditions) is included in Appendix V. The Little Creek Dam Inundation area near Faro is shown in red in Figure 5.1 for reference.

The Little Creek Dam is typically operated with a low reservoir volume. Due to the low pond level, the likelihood of a dam failure resulting in release of water endangering personnel or damaging infrastructure under typical operating conditions is nearly negligible. The most probable dam failure scenario resulting in release of water creating a downstream hazard would occur under an elevated reservoir level, which, albeit also unlikely, could occur if pumping from the dam ceased and outlet structures were not functioning for an extended period. The inundation maps and failure response plan presented represent a failure under these abnormal conditions.

Figure 5.1 Inundation Map for Little Creek Dam (Faro Section Only)

The Little Creek Dam is located adjacent to the Vangorda Creek, and the flood resulting from a breach of the dam would discharge into the creek. The flood wave would travel along the following path before dissipating:

- Along Vangorda Creek for 12 km to Pelly River.
- Along Pelly River for 45 km.

The estimated increase in water level due to flooding and infrastructure that may be impacted are summarized in Table 5.1. The increase in water level for sunny-day failures at both a high pond and at the normal operating level is shown. The potential for loss of life is primarily in Faro at the Campbell Street crossing, however users of roads and trails along Vangorda Creek may also be at risk. The

water level rise along Pelly River is significantly smaller, but may pose a hazard to anyone along the river bank when the flood wave arrives.

Table 5.1 Little Creek Dam Sunny-day Failure Peak Flow Depths

Creek/River	Distance Along Creek/River (m)	Increase in Water Level (Failure at High Pond) (m)	Increase in Water Level (Failure at Normal Operating Level) (m)	Impacted Infrastructure
Vangorda Creek	0+000	6.4	5.2	Little Creek Dam
	4+500	7.3	6.0	Local road washed out
	7+000	6.1	5.0	Local road washed out
	8+000	5.1	4.2	Foot bridge on Vangorda Falls trail washed out
	9+500	6.6	5.2	Campbell St. crossing over-topped
	12+000	4.5	3.7	Vangorda Creek Bridge and Sewer Line Crossing overtopped
Pelly River	0+000	<1	<1	Highway Bridge across Pelly River
	45+000	<1	<1	None, breach flow depth is minimal

There would be significant flooding along Vangorda Creek and minor flooding along Pelly River, and water quality impacts to fish and wildlife. The water level rise in Pelly River is not anticipated to pose a hazard to the highway bridge across the river. The nearest community on Pelly River downstream of Faro is Pelly Crossing, about 180 km (straight distance) west of Faro.

6 POTENTIAL CONSTRAINTS ON RESPONSE PLAN

6.1 Access Roads

Primary access to the mine site from the Town of Faro is by a 23 km long road leading to the main gate at the Faro Mine Complex. Site security staff man the main gate and have keys to access road gates. Procedures are in place to log in all persons entering the mining area. These procedures include:

- receiving Care and Maintenance Contractor management authorization;
- sign-in and waiver requirements; and
- having the required personal safety equipment for the intended areas and activities.

The Highways and Public Works department of the Yukon Government maintains the main access road to allow for passage of heavy loads, such as float trucks used to move heavy equipment, year round. This includes snow clearing in the winter.

Access by road to all dams from the main gate area is maintained by the Care and Maintenance Contractor. Figure B-002 shows a plan of the site access roads for the entire Faro Mine Complex property. Road access from the main gate to the Vangorda Plateau mine site is via the 12 km long heavy haul road. This road is maintained to the same standard as the mine access road from Faro to allow passage of heavy loads on float trucks.

In the summer, roads are passable by 2-wheel drive vehicles. During the winter, roads must be maintained by ploughing to allow vehicle access. Four-wheel drive vehicles are required in the winter due to drifting snow that may cover portions of the road, even after ploughing. All access roads have gates installed, including Blind Creek, access to Grum and the emergency access road to the haul road.

The most difficult period for accessing most dams and diversions is in the spring, when snowmelt in combination with rainfall has the potential to create flood conditions. During this period, access roads may be at risk of being washed out due to erosion or culvert failure. Culvert capacity may become diminished due to icing, snow or blockage by debris. Good practice is to position critical pieces of equipment in strategic locations during high risk periods to respond to emergencies more efficiently.

Loss of road access is a serious concern, since it will delay or prevent inspection of dam and channel facilities as well as the repair of any damage that has occurred. The contingency plan is to:

- Use snowmobiles in the winter when the snow is not ploughed from all roads.
- Maintain a grader, plough truck, front-end loader and gravel truck on-site or maintain contact with off-site contractors for emergency provision of road repair services.
- Aggressively steam ice from culverts and clear ice from roadside ditches through the winter and spring, as required, to maintain culvert/ditch flow and prevent road washout.

- Develop and maintain alternative access to these key areas:
  - Faro Creek Diversion;
  - the Back Slope of Rose Creek Diversion Channel;
  - the toe and at least one abutment of the Cross Valley Dam;
  - the toe and at least one abutment of the Intermediate Dam; and
  - the Fuse Plug.

6.2 Access to Specific Sites

The north end of the Intermediate Dam is accessed by driving down and across the Intermediate Dam spillway and then up the retention dyke on the south side of the spillway (see Figure B-003). Thus, during a flood event, access will not be possible from the north side of the valley, and vehicle access is also, in general, blocked by HPDE pipelines in the spillway. The toe and the crest of this dam can be accessed from top of the Canal Dyke of the Rose Creek Diversion Channel (RCDC) along two access roads downstream of the south abutment.

The crest of the Cross Valley Dam is accessed from the toe area. The toe is accessed from the north valley wall, but it crosses the area where the spillway discharge passes through two culverts (see Figure B-003). If the spillway discharge flow is too high, the toe access would be cut off by the flood. Thus, during a flood event, similar access constraint exists for the Cross Valley Dam north abutment. However, access to the toe area is available from the road on the RCDC dyke. There is no direct access to the Cross Valley Dam south abutment crest from the RCDC dyke.

The Rose Creek Diversion Channel can be accessed at both ends of the channel (see Figure B-003), and along either north or south valley wall.

The Little Creek Dam is accessed from the main access road to the Vangorda Pit (see Figure B-005). The access road is along the crest of the dam, and would not be available if the crest is unstable or being overtopped. Access is also possible along the east and south sides of the Vangorda Waste Rock Dump onto the south abutment of the dam, by following the road adjacent to the Vangorda Northeast Interceptor as shown on Figure B-005. However, this access seems to require some improvement at three short segments along the route to reach the south abutment of the Little Creek Dam.

The Faro Creek Diversion Channel (FCDC) is generally accessed from the road on Faro Northeast rock dumps and then west along the crest of the downstream reach of the diversion channel dyke (see Figure B-003). Access for heavy equipment is also possible from the north via the Northwest rock dumps and old exploration roads that pass around the north side of the main pit to the upstream end of the FCDC. This access is passable by light vehicles and equipment and is a very rough access for dump trucks.

The Vangorda Creek Diversion Flume (VCDF) is accessed from two directions; both of which are commonly used and of good quality (see Figure B-005). The "bottom end" is accessed from the main

haul road and then uphill along the western side of the Vangorda Pit along the dyke crest access road. The "top end" is accessed via the Grum Interceptor Ditch/Water Treatment Plant access road that crosses Vangorda Creek near the VCDF headworks.

6.3 Power and Communications

6.3.1 Power

The Faro Mine Site Complex is connected to the Whitehorse-Aishihik-Faro Grid via a 38 kV power line, as shown on Figures B-002, B-003 and B-005. Transformers are located at the Faro Mill, which steps down the power for on-site distribution. The Vangorda Plateau site is connected to the Faro Mill by a 27 kV overhead power line, as shown on Figures B-002, B-004 and B-005. This line feeds a 4160 V distribution system for the Grum and Vangorda Mine site, which is mounted on single log poles. A distribution of 4160 V lines feeds power to various substations around the site where temporary ground lines are used to connect to equipment (Gartner Lee 2003-2008).

A general loss of power could occur at the mine site if the Whitehorse-Aishihik-Faro hydroelectric power grid were to fail because of a local or regional disruption or accident. In this event, backup generators would be used to run pumps and treatment systems on the Faro side, while the Vangorda side would be without power. The major project equipment that would be shut down in this event includes the following:

- Grum Pit pumping;
- Vangorda Pit pumping; and
- Grum/Vangorda water treatment plant.

Experience has demonstrated that the regional power supplier can restore power quickly. The contingency plan at the site provides for alternate power sources in the event of an imminent emergency:

- two 1.6 MW generators;
- a 500 kW generator;
- a 100 kW generator; and
- the Town of Faro diesel generator.

The contingency plan requires that in the case of a general loss of power, the following steps be followed (Parsons 2016):

- Stop work. Inspect the work area for hazards, and ensure the area is safe before resuming work.
- Use the onsite communication system to determine if the power outage is site-wide or limited to a single building.

- Notify the Site Manager to determine options for fixing the power outage.
- Turn off and unplug all computers, appliances, electronic equipment, lights, and tools.
- Check equipment on emergency power. Items not permanently connected to these outlets should not be connected during a power failure.

6.3.2 Communications

The mine site is connected by a microwave phone system installed in 2003 along with a site radio system that is operated site wide through a repeater system. The two systems are connected into Northwestel system located in the Town of Faro. The electronics are located at the CKRW shack located behind the recreation centre in the Town of Faro and transmitted to the mine site via an antenna system located on Rose Hill and further transmitted to the guardhouse. Each system is equipped with backup emergency power and will remain running for approximately 6 hrs to 12 hrs in the event of a power outage.

The handheld portable radios are connected into cellular service for emergency purposes. Employees can dial out utilizing the keypads on the radios from the mine area. The repeater frequencies are as follows:

- RX 466.1375 MHz
- TX 461.1375 MHz

Satellite internet is available on site located at the guard house and a dedicated VOIP line (line 7) is also available in the event the phone system has a total failure other than loss of power.

The Guest Houses are equipped through Northwestel with phones/fax machines and internet, although the Yukon Government Guest House at 248 Dawson is sometimes shut down for the winter months.

6.4 Darkness

During the winter, there may be less than 6 hours of daylight each day. During the summer, daylight may extend for 24 hours, with a minimal light equivalent to twilight conditions for a short period.

Darkness increases the difficulty in responding to emergency events during the winter, when combined with the potential for extreme cold and snow conditions characteristic of the regional climate. Available outside lighting sources will be extremely limited, especially at the dam sites, being restricted to that provided by vehicles and portable flashlights. As noted in Table 8.1, portable light plants may be required to support response plans. Currently there are two light plants on site, and an additional plant could be rented for use in an emergency.

The site security area, Norcan shop area and fuel stations are lit during emergencies. Depending on the emergency, lighting in additional areas can be activated.

6.5 Snow Cover

During the winter, snow cover and/or rain events that result in icy surfaces on access roads, dams and structures will severely hamper emergency response activities. A cleared roadway is required before heavy equipment can be transported on float trucks, as discussed above in Section 6.1. In an emergency, access by mine staff can be made with snowmobiles or possibly helicopters (if available) to provide preliminary assessment of conditions and to initiate appropriate emergency response measures, including notification of stakeholders.

In general, site activities will be limited during the winter due to the logistical constraints associated with snow cover and maintenance of access. Winter activities such as the excavation of frozen material from borrow sources may be very difficult, if the moisture content is high. Extensive thick snow cover can insulate the subsurface, and may assist in the prevention of hard, frozen subsoil condition.

Winter is also a time when the risk to dam structures is low, due to lowered water levels, channel flows and frozen conditions. The most critical period is the spring, when snow/rain storms may coincide with high water levels during the break up period.

7 NOTIFICATION PLAN

The site Emergency Response Plan (Site ERP) by Parsons (2016), the Care and Maintenance Contractor, is also included here as Appendix IV. The Site ERP describes the notification procedures for any emergency condition occurring on site. The Site ERP notification plan defines the lines of communication from the Care and Maintenance Contractor site staff to Assessment and Abandoned Mines Branch, Yukon Government (YG) and the notification of outside agencies and stakeholders by the Site Manager with the concurrence of YG. The site ERP directs that all spills be reported as per the Faro Mine Complex Spill Reporting Plan.

The main distinction between the Orange Alert and Red Alert notification procedures is the degree of involvement of outside agencies. Figure A-007 is a decision-based flow chart illustrating the steps in the notification plan from the perspective of the first on-scene individual. The decision path provides a guide for notification for the following condition levels:

- observation of an Orange Alert level condition;
- observation of an Orange Alert level condition, which progresses to the Red Alert level; and
- observation of a Red Alert level condition.

A list of contacts is included in Appendix I.

For all alert levels, the first response of the observer is to ensure personal safety and the safety of others. This may require erecting barricades, warning indicators or posting guards to prevent or control access while notifying the Care and Maintenance Contractor Site Manager.

For an Orange Alert condition notification is primarily internal within the mine site and the YG Project Manager except when non-compliant water must be released. Releases of non-compliant water require reporting to the Yukon Spill Line.

If the condition progresses from the Orange Alert to the Red Alert level, external notification of all downstream interests and external emergency response organizations is required by the Care and Maintenance Contractor Site Manager, who will first contact the YG Project Manager. With the concurrence of the YG Project Manager, the Site Manager will notify relevant stakeholders as required by the ERP notification procedure.

If the condition is immediately recognized as a Red Alert, the initial observer should notify the Care and Maintenance Contractor Site Manager about the severity of the situation, who will, in turn, assess the situation and implement the Response Plan(s) as outlined in Section 4 and the notification plan shown on Figure A-007.

8 RESPONSE PLAN RESOURCES

8.1 Current Resources

For the various activities covered in the response plans reviewed herein, manpower, mobile equipment, supplies and support will be required on site. The following section outlines the mobile equipment that is available at the Faro Mine Complex as well as from other sources in the area. In addition, a suggested list of materials and supplies is also provided. Thus, site staff can decide if additional support and/or supplies are required for a given emergency based on the existing on-site inventory. Currently the following mobile equipment is located at the Faro Mine Complex:

- Diesel Pumps
  - Godwin HL6
  - Godwin HL160
  - Pioneer Skid (at tailings pump house)
  - Pioneer at the Faro Creek Diversion
  - Trash pump bought from Canadian Dewatering
  - Selwood pump
- Earth Moving
  - Cat 14 M Grader
  - Cat D9R dozer
  - Cat 345CL excavator
  - Cat 336E excavator
  - Volvo L150G front end loader
  - Case 4WD 580SM extendable backhoe loader
  - 2-Cat 730 rock truck;
  - Two highway-rated dump trucks, and
  - Heavy equipment float and tractor.
- Lifting
  - Cat forklift
  - Kalmar forklift
  - Sellick forklift
  - One Kenworth tandem-axle Hiab crane truck, and
  - One Peterbuilt tandem-axle Hiab crane truck.
- Generators
  - Cat 285 kW diesel genset
  - Doosan 290 kW genset
  - Cummins/Onan 300 kW diesel genset
  - Various small portable gasoline generators, and
  - Various portable gas water pumps.

Miscellaneous equipment

- Two trailer mounted Enviro-fuel tanks
- Ingersoll Rand packer
- Various rock and sand screens
- Two 4WD ATV's
- Three snowmobiles
- Steam Truck
- Vac truck
- One UTV Polaris Ranger
- One medical response vehicle
- Various 4WD light trucks
- Various flat deck utility trailers
- Gorman/Rupp Duetz diesel water pump
- Seven 30 hp Flygt electric water pumps
- Various small pumps
- Hand held radios, and
- Two Sat phones.

Site staff are generally familiar with the on-site equipment, and use it on a regular basis. Generally, operators for this equipment are in the Town of Faro, although contacting staff may be problematic at short notice and during weekends and holidays. Cranes require certified operators, which may not be immediately available in an emergency.

The Town of Faro and the YG road maintenance yard have additional equipment such as excavators, graders, loaders, steamer trucks, generators, flat deck trucks and various dump trucks that may be available for emergencies. External contractors are also regularly on site with equipment.

Local contractors in the Faro-Ross River area and other Yukon-based contractors can provide a variety of equipment to supplement the mine's equipment on site. This document does not endorse use of any of the contractors named below or limit the selection to those listed. The names given below are for reference only, and should be verified on a regular basis.

Two contractors in Ross River are potentially able to supply the following equipment:

1. Clifford McLeod Contracting, Ross River, YT, Phone 867-969-2364 (no email)
    - 1985 & 1988 Western Star dump trucks
    - Cat 966C loader
    - Cat 270 excavator
    - Cat D6D dozer
    - Grader, and
    - Other miscellaneous light-duty mobile equipment.

2. Tim Moon Construction, Ross River, YT, Phone 867-969-2519 (no email)
   - Three Cat 235 excavators (or equivalent)
   - Cat D8 and D7 dozers
   - Cat 14G grader
   - Cat 966 loader (or equivalent), and
   - Other miscellaneous light-duty mobile equipment.

In addition to the above two local contractors, there are two major contractors in the Yukon Territory that have worked extensively at Faro Mine. They have extensive suites of mining and heavy hauling equipment, and their contact information is listed below:

1. Cobalt Construction Inc.
   Whitehorse, YT Y1A 0J9
   Phone: 867-668-3004
   Fax: 867-668-7662
   Email: cobalt@cobaltconstruction.ca
2. Pelly Construction Ltd.
   Whitehorse, YT Y1A 2T7
   Phone: 867-667-6161
   Fax: 867-667-4194
   Email: info@pelly.net

Each of the contractors may have some equipment within the Faro regional area and they should be contacted, if response plans dictate the need for their resources, which may include operators for the equipment.

For all equipment, fuel and oil will be required for their operation. It is assumed that an appropriate amount of both is located on site and that additional required amounts can be moved from the Town of Faro to site.

If helicopters are required, the following are some of the helicopter companies in the Yukon:

1. Trans North Helicopters

Whitehorse headquarters	phone: 867-668-2177	
Carmacks base	phone: 867-863-5551	cell: 867-335-2221
Ross River base	phone: 867-969-2374	cell: 867-335-2374

   Email: email@tntaheli.com

2. Horizon Helicopters

Whitehorse	phone: 867- 633-6044

   Email: info@horizonhelicoptors.ca

3. Fireweed Helicopters
   Whitehorse phone: 867-668-5888
   Email: bruno@fireweedhelicopters.ca

In addition to mobile equipment and operators, equipment, materials and supplies will be required to implement the various response plans reviewed earlier. Table 8.1 outlines potential sources for some of the response plan requirements.

Figures B-008 to B-010 show the surficial geology and locations of rock and soil borrow sites in the mine site area. Frozen material with higher moisture content (e.g., till and sand versus riprap) will be difficult to excavate from borrow pits. If rainfall occurs immediately preceding snowfall and freeze-up, even material stockpiles may be frozen solid.

Table 8.1 Potential Equipment, Materials and Supplies for Emergency Response

Article	Purpose	Commentary/Location
Riprap	Erosion protection of eroded areas, channels and dam faces.	Cobbles and boulders exist in the granular borrow areas: ▪ North Fork Rose Creek Quarry ▪ West of the Cross Valley Dam, and ▪ Quarry area at the Vangorda Waste Dump. A stockpile of angular riprap is located both near the Faro Valley Dumps on the Faro Side of the property and at the Grum quarry on the Vangorda side of the property. Old rockfill quarries are located on the south side of the Rose Creek Diversion Channel (RCDC). Supply of extensive amounts of riprap would be problematic. Large rockfill fragments from the waste rock dumps could possibly be used, but material may be acid-generating. Identification of non-acid-generating rockfill from these potential sources is required. Figures B-008 to B-010 show surficial geology and locations of soil and rock borrow information.
Rock fill and general fill	Backfill for settled areas. Construction of access roads, pads, dykes and buttress berms.	As noted above. Borrow pits are also located along the mine site access road coming from the Town of Faro. Large amounts of till are located on the Vangorda Plateau with accessible amounts overlooking the Vangorda Pit slopes. Figures B-008 to B-010 show surficial geology and locations of soil and rock borrow information.
Sand	Required for bedding and covering of liners. May be required for filters and drainage layers.	Granular borrow areas as noted above. Significant granular deposits located just above the north abutment of the Intermediate Dam. If critical, tailings could also be used but metal leaching and ARD concerns would result. Figures B-008 to B-010 show surficial geology and locations of soil and rock borrow information. 2 Pallets of bagged sand are available on site.
Geotextile	Required for separation and/or filtration for filters and drainage layers.	Heavy-duty non-woven geotextile would likely be required. Materials available on site include: 15 rolls @ 15’ x 300’ Non-woven Armtec 200 geotextile, 4 rolls @ 13’ x 200’ heavy duty woven poly geotextile, 1 roll @ 15’ x 150’ heavy weight fabric with 1/8” HDPE diamond mesh backing, 8 rolls @ 7’ x 50’ Layfield floating style silt curtains.

Article	Purpose	Commentary/Location
Geocomposite liner (GCL)	Required for reducing seepage and leakage from channels.	GCL products, such as Bentofix and Bentomat, are installed with overlapping seams only. Powdered bentonite is required for seam overlaps. Materials available on site include: 2 rolls @ 15' by 150' bitumen liner, 9 rolls @ 15' by 150' Bentomat liner.
Siphon pipes	Required to lower pond levels rapidly when needed.	Various lengths of 8, 16, 20 and 24-inch diameter plastic pipe are located on site. Starting siphon pipes require valves or cranes to fill the pipe ends. In addition, small suction pumps and pipe tie-in locations are required to evacuate trapped air.
Light plants	Required for night operations, particularly during winter	Three light plants are required at site; one should be dedicated to the guardhouse, one mounted on wheels for towing and the other to be man-portable. Currently there are two light plants on site, and a third one could be rented, if needed.
Pumps	Required to pump water and to remove air from siphon pipes.	Various types and sizes of pumps will be required. Pumps will need to be portable and hence gasoline or diesel driven may be the most useful, dependent upon electrical services in the area.

8.2 Recommended Minimum Emergency Materials (KCB 2017c)

In some emergency situations, site personnel may require material to make repairs to structures to mitigate further damage and potentially avoid a larger failure. Material should be stockpiled or readily available for the following situations:

- repair of the Rose Creek Diversion Channel fuse plug spillway at the head of the Intermediate Pond;
- filling low points on roads or dam crests;
- repairing roads, diversions and dams;
- erosion protection for slopes and channels;
- filling sinkholes; and
- constructing temporary berms and access roads.

Materials that should be available for emergency response and recommended stockpile locations for such materials are summarized in Table 8.2. A volume of 200 m^3 each of riprap, coarse gravel and sand and gravel was selected, for each of the three sites. 200 m^3 is considered sufficient to construct a 0.5 m thick layer of each material 10 m wide and 40 m long, as may be required for channel repair and erosion protection. A volume of 2000 m^3 of general fill was selected to provide sufficient material to reconstruct the Rose Creek Diversion Channel Fuse Plug. No stockpile of general fill is suggested for the Intermediate Dam and Cross Valley Dam as fill can be borrowed from nearby areas as needed. Emergencies requiring larger quantities of material are unlikely to be within the capability of site staff and equipment to repair until the emergency has subsided.

Table 8.2 Emergency Response Materials

Material	Potential Applications	Specification	Recommended Stockpile Quantities and Locations
Riprap	▪ Erosion protection on slopes and in channels.	▪ Coarse rock, nominally 12" plus screened with grizzly bars.	▪ 200 m^3 near the Rose Creek Diversion Channel fuse plug. ▪ 200 m^3 near the Intermediate and Cross Valley dams. ▪ 200 m^3 on Vangorda side.
Coarse Gravel	▪ Bedding/filter layer for riprap.	▪ Nominally 2" plus, maximum 6" with some oversized material acceptable.	▪ 200 m^3 near the Rose Creek Diversion Channel fuse plug. ▪ 200 m^3 near the Intermediate and Cross Valley dams. ▪ 200 m^3 on Vangorda side.
Rockfill & General Fill	▪ General repairs to roads, channels and dams. ▪ Construction of temporary access roads, berms, dykes, pads, etc.	▪ Nominally 12" minus material with a range of particle sizes. ▪ Only non-frozen material should be placed.	▪ 2000 m^3 near the Rose Creek Diversion Channel fuse plug. ▪ Existing borrow areas near the Intermediate and Cross Valley dams can be used as needed. ▪ Existing borrow areas on the Vangorda side can be used as needed.
Sand and Gravel	▪ Filter layers, backfilling sinkholes in dams and embankments, road surfacing, filling low points on dam crests.	▪ Nominally 2" minus, (5% to 10% fines content). ▪ Select material from granular borrow areas. Screening not typically required. ▪ Only non-frozen material should be placed.	▪ 200 m^3 near the Rose Creek Diversion Channel fuse plug. ▪ 200 m^3 near the Intermediate and Cross Valley dams. ▪ 200 m^3 on Vangorda side. ▪ Borrow areas can be used directly in winter and spring when the stockpile is frozen.
Non-Woven Geotextile	▪ Separation and filtration for erosion protection, filters and drainage layers.	▪ Heavy non-woven geotextile. ▪ Material already on site is acceptable.	▪ 600 m^2
Impermeable Liners	▪ Reducing leakage from ponds and channels.	▪ HDPE, bituminous, or geocomposite clay liner. ▪ Material already on site is acceptable.	▪ 400 m^2

Stockpiles must be readily accessible during extreme events and must be in areas that are unlikely to be affected by flood flows. Suggested stockpile locations on the Faro side and Vangorda side are shown in Figure 8.1 and Figure 8.2, respectively. If these locations do not have adequate space, then nearby locations will be acceptable.

Figure 8.1 Suggested Stockpile Locations – Faro Side

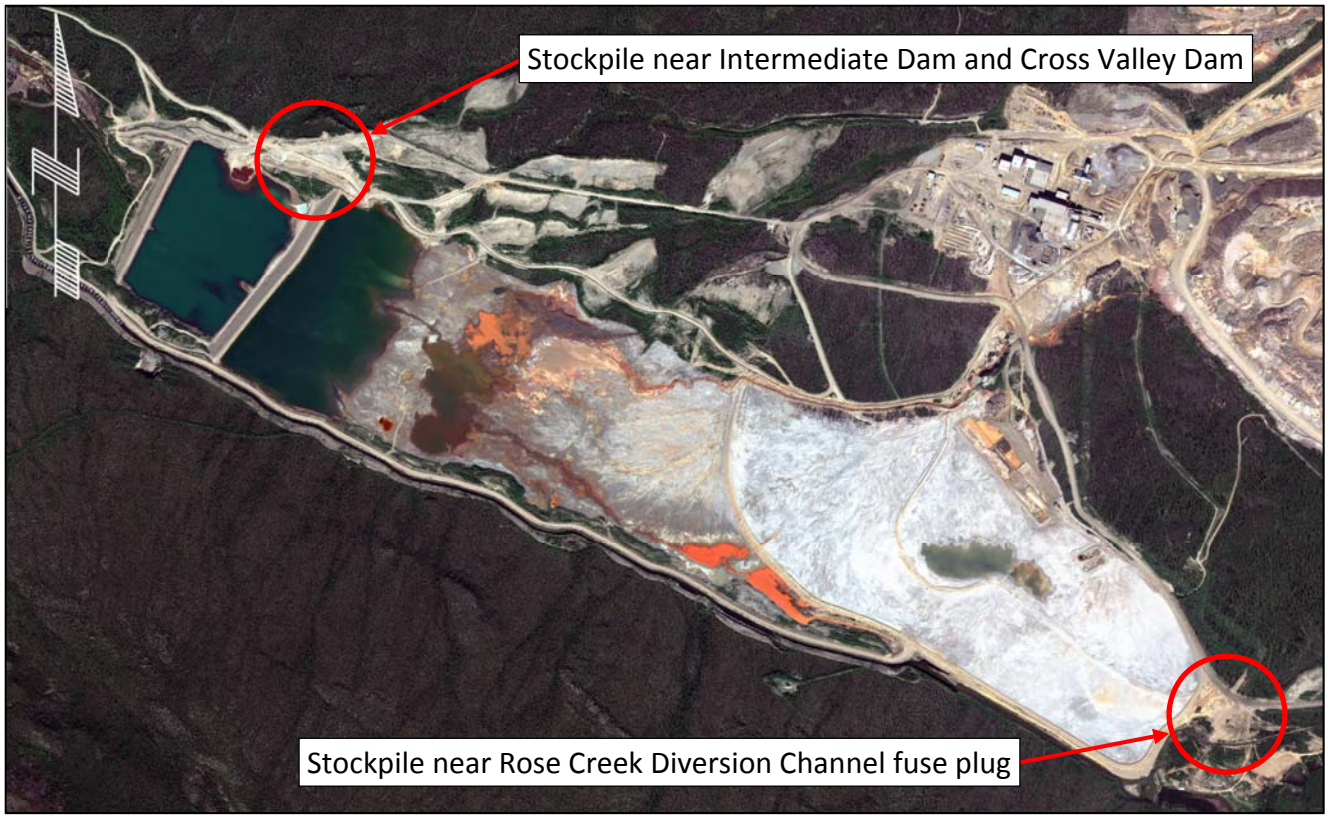
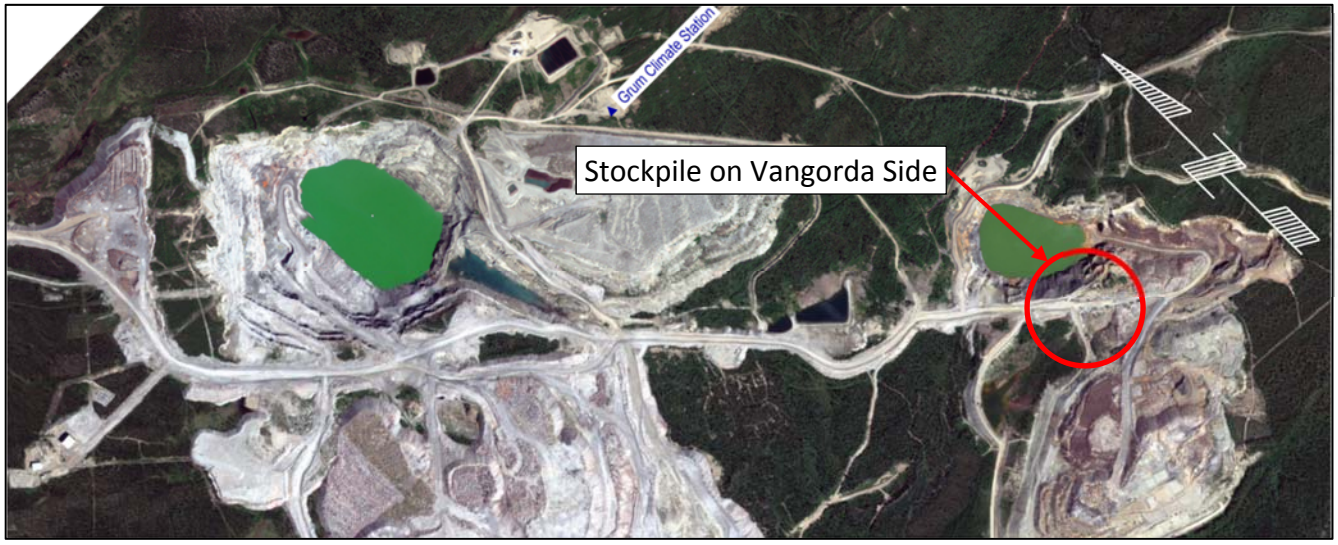


Figure 8.2 Suggested Stockpile Locations – Vangorda Side



9 CLOSURE

This ERP should be considered a "living document" that is periodically reviewed and updated to reflect current site conditions and information. At a minimum, the equipment and contact lists should be updated annually.

This document is an instrument of service of Klohn Crippen Berger Ltd. The document has been prepared for the exclusive use of the Yukon Government (Client) for the specific application to the Faro Mine Complex. In this document, Klohn Crippen Berger has endeavoured to comply with generally-accepted professional practice common to the local area. Klohn Crippen Berger makes no warranty, express or implied.

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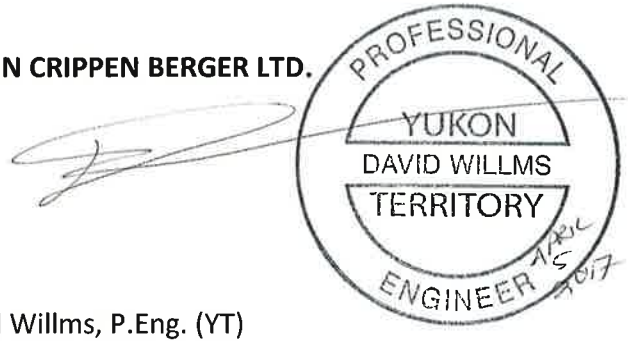

David Willms, P.Eng. (YT)
Project Manager – Geotechnical Engineer

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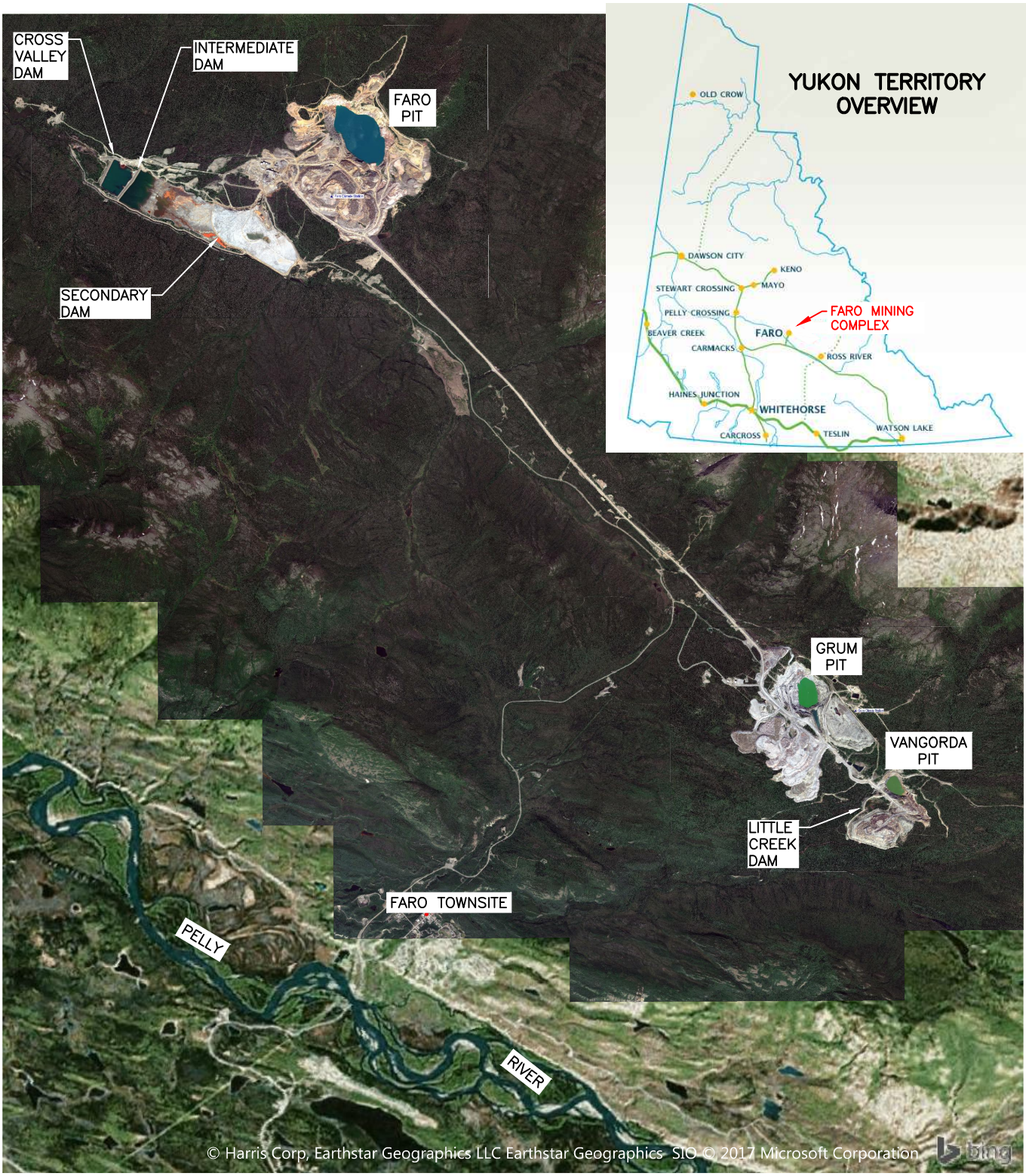
FIGURES

Figure A-001 Site Location Plan
Figure B-002 Mine Site Topography and Access Roads
Figure B-003 Faro Site General Layout
Figure B-004 Faro Site Detail Layout
Figure B-005 Vangorda Plateau Site General Layout
Figure B-006 Vangorda Plateau Site Detail Layout
Figure A-007 Decision Path for Site Personnel
Figure B-008 Faro Mine Site Surficial Geology - Soil and Rock Borrow Locations
Figure B-009 Faro-Vangorda Haul Road Surficial Geology - Soil and Rock Borrow Locations
Figure B-010 Vangorda-Grum Area Surficial Geology - Soil and Rock Borrow Locations



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CLIENT

Yukon Government

Klohn Crippen Berger

PROJECT

FARO MINE COMPLEX

TITLE

SITE LOCATION PLAN

PROJECT No. M09770A06

FIG. No. A-001

KCB-R-MPA

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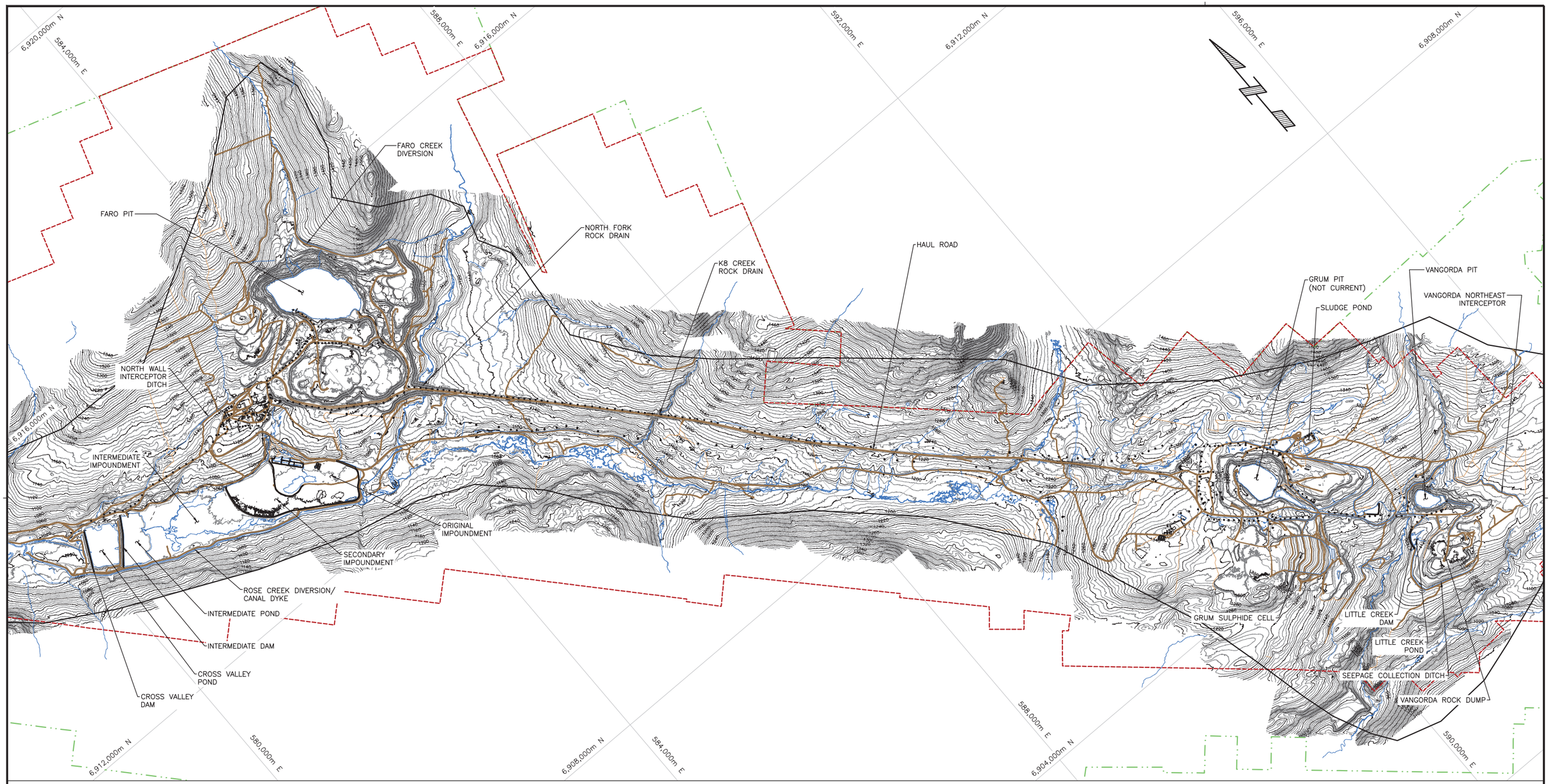
Xref File(s):
Image File(s): Map Sheet 1-1 Map Sheet 3-1 Map Sheet 3-2 Yukon Government yukon map - faro mine location



LEGEND

- PROTECTED AREA WITHDRAWN FROM STAKING MINERAL CLAIMS OIC #2007/168
- IMPACTED AREA BOUNDARY
- ACCESS ROADS
- STREAMS
- POWER POLE

SCALE 0 2000m

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CLIENT: Yukon Government

Klohn Crippen Berger

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

TITLE: MINE SITE TOPOGRAPHY AND ACCESS ROADS

PROJECT No. M09770A05

FIG. No. B-002

KCB-R-MLD

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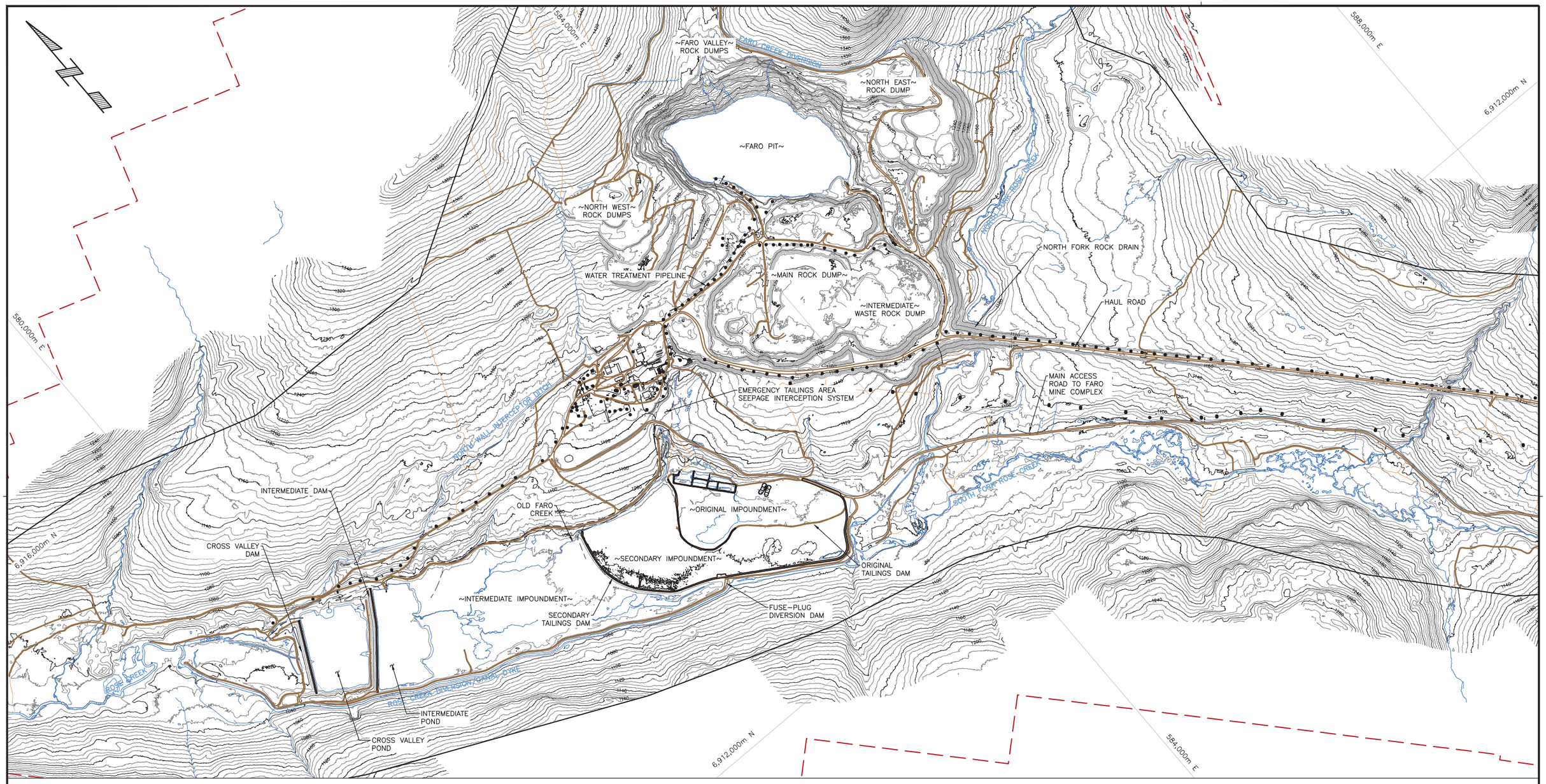

LEGEND

- IMPACTED AREA BOUNDARY
- ACCESS ROADS
- STREAMS
- POWER POLE

SCALE 0 1000m

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CLIENT: Yukon Government

Klohn Crippen Berger

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

TITLE: FARO SITE GENERAL LAYOUT

PROJECT No. M09770A05

FIG. No. B-003

KCB-A-MLD

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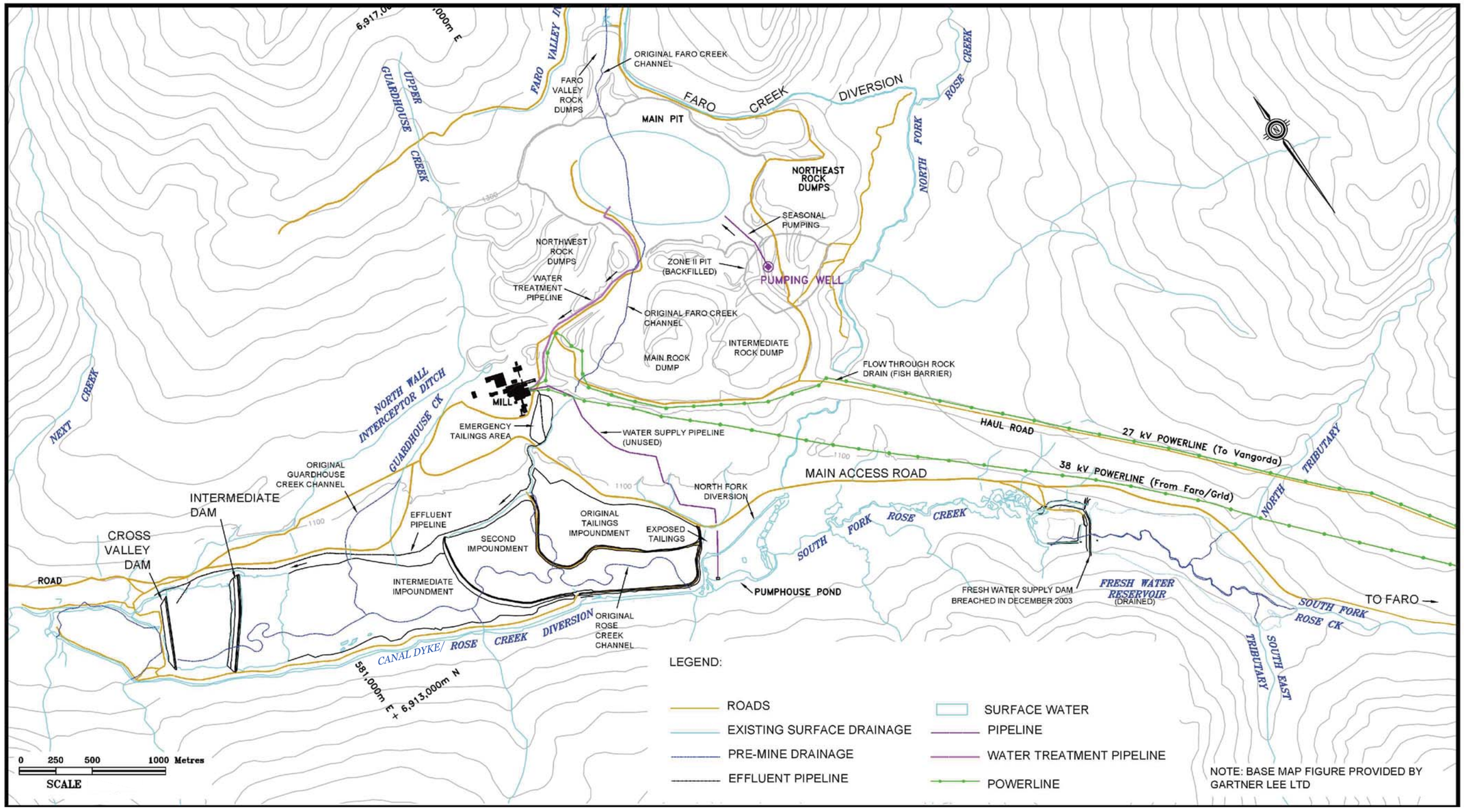

NOTE:

1. ORIGINAL FIGURE PROVIDED BY BGC ENGINEERING.

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CLIENT: Yukon Government

Klohn Crippen Berger

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

TITLE: FARO SITE DETAIL LAYOUT

PROJECT No. M09770A05

FIG. No. B-004

KCB-R-MLD

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592,000m E

596,000m E

6,904,000m N

GRUM SETTLING POND

WATER TREATMENT PLANT

SLUDGE POND

OVERLAND WATER TREATMENT PIPELINE

~GRUM OVERBURDEN DUMP~

~GRUM PIT~
(NOT CURRENT)

SHEEP PAD PONDS

VANGORDA CREEK DIVERSION FLUME

VANGORDA NORTHEAST INTERCEPTOR

~VANGORDA PIT~

HAUL ROAD

SLOT CUT

LITTLE CREEK POND

LITTLE CREEK DAM

~VANGORDA~
ROCK DUMP

~GRUM SULPHIDE~
CELL

~GRUM SOUTHWEST~
ROCK DUMP

GRUM CREEK

SEEPAGE COLLECTION DITCH

VANGORDA CREEK

592,000m E

6,904,000m N

LEGEND

- IMPACTED AREA BOUNDARY
- ACCESS ROADS
- STREAMS
- POWER POLE

SCALE 0 750m

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CLIENT: Yukon Government

Klohn Crippen Berger

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

TITLE: VANGORDA PLATEAU SITE
GENERAL LAYOUT

PROJECT No. M09770A05

FIG. No. B-005

KCB-R-MLD

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GRUM INTERCEPTOR DITCH
rip rap corner
rip rap corner
geotex
rip rap corner
old section rip rap @ 100m intervals
GRUM SETTLING POND
WATER TREATMENT PLANT
SLUDGE POND
BLASTER'S SHACK
WATER TREATMENT PLANT 500 mm DIA. DISCHARGE PIPE
NEW DITCH ROAD
250 mm DIA. BURIED PIPELINE FROM LITTLE CREEK TO WATER TREATMENT PLANT
2400 mm DIA. FLUME SECTION
TO DY
VANGORDA CREEK DIVERSION (FLUME)
OVERBURDEN DUMP
GRUM PIT
RIPRAP APRON
HALFROUND CMP CULVERT
SPILLWAY
EXIT CHUTE
PLUNGE POOL
VANGORDA PIT
PELLY POND
ORE TRANSFER PAD
AREA WHERE MATERIAL WAS REMOVED IN 1998
WASTE ROCK PILES
WASTE ROCK PILE
OLD SHOP
U/G PORTAL
LUBE STATION
FUEL TANKS
MAINTENANCE STORAGE AREA
CORE SHACKS
SHEEP PAD SEDIMENT PONDS
LITTLE CREEK POND
TILL STOCKPILE
LITTLE CREEK DAM
STARTER DIKE DIVERSION DITCH (REMOVED SEPT. 2001)
WASTE ROCK PILES
VANGORDA WASTE DUMP
BARITIC ORE STOCKPILE
EMERGENCY SPILLWAY
GW-94-04
P94-04 A
P94-04 B
P94-03 A
P94-03 B
DRAIN No.6
DRAIN No.5
DRAIN No.4
TILL BERMS
REGRADED SLOPE (1998)
TILL COVER (1998)
APPROVED WATER LICENCE BOUNDARY OF VANGORDA WASTE DUMP
DRAIN No.1
DRAIN No.2
GW-94-05
GW-94-03
GW-94-01
GW-94-02
P94-02 A
P94-02 B
P94-02 C
P94-01 B
P94-01 A
DRAIN No.3
SEEPAGE COLLECTION DITCH
GRUM WASTE DUMP
SUMP C
SUMP B
VANGORDA CREEK
6,905,000 N
6,904,000 N
6,903,000 N
6,902,000 N
593,000 E
594,000 E
595,000 E
592,000 E
10000E
9800E
9600E
9400E
9200E
9000E
11200N
11000N
10800N
10600N
10400N
10200N
10000N
9800N
9600N
9400N
9200N

SCALE 0 250m

NOTES

1. ORIGINAL SOURCE BY DELOITTE & TOUCHE.
2. TOPOGRAPHIC MAP PROVIDED BY ANVIL RANGE MINING CORPORATION.

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CLIENT: Yukon Government

Klohn Crippen Berger

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

TITLE: VANGORDA PLATEAU SITE DETAIL LAYOUT

PROJECT No. M09770A05

FIG. No. B-006

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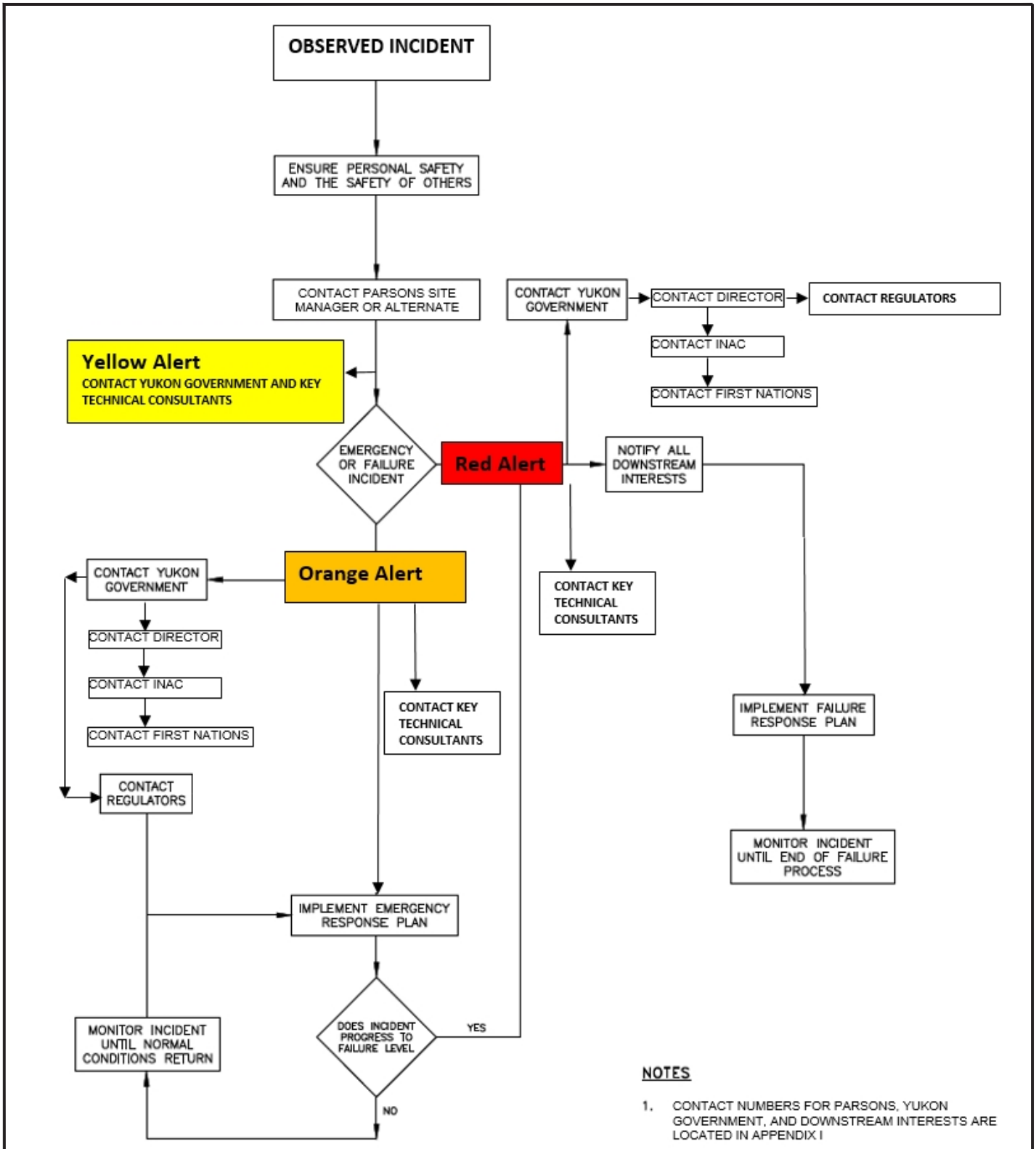

NOTES

1. CONTACT NUMBERS FOR PARSONS, YUKON GOVERNMENT, AND DOWNSTREAM INTERESTS ARE LOCATED IN APPENDIX I

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CLIENT: Yukon Government

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

TITLE: DECISION PATH FOR SITE PERSONNEL

Klohn Crippen Berger

PROJECT No. M09770A05

FIG. No. A–007

KCB–R–MPA

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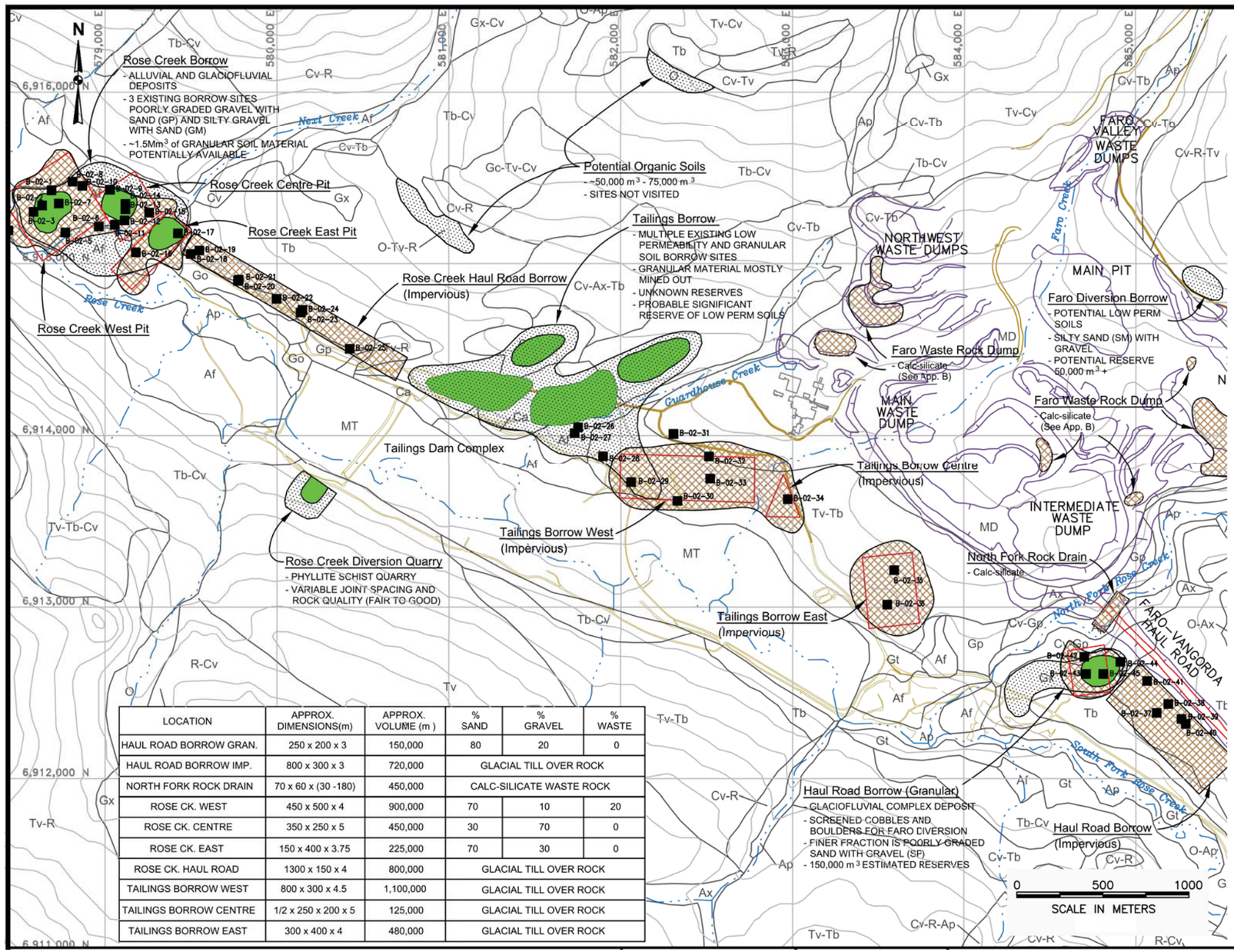

LOCATION	APPROX. DIMENSIONS(m)	APPROX. VOLUME (m)	% SAND	% GRAVEL	% WASTE
HAUL ROAD BORROW GRAN.	250 x 200 x 3	150,000	80	20	0
HAUL ROAD BORROW IMP.	800 x 300 x 3	720,000	GLACIAL TILL OVER ROCK		
NORTH FORK ROCK DRAIN	70 x 60 x (30 -180)	450,000	CALC-SILICATE WASTE ROCK		
ROSE CK. WEST	450 x 500 x 4	900,000	70	10	20
ROSE CK. CENTRE	350 x 250 x 5	450,000	30	70	0
ROSE CK. EAST	150 x 400 x 3.75	225,000	70	30	0
ROSE CK. HAUL ROAD	1300 x 150 x 4	800,000	GLACIAL TILL OVER ROCK		
TAILINGS BORROW WEST	800 x 300 x 4.5	1,100,000	GLACIAL TILL OVER ROCK		
TAILINGS BORROW CENTRE	1/2 x 250 x 200 x 5	125,000	GLACIAL TILL OVER ROCK		
TAILINGS BORROW EAST	300 x 400 x 4	480,000	GLACIAL TILL OVER ROCK		

LEGEND (from Bond, 1999)

QUATERNARY

HOLOCENE

MINE DISTURBANCE

MD- mine disturbance; consisting of an open-pit and stripped till and bedrock accumulations. Bedrock and surficial sediments exposed in open-pit.

MINE TAILINGS

MT - mine tailings; consisting of sand, silt and some clay.

ORGANIC DEPOSITS

O - organics; consisting of woody sedge peat, variable thickness. White River ash accumulations are commonly associated with poorly drained peaty areas.

ALLUVIAL DEPOSITS

Ap - alluvial plain; silt, sand and pebbles with reworked cobbles and boulders occurring as bars, overbank floodplain deposits, 0 - 10 m thick; floodplain subject to periodic floods. Small valley alluvial plains may not be mappec at this scale.

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Af - alluvial fan; coarse sand, pebbles, cobbles and mudflow deposits, up to or >10 m thick. Appear as vegetated, often peat covered, landforms developed during post-glacial sedimentation.

Ax - complexes of Ap and Af undivided. Common when a stream is unconfined and also in narrow valleys where side-entry alluvial fans cannot be differentiated from an alluvial plain.

PLEISTOCENE AND HOLOCENE (UNDIVIDED)

COLLUVIAL DEPOSITS

Cv - colluvium veneer; conforms to bedrock topography, <1 m thick.

Ca - colluvium apron; coalescing colluvial fans at the base of a slope, >1 m thick.

Cz - mass wasting; includes slumping, debris slides and rockfalls. Slumping and rockfalls are Common on Mt.Mye.

LATE PLEISTOCENE (WISCONSINAN) - McCONNELL GLACIATION

GLACIOLACUSTRINE DEPOSITS

Lb - glaciolacustrine blanket; 1- 40 m thick.

GLACIOFLUVIAL DEPOSITS

Gp - glaciofluvial plain; 3 - 10 m thick.

Gt - glaciofluvial terrace; <10 m thick.

Gx - glaciofluvial complex; 1 - 30 m thick, composed of deposits of outwash, glaciolacustrine and minor till deposited in an ice contact environment. Hummocky topography is associated with this depositional setting. Crevasse fillings were mapped in the upper part of Vangorda Creek valley.

GLACIAL DEPOSITS

Tv - till veneer; conforms to underlying topography, <1 m thick.

Tb - till blanket; gently to moderately sloping plain controlled by bedrock or underlying surficial deposits, >1 m thick.

Tx - till complex; till blanket or veneer composed of meltout till and minor ice contact glaciofluvial deposits.

LOWER CAMBRIAN TO CRETACEOUS

BEDROCK

R - bedrock; common on plateau summits and ridges on Mt. Mye and Sheep Mountain.

- EXISTING QUARRY OR BORROW
- POTENTIAL QUARRY OR BORROW
- AREA IDENTIFIED IN PHASE 1 (REJECTED IN PHASE 2)
- MINE INFRASTRUCTURE
- EXISTING ACCESS ROAD
- PHASE 2 BORROW TEST PIT B–02–40

REFERENCE

ORIGINAL MAP: SRK (2003) FIGURE 4

BOND, J.D. (OPEN FILE 1999-8)

SURFICIAL GEOLOGY MAP OF MOUNT MYE AND FARO (105K/3&6 W), CENTRAL YUKON TERRITORY

NOTE:

1. ORIGINAL FIGURE PROVIDED BY BGC ENGINEERING.

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA,STATEMENTS,CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

CLIENT: Yukon Government

Klohn Crippen Berger

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

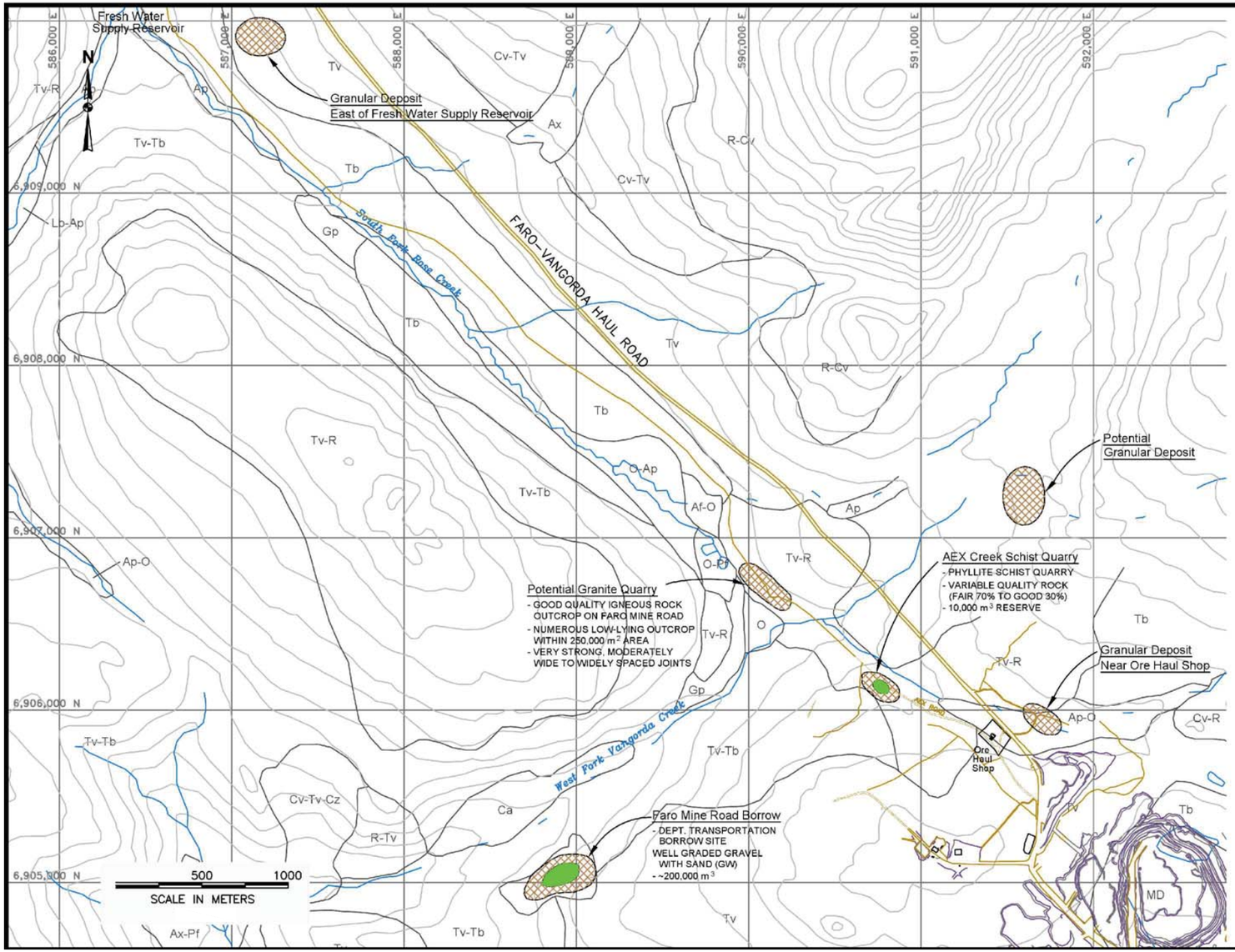
TITLE: FARO MINE SITE SURFICIAL GEOLOGY SOIL AND ROCK BORROW LOCATIONS

PROJECT No. M09770A05

FIG. No. B–008

KCB-R-MLD

Date:1/29/2013 Time:13:25:10 Scale:1:25,585
Filename:\\NT.KLOHN.COM\PROJDATA\M\VGR\M09770A03–GOVTYUKON–2013 FARO\400 DRAWINGS\ERP\FIG_B–008_FARO MINE SITESUFICIAL GEOLOGY.DWG



LEGEND (from Bond, 1999)

QUATERNARY

HOLOCENE

MINE DISTURBANCE

MD- mine disturbance; consisting of an open-pit and stripped till and bedrock accumulations. Bedrock and surficial sediments exposed in open-pit.

MINE TAILINGS

MT - mine tailings; consisting of sand, silt and some clay.

ORGANIC DEPOSITS

O - organics; consisting of woody sedge peat, variable thickness. White River ash accumulations are commonly associated with poorly drained peaty areas.

ALLUVIAL DEPOSITS

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Ax - complexes of Ap and Af undivided. Common when a stream is unconfined and also in narrow valleys where side-entry alluvial fans cannot be differentiated from an alluvial plain.

PLEISTOCENE AND HOLOCENE (UNDIVIDED)

COLLUVIAL DEPOSITS

Cv - colluvium veneer; conforms to bedrock topography, <1 m thick.

Ca - colluvium apron; coalescing colluvial fans at the base of a slope, >1 m thick.

Cz - mass wasting; includes slumping, debris slides and rockfalls. Slumping and rockfalls are Common on Mt.Mye.

LATE PLEISTOCENE (WISCONSINAN) - McCONNELL GLACIATION

GLACIOLACUSTRINE DEPOSITS

Lb - glaciolacustrine blanket; 1- 40 m thick.

GLACIOFLUVIAL DEPOSITS

Gp - glaciofluvial plain; 3 - 10 m thick.

Gt - glaciofluvial terrace; <10 m thick.

Gx - glaciofluvial complex; 1 - 30 m thick, composed of deposits of outwash, glaciolacustrine and minor till deposited in an ice contact environment. Hummocky topography is associated with this depositional setting. Crevasse fillings were mapped in the upper part of Vangorda Creek valley.

GLACIAL DEPOSITS

Tv - till veneer; conforms to underlying topography, <1 m thick.

Tb - till blanket; gently to moderately sloping plain controlled by bedrock or underlying surficial deposits, >1 m thick.

Tx - till complex; till blanket or veneer composed of meltout till and minor ice contact glaciofluvial deposits.

LOWER CAMBRIAN TO CRETACEOUS

BEDROCK

R - bedrock; common on plateau summits and ridges on Mt. Mye and Sheep Mountain.

- EXISTING QUARRY OR BORROW
- POTENTIAL QUARRY OR BORROW
- AREA IDENTIFIED IN PHASE 1 (REJECTED IN PHASE 2)
- MINE INFRASTRUCTURE
- EXISTING ACCESS ROAD
- PHASE 2 BORROW TEST PIT

B–02–40

REFERENCE

ORIGINAL MAP: SRK (2003) FIGURE 4

BOND, J.D. (OPEN FILE 1999-8)
SURFICIAL GEOLOGY MAP OF MOUNT MYE AND FARO
(105K/3&6 W), CENTRAL YUKON TERRITORY

NOTE:

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CLIENT: Yukon Government

Klohn Crippen Berger

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

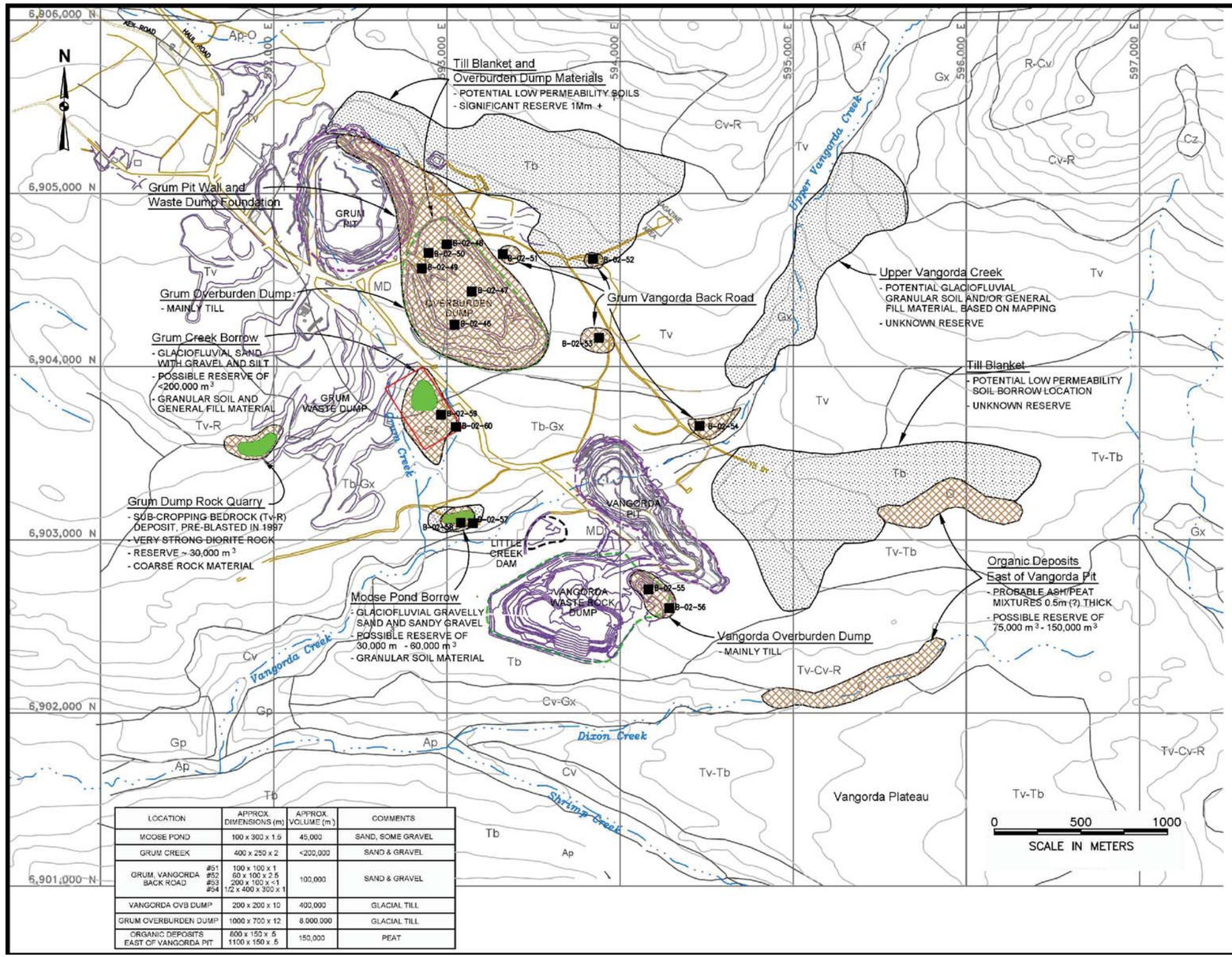
TITLE: FARO–VANGORDA HAUL ROAD
SURFICIAL GEOLOGY
SOIL AND ROCK BORROW LOCATIONS

PROJECT No. M09770A05

FIG. No. B–009

KCB–R–MLD

Date:1/29/2013 Time:13:25:10 Scale:1:2,585
Filename: \\INT.KLOHN.COM\PROJDATA\M\VCR\M09770A03–GOVTYUKON–2013 FARO\400 DRAWINGS\ERP\FIG_B–009_FARO–VANGORDA_HAULROADSURFICIALGEOLOGY.DWG



LOCATION		APPROX. DIMENSIONS (m)	APPROX. VOLUME (m3)	COMMENTS
MOOSE POND		100 x 300 x 1.5	45,000	SAND, SOME GRAVEL
GRUM CREEK		400 x 250 x 2	<200,000	SAND & GRAVEL
GRUM, VANGORDA BACK ROAD	#51 #52 #53 #54	100 x 100 x 1 60 x 100 x 2.5 200 x 100 x <1 1/2 x 400 x 300 x 1	100,000	SAND & GRAVEL
VANGORDA OVB DUMP		200 x 200 x 10	400,000	GLACIAL TILL
GRUM OVERBURDEN DUMP		1000 x 700 x 12	8,000,000	GLACIAL TILL
ORGANIC DEPOSITS EAST OF VANGORDA PIT		600 x 150 x .5 1100 x 150 x .5	150,000	PEAT

LEGEND (from Bond, 1999)

QUATERNARY

HOLOCENE

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LOWER CAMBRIAN TO CRETACEOUS

BEDROCK

R - bedrock; common on plateau summits and ridges on Mt. Mye and Sheep Mountain.

EXISTING QUARRY OR BORROW

POTENTIAL QUARRY OR BORROW

AREA IDENTIFIED IN PHASE 1 (REJECTED IN PHASE 2)

MINE INFRASTRUCTURE

EXISTING ACCESS ROAD

PHASE 2 BORROW TEST PIT B-02-40

REFERENCE

ORIGINAL MAP: SRK (2003) FIGURE 4

BOND, J.D. (OPEN FILE 1999-8)
SURFICIAL GEOLOGY MAP OF MOUNT MYE AND FARO (105K/3&6 W), CENTRAL YUKON TERRITORY

NOTE:

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CLIENT: Yukon Government

Klohn Crippen Berger

PROJECT: FARO MINE COMPLEX
ERP FOR DAMS AND WATER DIVERSION STRUCTURES

TITLE: VANGORDA–GRUM AREA
SURFICIAL GEOLOGY
SOIL AND ROCK BORROW LOCATIONS

PROJECT No. M09770A05

FIG. No. B–010

KCB-R-MLD

Date:1/29/2013 Time:13:25:10 Scale:1:25,585
Filename:\\NT.KLOHN.COM\PROJDATA\M\VCR\M09770A03-GOVTYUKON-2013 FARO\400 DRAWINGS\ERP\FIG_B-010_VANGORDA-GRUM_SURFICIALGEOLOGY.DWG

APPENDIX I

Site Emergency Contact Lists

I.1 Emergency Contact List

I.2 Technical Support Contact List – Geotechnical, Hydrotechnical and Environmental

I.3 Earthquake Information

Appendix I
Site Emergency Contact Lists

I.1 EMERGENCY CONTACT LIST

Care and Maintenance Contractor (Parsons)

Contact	Position	Faro Residence	Mobile	Phone
On Site Security (FARO)		N/A	Radio Call	(867) 994-2600 Ext. 0000
Stu Waring	Mine Manager, Site Manager			867-689-0455
Patrick McCormick	HS&E Lead			867-689-1806
Greg Beck	HS&E Support			
John Barker	Safety Director, HS&E Support			704-264-6159
John Crass	Project Manager			403-294-4243
Len Faber	Site Superintendent	1-867-994-3344		(867) 994-2600 Ext. 0002
Jerry Naus	Emergency Manager			
Tracy Parkin	Environmental Coordinator	1-867-969-2856	1-867-335-6595	(867) 994-2600 Ext. 0004
Paul Kelly	WTP Lead	1-867-994-3485 (h)		
Dan Duivenvoorden	Water Treatment Supervisor	1-867-994-2849		
Chris Wilkinson	Site Services Supervisor	1-867-994-3289	1-867-332-1662	
Faro Mine Site				867-994-2348
Satellite Phone 011 881 631 655 459				

Emergency Services

Emergency Contact	Phone
Faro Ambulance/Nursing Station	1-867-994-4444
Faro Fire Department	1-867-994-2222
Faro RCMP (emergency)	1-867-994-5555
Faro RCMP (non-emergency)	1-867-994-2677
Conservation Officer (TJ Grantham)	1-867-994-2862
Yukon Wildfire Management	1-888-798-3473 (Report Wildfires) 1-800-826-4750 (Wildfire Update) 1-867-393-7415 (Fire Information)
Dept. of Highways (Drury Creek)	1-867-994-3046
Whitehorse General Hospital	1-867-393-8700
Poison Control Centre	1-800-267-1373
Yukon Government Report a Fire Line	1-888-798-FIRE (3473)
Yukon Government 24 Hour Spill Report Hotline	1-867-667-7244
Yukon Health and Safety Board 24 Hour Emergency Line	1-867-667-5450
Yukon Government Type II Management Team	1-867-667-3208
Faro Municipal Airport	1-867-994-2791
Town of Faro	867-994-2728

First Nations (to be notified by YG/INAC)

First Nation	Contact	Phone
Liard First Nation	Daniel Morris (Chief)	(867) 536-7901
Kaska Dena Council	George Miller	(250) 779-3181
Ross River Dena Council	Jenny Caesar (Deputy Chief)	(867) 969-2725 or (867) 334-7513
Selkirk First Nation	Elections underway	

Assessment and Abandoned Mines – Government of Yukon

AAM Contacts	Position	Office #	Mobile #
Carrie Gillis	A/Project Manager	1-867-456-6764	(867) 332-4431
Thaidra Sloane	Senior Project Manager (Care and Maintenance)	1-867-456-6117	867-332-4155
Joshua Ojierenem	Project Manager (Operations and Maintenance)	1-867-456-6163	867-332-9019
Patricia Randell	A/Director	1-867-456-6147	1-867-332-4194
Erik Pit	Senior Project Manager	1-867-456-6154	1-867-332-5521
	Chief Mine Inspector	1-867-456-6812	

Regulators

Regulator	Phone
Environment Canada	See Yukon Department of the Environment Spill Line
Yukon Department of the Environment – Spill Line	867-667-7244
Department of Fisheries and Oceans	See Canadian Coast Guard Marine Spill Line
Canadian Coast Guard – Marine Spill Line	1-800-889-8852

I.2 TECHNICAL SUPPORT CONTACT LIST – GEOTECHNICAL, HYDROTECHNICAL AND ENVIRONMENTAL

Position	Contact	Company	Phone
Geotechnical	David Willms	Klohn Crippen Berger	(604) 251-8529 (w) (604) 649-3921 (c)
Geotechnical - Alternate	Jim Cassie	BGC	(403) 250-5185 (w) (587) 894-2664 (c)
Hydrotechnical	Kate Patterson	Klohn Crippen Berger	(604) 251-8487 (w) (778) 789-5283 (c)
Heritage or Archeological finds	Emilie Hamm	Assessment and Abandoned Mines	(867) 667-8712 (w) (867) 334-9799 (c)
Environmental (YG)	Adrienne Turcotte	Assessment and Abandoned Mines	(867) 667-3153 (w) (867) 334-9799 (c)

I.3 EARTHQUAKE INFORMATION

Earthquake information can be obtained from the Geological Survey of Canada/NRCanada website: http://www.earthquakescanada.nrcan.gc.ca/index-eng.php. The person monitoring for seismic activity may choose to subscribe to their RSS feed.

US Geological Survey website: http://earthquake.usgs.gov/earthquakes/map/

The person monitoring for seismic activity may choose to subscribe to the following automated earthquake notification service: https://sslearthquake.usgs.gov/ens/

APPENDIX II

Spills Regulations

ENVIRONMENT ACT

Pursuant to section 147 of the *Environment Act*, the Commissioner in Executive Council orders as follows:

1. The annexed Spills Regulations are established.

2. The annexed Regulations shall come into force with effect from the 1st day of January, 1997.

Dated at Whitehorse, in the Yukon Territory, this 16th day of December, 1996.

_____
Commissioner of the Yukon

LOI SUR L'ENVIRONNEMENT

Le Commissaire en conseil exécutif, conformément à l'article 147 de la *Loi sur l'environnement*, décrète ce qui suit :

1. Le Règlement sur les déversements ci-joint est établi.

2. Ce même règlement entre en vigueur le 1er janvier 1997.

Fait à Whitehorse, dans le territoire du Yukon, ce 16 décembre 1996.

_____
Commissaire du Yukon

SPILLS REGULATIONS

Definitions

1. In these regulations,

"Act" means the *Environment Act*; *«loi»*

"Federal Regulations" means the Transportation of Dangerous Goods Regulations (Canada) SOR/85/77 of January 18, 1985, as amended from time to time; *«règlement fédéral»*

"government officials" means federal, territorial or municipal government representatives responsible for responding to spill reports to the Yukon Spills Report Centre. *«fonctionnaires du gouvernement»*

Application

2.(1) These regulations do not apply to a release of gas without flaring where authorized by a licence issued under the *Yukon Oil and Gas Act.*

(2) These Regulations do not apply to ozone depleting substances listed in Schedule A of the Ozone Depleting Substances Regulations.

Spill thresholds

3. A spill in excess of the amounts specified in Schedule A is a spill under the Act.

Spill reporting

4. For the purposes of section 133 of the Act, a report to the Yukon Spills Report Centre will be considered a report to an environmental protection officer.

RÈGLEMENT SUR LES DÉVERSEMENTS

Définitions

1. Les définitions suivantes s'appliquent au présent règlement :

«fonctionnaires du gouvernement» Les représentants des gouvernements fédéral, provinciaux ou municipaux, responsables d'intervenir suite à un avis de déversement auprès du «Yukon Spills Report Centre»; *"government officials"*

«loi» S'entend de la *Loi sur l'environnement*; *"Act"*

«règlement fédéral» S'entend du Règlement sur le transport des marchandises dangereuses (Canada), DORS/85-77, du 18 janvier 1985, ainsi que ses modifications. *"Federal Regulations"*

Application

2.(1) Le présent règlement ne s'applique pas à un rejet de gaz sans torchage lorsqu'il est autorisé en vertu d'un permis émis conformément à la *Loi du Yukon sur le pétrole et le gaz*.

(2) Le présent règlement ne s'applique pas aux substances appauvrissant la couche d'ozone apparaissant à l'annexe A du Règlement sur les substances appauvrissant la couche d'ozone.

Seuils limites

3. Un déversement qui excède les quantitées indiquées à l'annexe A est assimilé à un déversement en vertu de la Loi.

Rapport de déversement

4. Aux fins de l'article 133 de la Loi, un rapport de déversement au «Yukon Spills Report Centre» est assimilé à un rapport fait à un agent de protection de l'environnement.

SCHEDULE A

ITEM	COLUMN 1 - SUBSTANCE SPILLED	COLUMN 2 - SPECIFIED AMOUNT
1.	Explosives of Class 1 as defined in section 3.9 of the Federal Regulations	any amount
2.	Flammable gases, of Division 1 of Class 2 as defined in section 3.11(a) of the Federal Regulations	Any amount of gas from a container larger than 100L, or where the spill results from equipment failure, error or deliberate action or inaction
3.	Non-flammable gases of Division 2 of Class 2 as defined in section 3.11(d) of the Federal Regulations	Any amount of gas from a container larger than 100L, or where the spill results from equipment failure, error or deliberate action or inaction
4.	Poisonous gases of Division 3 of Class 2 as defined in section 3.11(b) of the Federal Regulations	any amount
5.	Corrosive gases of Division 4 of Class 2 as defined in section 3.11(c) of the Federal Regulations	any amount
6.	Flammable liquids of Class 3 as defined in section 3.12 of the Federal Regulations	200 L
7.	Flammable solids of Class 4 as defined in section 3.15 of the Federal Regulations	25 kg
8.	Products or substances that are oxidizing substances of Division 1 of Class 5 as defined in sections 3.17(a) and 3.18(a) of the Federal Regulations	50 kg or 50 L
9.	Products or substances that are organic compounds that contain the bivalent "-0-0-" structure of Division 2 of Class 5 as defined in sections 3.17(b) and 3.18(b) of the Federal Regulations	1 kg or 1 L
10.	Products or substances that are poisons of Division 1 of Class 6 as defined in sections 3.19(a) to (e) and 3.20(a) of the Federal Regulations	5 kg or 5 L
11.	Organisms that are infectious or that are reasonably believed to be infectious and the toxins of these organisms as defined in sections 3.19(f) and 3.20(b) of the Federal Regulations	any amount
12.	Radioactive materials of Class 7 as defined by section 3.24 of the Federal Regulations	any discharge or a radiation level exceeding 10 mSv/h at the package surface and 200 mSv/h at 1 m from the package surface
13.	Products or substances of Class 8 as defined by section 3.24 of the Federal Regulations	5 kg or 5 L

ITEM	COLUMN 1 - SUBSTANCE SPILLED	COLUMN 2 - SPECIFIED AMOUNT
14.	Miscellaneous products or substances of Division 1 of Class 9 as defined by sections 3.27(1) and 2(a) of the Federal Regulations	50 kg or 50 L
15.	Miscellaneous products or substances of Division 2 of Class 9 as defined in section 3.27(1) and 2(b) of the Federal Regulations	1 kg or 1 L
16.	Miscellaneous products or substances of Division 3 of Class 9 as defined in section 3.27(1) and 2(c) of the Federal Regulations	5 kg or 5 L
17.	Special waste as defined in section 1 of the Special Waste Regulations	amounts specified in s. 3(1)(b) of Special Waste Regulations
18.	A pesticide as defined in section 2 of the *Environment Act*, but not including those pesticides and fertilizers listed in Schedule 4 of the Pesticide Regulations	5 kg or 5L
19.	Pesticides and fertilizers listed in Schedule 4 of the Pesticide Regulations	any amount

ANNEXE A

ITEM	1ière COLONNE - SUBSTANCE DÉVERSÉE	2ième COLONNE - QUANTITÉ DÉTERMINÉE
1.	Explosifs de classe 1, tels que décrits à l'article 3.9 du règlement fédéral	Toute quantité
2.	Gaz inflammables de la division 1, classe 2, tels que décrits à l'alinéa 3.11 a) du règlement fédéral	Toute quantité de gaz à l'intérieur d'un récipient pouvant contenir plus de 100 litres, ou lorsque le déversement est le résultat d'une défectuosité de l'équipement, d'une erreur ou d'un acte ou d'une omission délibéré
3.	Gaz ininflammables de la division 2, classe 2, tels que décrits au règlement fédéral	Toute quantité de gaz à l'intérieur d'un récipient pouvant contenir plus de 100 litres, ou lorsque le déversement est le résultat d'une défectuosité de l'équipement, d'une erreur ou d'un acte ou d'une omission délibéré
4.	Gaz toxiques de la division 3, classe 2, tels que décrits à l'alinéa 3.11 b) du règlement fédéral.	Toute quantité
5.	Gaz corrosifs de la division 4, classe 2, tels que décrits au règlement fédéral	Toute quantité
6.	Liquides inflammables de la classe 3, tels que décrits à l'article 3.12 du règlement fédéral.	200 L
7.	Solides inflammables de la classe 4, tels que décrits à l'article 3.15 du règlement fédéral	25 kg
8.	Produits ou substances qui sont des matières comburantes de la division 1, classe 5, tels que décrits aux alinéas 3.17 a) et 3.18 a) du règlement fédéral	50 kg ou 50 L
9.	Des produits ou des substances qui sont des composés organiques qui contiennent la structure bivalente «-0-0-», de la division 2, classe 5, tels que décrits aux alinéas 3.17 b) et 3.18 b) du règlement fédéral	1 kg ou 1 L
10.	Produits ou substances toxiques de la division 1, classe 6, tels que décrits aux alinéas 3.19 a) à e) et 3.20 a) du règlement fédéral	5 kg ou 5 L
11.	Organismes infectieux ou dont il est raisonnable de croire qu'ils sont infectieux ainsi que leurs toxines, tels que décrits aux alinéas 3.19 f) et 3.20 b) du règlement fédéral	Toute quantité

ITEM	1ière COLONNE - SUBSTANCE DÉVERSÉE	2ième COLONNE - QUANTITÉ DÉTERMINÉE
12.	Matières radioactives, de la classe 7, telles que décrites à l'article 3.24 du règlement fédéral	Toute quantité d'un rejet ou de l'intensité de rayonnement radioactif supérieur à 10 millisievert par heure à la surface du colis et de 200 miilisievert par heure à 1 m de la surface du colis
13.	Produits ou substances de la classe 8, tels que décrits à l'article 3.24 du règlement fédéral	5 kg ou 5 L
14.	Matières ou produits divers de la division 1, classe 9, tels que décrits au paragraphe 3.27(1) et à l'alinéa 2 a) du règlement fédéral	50 kg ou 50 L
15.	Matières ou produits divers de la division 2, classe 9, tels que décrits au paragraphe 3.27(1) et à l'alinéa 2 b) du règlement fédéral	5 kg ou 5 L
16.	Matières ou produits divers de la division 3, classe 9, tels que décrits au paragraphe 3.27(1) et à l'alinéa 2 c) du règlement fédéral	5 kg ou 5 L
17.	Déchets spéciaux, tels que décrits à l'article 1 du Règlement sur les déchets spéciaux.	Quantité déterminée à l'alinéa 3(1) b) du Règlement sur les déchets spéciaux
18.	Un pesticide tel que décrit à l'article 2 de la *Loi sur l'environnement*, à l'exception des pesticides et des engrais chimiques énumérés à l'annexe 4 du Règlement sur les pesticides.	5 kg ou 5L
19.	Les pesticides et les engrais chimiques énumérés à l'annexe 4 du Règlement sur les pesticides.	Toute quantité

APPENDIX III

Emergency Equipment Lists

Emergency Equipment Available at:

III.1 Town of Faro

III.2 Drury Creek and Ross River Grader Station

III.3 Faro RCMP

III.4 Faro Search and Rescue

III.5 Faro Volunteer Fire Department

III.6 Faro Ranger Patrol ICPRG

III.7 Faro Conservation Office

Appendix III
Available Emergency Equipment

III.1 TOWN OF FARO

Number	Description	Model Year	Size
1	KX080-3 Kubota Excavator	2008	0.5 yd bucket
1	John Deere TC 54H F.E. Loader (c/w 5 ft lifting forks)	2000	2.5 yd bucket
1	John Deere 410E Loader/ Backhoe	1997	1.25 yd/ 7.5 cu ft
1	John Deere 450E Tracked Dozer	1985	8 ft blade
1	John Deere 455G Tracked Loader	1990	1 yd bucket
1	John Deere 670B Road Grader	1989	12 ft blade
1	GMC Tandem Axle Dump Truck	1985	12 cu yd box
1	GMC Single Axle Dump Truck	1985	4 cu yd box
1	GMC Flat Deck Truck	1989	16 ft deck
1	Model 8000 Ford Diesel Tank Truck	1989	Vac tr (4000g)
1	Ford Cube Van Steamer Truck	1983	
6	Pickup trucks (1 slip in diesel tank)		250 gallons
1	GM Rally Van		10 passenger
2	Cargo Vans (mtce. vehicles)		
2	110 volt generators (gas fired)		
1	19 KW emergency generator/ 208-3 phase		
3	Flyght Pumps (110 Volt)		
1	4 “ Diesel Pump		
2	Satellite Phones		

III.2 DRURY CREEK AND ROSS RIVER GRADER STATION

Drury Creek Grader Station

Number	Description
1	740 Champion Grader
2	10 Ton Dump Trucks
1	5 Ton Dump Trucks
2	1 Ton Pickup Trucks
1	624 John Deere Loader (at airport)
1	936 Cat Loader (at Drury Camp)

Ross River Grader Station

Number	Description
3	5 Ton Dump Trucks
2	740 Champion Graders
1	14G Cat Grader
1	Mobile Culvert Steamer
1	D-6 Dozer
1	Vohl Snow Blower
1	Low Boy Trailer
1	Water Tanker
1	Tracker

III.3 FARO RCMP

Vehicles

Number	Description
1	Chevrolet Silverado 4X4 (emergency equipment, radio communication and loud speaker)
1	Ford Expedition (SUV) 4X4 (emergency equipment, radio communication and loud speaker)
1	Yamaha Quad 4X4
1	Yamaha Rhino 4X4
1	Jet Boat
1	Polaris Wide Track Snowmobile
1	Bombardier Snowmobile
1	Flat Deck Trailer

Equipment

Number	Description
2	Search and Rescue packs
2	GPS Units
1	SPOT Device
1	Satellite Phone (Phone # 011881651422091)
1	Generator

Facilities

Number	Description
1	Administration Office: (radio equipment, three prisoner cells, kitchen and no emergency power)
1	Small Garage (no emergency power)
1	Storage Facility (soft shell garage)
3	Staff Houses (no emergency power)
1	Temporary Quarters (no emergency power)

III.4 FARO SEARCH AND RESCUE

Number	Description
1	Suburban
1	Jet Boat
1	Small Generator
1	Small Chainsaw
10	Summer Weight Sleeping Bags
10	Blue Foam Mats
4	Small Tents
1	Megaphone
6	ICOM radios
6	Radio Chest Packs
2	Wall Tents
1	Orange Basket Stretcher
1	Aluminum Basket Stretcher
1	SKED Stretcher
1	Backboard and Spider Straps
2	White Gas Stoves
2	White Gas Lanterns
6	Floater Suits
3	Life Jackets
1	First Aid Kit
4	Packs
1	Rope Rescue Kit (z Drag)
	SAR Hardhats
1	Spotlight
	Misc. Rope

III.5 FARO VOLUNTEER FIRE DEPARTMENT

Number	Description
1	2007 Fort Garry Fire Truck (Pumper #1) fully equipped with 1040 G.P.M. pumping capacity with 900 Gallon Tank and Class A Foam Capabilities
1	1988 Ford Hub Fire Truck (Pumper #2) fully equipped with 840 G.P.M. pumping capacity and 800 Gallon Tank & 5000 Watt Gas powered Portable Generator
1	1971 Ford Theilbeu Fire Truck fully equipped with 640 G.P.M. pumping capacity and approx. 800 Gallon Tank
10	Scott Self Contained Breathing Apparatus with ½ hour bottles. (2 New fully equipped with radios)
22	Self-Contained Breathing Apparatus spare ½ hour bottles
1	JMAR Air Compressor and five bottles cascade refilling system
1	Base Radio with duplex and repeater functions
4	Portable Radios with keypads
6	Portable Radios
3	Mobile Radios (Pumper #1, Pumper #2 and Rescue #3)
22	One Way Pagers
260 Litres	AFFF Class B Foam
250 Litres	Class A Foam
22	Complete Sets of Firefighter Personal Protective Gear
10 Pairs	Wildland Coveralls
1	Encapsulating Suit
20	ABC Fire Extinguishers
3	CO_2 Fire Extinguishers
6	50 lbs boxes of ABC Dry Chemical Powder
2	Forestry Water Back Packs
1	Chainsaw for ventilation
1	Metal Cutting Saw
6	Canvas Tarps for salvage and overhaul
4	One-hour HAZMAT Self Contained Breathing Apparatus with spare bottles
1	1997 Ford F450 1.5 Ton Crew Cab First Responder Rescue Truck (#3 Rescue) equipped with the following vehicle extraction equipment:
2	Phoenix Jaws of Life Sets with Shears and Ram
1	Honda 5.5 HP Gas powered portable air compressor
1	Honda 5000 Watt Gas powered portable generator
1	Honda ventilation fan
1	Honda 3” Water Pump
1	Air Chisel kit
1	Set 4 Ton Porta Power Hydraulic Kit
	Miscellaneous blocking, chains, rope and other equipment
2	Heavy Duty Come-Alongs
1	Heavy Duty Reciprocating Saw
	First Aid and Oxygen Administration Kits

III.6 FARO RANGER PATROL ICPRG

Faro Ranger Patrol ICPRG

Number	Description
5	Garmin GPS
2	Satellite Phones
1	Digital Camera
1	First Aid Kit
1	Rifle Cleaning Kit
1	PCX-250 HF Transceiver (wireless communications device)
5	Binoculars
4	Coleman Stoves
4	Lanterns
11	Gas Cans
2	Canadian Flags
1	Ranger Flag
1	File Cabinet
1	Office Supplies
16	Breakfast/Lunch/Supper Rations
1	Fax Machine
4	Hand Held Radios
1	Wall Tent
1	Wall Tent Stove and Pipe

Faro Ranger Personal Equipment List

Number	Description
2	Patrol Wall Tents with Stoves and Pipe
1	Personal Wall Tents
9	Snowmobiles
6	ATVs
2	Argos
6	Chainsaws
6	Boats
12	Vehicles (Pickups or SUV's)
6	Trailers
3	Skimmers
4	Coleman Stoves
4	Coleman Lanterns
2	Satellite Phones
5	GPS- Global Positioning System

III.7 FARO CONSERVATION OFFICE

Faro Conservation Office

Number	Description
1	Satellite Phone
1	SPOT
2	Four Wheelers
2	Snowmobiles
1	19’ Aluminum Boat with 175 HP Jet
1	4X4 ¾ Ton Pick up
	Personal Survival Equipment
1	21’ Tandem Axle Flat Deck Trailer
2	Base Station MRS radios
1	Portable MRS radio
2	Family Wave Radios
1	LAD Radio

Personal Equipment

Number	Description
1	17.5’ fibreglass boat with 90 HP outboard
1	19’ Freighter Canoe with 30 HP outboard
1	4X4 ¾ Ton Pick up
1	4X4 ¾ Ton Suburban
1	14’ Horse Trailer
2	Snowmobiles
	Personal Survival Equipment

APPENDIX IV

Parsons Emergency Management Plan – Faro Mine Complex

EMERGENCY RESPONSE PLAN

FOR FARO MINE COMPLEX

FARO, YT

Original: March 22, 2016

Effective Date of Plan: April 1st, 2016

Prepared for:

GOVERNMENT OF YUKON
ENERGY, MINES AND RESOURCES

ASSESSMENT AND ABANDONED MINES
WHITEHORSE, YT

Prepared by:

PARSONS INC.
SUITE 100, 318 - 11TH AVENUE SE
CALGARY, ALBERTA T2G 0Y2

PHONE: (403) 294-4200

FAX: (403) 294-4240

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FARO MINE COMPLEX

EMERGENCY RESPONSE PLAN

EMPLOYEE ACKNOWLEDGEMENT SIGN OFF

Please print legibly.

Surname: _____

First Name: _____ Given Name Initial(s): _____

Emergency Management Team/ Incident Command Team Position: _____

I acknowledge that I have read, understood, and agree with the contents of this Emergency Response Plan for the Faro Mine Complex.

Signature: _____

Date: _____

Submit to the Safety, Health and Environment Lead

FARO MINE COMPLEX

EMERGENCY RESPONSE PLAN

EMPLOYEE SUGGESTIONS FOR IMPROVEMENT

☐ I noticed the following mistake(s)

☐ I would like to propose the following change(s) / amendment(s) / improvement(s)

Guidance:

- Indicate the section and paragraph numbers to which the proposed correction / change applies.
- If appropriate, photocopy affected page(s) from this document, mark up the changes, and attach to this form.
- If necessary, attach to this form any additional information / material required to be incorporated within this document.
- Complete the details below and submit this form (including attachments) to the Safety, Health and Environment Lead.

Signature: _____

Name: _____

Position: _____

Location: _____

Date Submitted: _____

THANK YOU for your interest in improving site safety, health and environmental protection.

Submit to the Safety, Health and Environment Lead

Formal distribution of this plan is as follows:

PARSONS

Company Executive

Project Manager

Site Manager

Site Safety, Health and Environment Lead

GOVERNMENT AGENCIES

Government of Yukon, Energy, Mines and Resources, Assessment and Abandoned Mines

ADDITIONAL COPIES

Additional copies of the emergency management and response plan will be onsite. A copy will also be held at Parsons' office in Calgary, Alberta.

PROCESS FOR MEDIA AND PUBLIC INQUIRIES

All media inquiries are to be directed to Yukon Government.

If a member of the media shows up unexpectedly at the site, they are to be referred to the Site Manager who will direct them to Yukon Government.

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1.0 INTRODUCTION

1.1 SITE DETAILS

Parsons Inc., hereafter referred to as “Parsons” prepared this emergency response plan (ERP) as part of the Care and Maintenance (C&M) of the Faro Mine Complex located near the Town of Faro, Yukon. The Faro Mine Complex is approximately 25 square kilometers situated within the Traditional Territory of the Kaska Nation, located approximately 360 km northeast of Whitehorse and upstream from the Traditional Territory of the Selkirk First Nation.

Mining operations commenced in 1969 with the production of lead, zinc and silver. Operations ceased in 1998 and the mine was abandoned due to bankruptcy of the mine owner. The Faro Mine Complex comprises the Faro Mine Area (1), the Rose Creek Tailing Area (2), and the Vangorda Plateau (3), as indicated in the figure below:

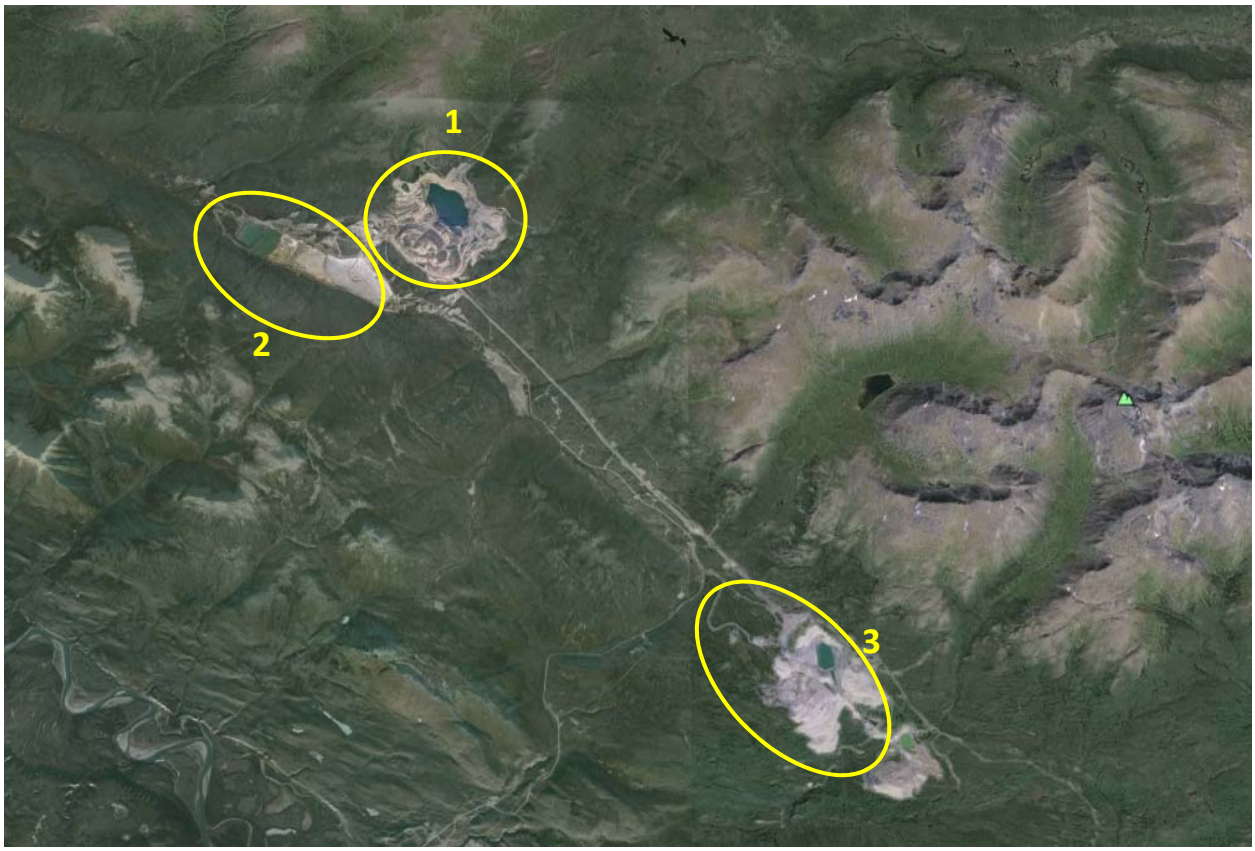


Figure 1: Faro Mine Complex

The Faro Mine Area includes the Faro Pit and approximately 230 million tonnes of waste rock. The Rose Creek Tailing Area includes three dams and approximately 55 million tonnes of tailings. The Vangorda Plateau includes the Vangorda and Grum pits and 16 million tonnes of waste rock. There are two major stream diversions in the Complex, one in the Faro Pit Area and the other in the Rose Creek Tailing Area.

1.1.1 *COMPANY INFORMATION*

Parsons Inc.

Suite 100, 318 11th Avenue SE,

Calgary, Alberta

T2G 0Y2

1.1.2 *CURRENT REVISION AND EFFECTIVE DATES*

The ERP will be effective as listed in Table 1 for all aspects of the C&M of the Faro Mine Complex. The ERP may be updated as conditions change or situations arise.

Table 1: Effective Dates of the Emergency Management and Response Plan

Revision Number	Revision Date	Effective Date	Updates
Rev 1	April 25, 2016	April 26, 2016	Fire response information
Rev 2			

1.1.3 *DESCRIPTION OF HEALTH, SAFETY AND ENVIRONMENTAL HAZARDS*

Contaminated Surface Water: There are three (3) partially flooded open pits that contain impacted water; and, one sealed portal that leads to a flooded exploration drift containing impacted water.

Contaminated Groundwater: The Rose Creek Alluvial Aquifer underlying the tailings impoundment is contaminated.

Contaminated Soil: Soil contaminated with lead/zinc is present throughout the site, and in particular, the areas surrounding the former concentrate storage and load-out building. There is also an estimated 90 000 m^3 of hydrocarbon impacted soil at the site.

Public Access to Site: The road leading to the Faro Mine Complex is a Faro Mine Road, a public highway maintained by YG Highways and Public Works. The road ends at the Guardhouse for the Complex, which poses a security risk as some areas are easily accessible. In addition, site security is limited to small sections of fence and lockable gates in specific areas, leaving other portions of the site easily accessible to the public.

Dams and Diversions of Insufficient Capacity/Robustness: The flood diversion system capacity of the major tailings retention structures is not sufficient for long-term risk mitigation.

Acid Drainage from Waste Rock and Tailings: Approximately 55 million tonnes of lead/zinc tailings are located within the tailings impoundment. Acidic water impacted with elevated metals concentrations is currently seeping from the waste rock.

Hazardous Materials: Several decommissioned buildings and facilities throughout the Site are contaminated with lead dust, asbestos and other hazardous materials.

Unsafe Infrastructure: The buildings and other types of infrastructure onsite are deteriorating and pose a risk for worker and public safety.

1.1.4 *APPLICABLE LEGISLATION, REGULATIONS AND STANDARDS*

The standards and requirements of the following documents have been incorporated into this ERP:

- Canadian Standards Association Z731-03 (Reaffirmed 2009), Emergency Preparedness and Response;
- Incident Command System (ICS) I-100, Introduction to Incident Command System;
- Environmental Emergency Regulations "E2 Regulations" under the Canadian Environmental Protection Act (CEPA 1999, amended in the document, Regulations Amending the Environmental Emergency Regulations, published in the *Canada Gazette* in December 2011);
- Implementation Guidelines for the Environmental Emergency Regulations (Environment Canada, 2011);
- Canadian Dam Association Dam Safety Guidelines (2007);
- Yukon Government Occupational Health and Safety Act (2002, amended 2010)

1.2 PURPOSE

The purpose of this ERP is to protect the public, workers, environment and property through emergency prevention, preparedness, organized response and recovery, in the event of an emergency.

This ERP defines the Faro Mine Complex incident command structure, response procedures, and integrated emergency preparedness process for Parsons' operations, from the field operations to corporate support activities.

Parsons emergency preparedness involves all aspects of planning, training, exercising, responding, and quality assurance. Figure 2 identifies the key elements of Parsons emergency preparedness.

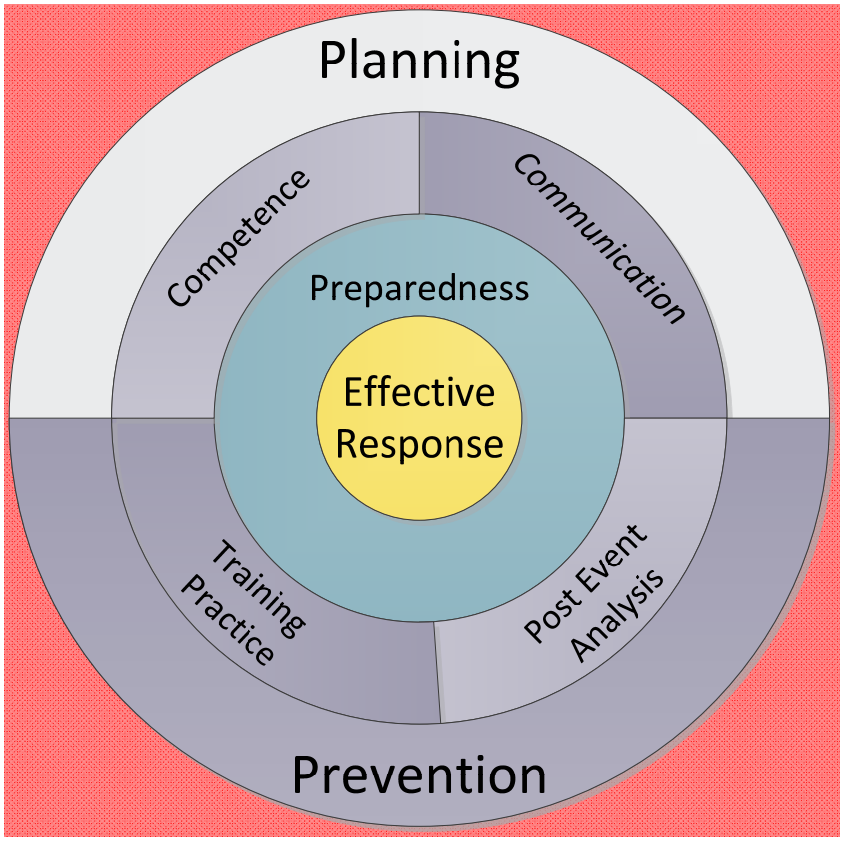


Figure 2: Emergency Preparedness Key Elements

1.3 SCOPE

This ERP addresses the prevention of, preparedness for, response to and recovery from environmental and safety emergencies caused by uncontrolled, unplanned or accidental incidents and releases during ongoing care and maintenance activities at the Faro Mine Complex. The ERP ensures all activities are in conformance with applicable standards, legislation, and regulations governing the Faro Mine Complex. In addition, the ERP presents responsibilities for all workers onsite and in corporate support groups.

Goals for the effective management of any incident are to:

- Protect lives (workers, emergency responders, and the public);
- Effectively rescue and treat casualties;
- Minimize environmental impacts;
- Minimize damage to public and private property;
- Facilitate rapid recovery and restoration from emergency occurrences;
- Comply with political, socio-cultural, and regulatory environment of local authorities and stakeholders; and,
- Address stakeholder concerns and expectations.

Parsons supervisors will review the ERP with each employee and contractor worker onsite:

- During the worker's initial site orientation;
- When the worker's responsibilities under the ERP change; and,
- When the ERP is updated.

Additional information on training involving the ERP is in Section 3.0.

1.4 ERP MAINTENANCE

The Parsons' project manager is responsible for maintaining all components of the ERP. The Site Safety, Health and Environment Lead will facilitate communication and compliance.

The ERP will be reviewed and updated at least once per year and more frequently, if appropriate, based on operational or Project modifications, additions or personnel changes. Updates will also incorporate information from any Project or bridging documents or plans as applicable.

1.5 LIST OF ACRONYMS

AHA	Activity Hazard Analysis
C&M	Care and Maintenance
CEPA	Canadian Environmental Protection Act
CPR	Cardiopulmonary Resuscitation
CSHM	(Parsons) Corporate Safety and Health Manual
EM	Emergency Manager
ERP	Emergency Management and Response Plan
EMT	Emergency Management Team
EMR	Emergency Medical Responder
GBU	Global Business Unit
HAZMAT	Hazardous Material
Kg	Kilogram
Km	Kilometre
IAP	Incident Action Plan
IC	Incident Commander
ICS	Incident Command System
ICT	Incident Command Team
IDLH	Immediately Dangerous to Life or Health

L	Litre
Lb	Pound
m^3	Cubic Metre
mL	Millilitre
PPE	Personal Protective Equipment
PSHEP	Project Safety, Health and Environment Plan
RAC	Risk Assessment Code
SDS	Safety Data Sheet
SH&E	Safety, Health, and Environment
Site	Faro Mine Complex

1.6 DEFINITIONS

Terms that are used in this ERP are defined in Table 2.

Table 2: Definition of Terms

Term	Description
Accident	An undesired event or sequence of events causing injury, ill health, property damage or loss of life.
Decontamination	The removal of hazardous substances from employees and their equipment to the extent necessary to preclude the occurrence of foreseeable adverse health effects.
Deputy Incident Commander (IC)	Designated personnel in a department or operating site to assist in the evacuation process sweep the area for any potential missing persons and take a headcount to account for all personnel in the deputy ICs designated area.
Emergency	A serious, unexpected, and often dangerous situation requiring immediate action.
Emergency response	Response effort involving first responders, trained onsite personnel and designated external responders (e.g. medical aid).
Facility	Any building, structure, installation, equipment, pipe or pipeline (including any pipe into a sewer), well, pit, pond, lagoon, impoundment, ditch, storage container, motor vehicle, rolling stock, or aircraft; OR , Any site or area where a hazardous substance has been deposited, stored, disposed, placed, or otherwise come to be located.
Hazard	A situation or condition that presents a risk to safety, health, or the environment.
Hazardous material (HAZMAT)	Substance that presents a risk to safety, health, or the environment because it is explosive, gaseous, flammable, toxic, radioactive, corrosive, combustive, or leachable. Exact definitions regarding what materials are hazardous and how they are regulated vary depending on the jurisdiction.
HAZMAT Response Team	An organized group of employees who are designated and trained to handle actual or potential leaks or spills of hazardous substances requiring possible close approach to the substance to control or stabilize the incident. A HAZMAT team is not a fire brigade nor is a typical fire brigade a HAZMAT team. However, a HAZMAT team may be a separate component of a fire brigade.
Hazardous waste	Waste that poses substantial or potential threats to safety, health, or the environment.
Health hazard	A chemical, mixture of chemicals, or pathogen that could cause acute or chronic health effects in exposed humans. The term “health hazard” includes but is not limited to chemicals that are carcinogens; toxic agents, including those that act on the reproductive, blood, kidney, liver, lung, eye, skin, brain and nerves, or other organ systems; irritants; corrosives; and sensitizers. Health hazards also include stress resulting from temperature extremes.
Immediately dangerous to life or health (IDLH)	An atmospheric concentration of any toxic, corrosive, or asphyxiant substance that poses an immediate threat to life or that would interfere with an individual’s ability to escape from a dangerous atmosphere.

Term	Description
Incident	An unplanned, undesired event that hinders completion of a task and may cause injury or other damage.
Incident Command System (ICS)	A comprehensive, practical emergency management system widely used by government and industry for effectively organizing and using the resources available for any type or size of operation.
Near loss/miss	Incident that had the potential to cause harm or injury but because of circumstances resulted in no harm.
Non-occupational medical emergency	A medically based emergency where the injured party is not suffering from an injury that is directly related to a work process. Examples include strokes and heart attacks.
Occupational medical emergency	A medically based emergency where the injured party has been injured by a work process. Examples include scrapes, burns, and amputations.

2.0 SITE-SPECIFIC RISK ASSESSMENT AND MANAGEMENT

2.1 OVERVIEW

Effective risk management first requires the identification of possible emergency scenarios. An appropriate response can then be determined based on the likelihood of a given emergency scenario and the worst-case result of that scenario. The risk assessment code (RAC) matrix in Table 3 is used to determine the degree of risk of a given scenario.

Table 3: Risk Assessment Code Matrix

Overall risk (Use highest code)					
	Probability				
Severity	**Frequent (F)**	**Likely (L)**	**Occasional (O)**	**Seldom (S)**	**Unlikely (U)**
Catastrophic (C)	E	E	H	H	M
Critical (Cr)	E	H	H	M	L
Marginal (M)	H	M	M	L	L
Negligible (N)	M	L	L	L	L

Step 1: Review each hazard with identified safety controls and determine RAC (See above). The RAC is developed after correctly identifying all hazards and fully implementing all controls.

P "Probability" is the likelihood to cause an incident, near miss, or accident and identified as Frequent (F), Likely (L), Occasional (O), Seldom (S) or Unlikely (U).	**RAC Chart**
S "Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as Catastrophic (C), Critical (Cr), Marginal (M), or Negligible (N)	E = Extremely high risk
	H = High risk

Step 2: Identify the RAC (probability/severity) as E, H, M, or L for each hazard on the activity hazard analysis (AHA). Annotate the highest RAC at the top of AHA.	M = Moderate risk L = Low risk

2.2 POTENTIAL EMERGENCIES

Potential emergency situations that apply to the Project and site are noted in Table 4. This list was determined by looking at the site location, hazards present onsite, and type of work being performed. Incident action plans (IAPs) for each of the potential emergency situations shown in the table are provided in Appendix A.

Table 4: Potential Onsite Emergencies

Potential Emergency	Probability	Severity	Risk Assessment Code
Medical (occupational)	Likely	Critical	High
Medical (non-occupational)	Seldom	Critical	High
Fire or explosion	Occasional	Catastrophic	High
Power failure	Occasional	Marginal	Low
Terrorism or bomb threat	Unlikely	Catastrophic	Moderate
Site security breach or sabotage	Seldom	Critical	Moderate
Earthquake	Seldom	Catastrophic	High
Severe weather	Occasional	Critical	High
Vehicle or traffic incident	Occasional	Catastrophic	High
Environmental release (contaminated surface water spill)	Variable*	Critical	High
Environmental release (contaminated groundwater migration)	Variable*	Critical	High
Environmental release (chemical spill)	Variable*	Variable*	Low to High
Building/Structure collapse	Unlikely	Critical	High
Dam failure	Unlikely	Critical to Catastrophic	High
Open pit wall/ramp failure	Unlikely	Critical	High
Confined Space Accident/Incident	Seldom	Variable	Low to High
Animal attack	Unlikely	Variable	Low to High
Inrush into open pit	Unlikely	Critical	High
Wastewater treatment Plant Failure	Seldom	Critical	Moderate
Rescue from Height	Seldom	Critical	Moderate

* The probability and severity of an emergency involving a hazardous chemical spill will depend on how often the chemical is used on the Project and the hazardous properties of the chemical. Surface water spills will depend on the condition of the dams and diversions and if/when upgrades are completed. Contaminated groundwater migration will depend on the engineering controls that are put in place and changes in weather conditions or catastrophic events.

2.3 HAZARDOUS MATERIALS ONSITE

There are hazardous materials and contaminated materials present throughout the site.

A list of the approximate volumes of known hazardous materials or contaminated materials located onsite is available in the FMC PSHEP Appendix I.

3.0 TRAINING, SIMULATION EXERCISES, AND DRILLS

Parsons will ensure training and resources are in place to provide successful emergency management and response. This will include conducting a seminar for all workers that will provide initial, site-specific, emergency response training for the Project.

3.1 TRAINING

All personnel working directly or indirectly for Parsons must be qualified to perform their assignment in a competent, safe manner. Competency will be demonstrated through proof of training for all personnel, Parsons or contractor, on the emergency procedures in effect.

First Aid:

- Parsons provides training for designated first-aid providers in accordance with Occupational Health and Safety Regulations.
- In accordance with Parsons CSHM Section 2.5, at least two employees on each shift must be qualified to administer first aid when the nearest medical aid is more than 5 minutes away. At the Faro Mine Complex, offsite medical aid will be at least 20 minutes away. At least two security personnel trained as EMRs will be present onsite at all times.
- One advanced first-aid attendant will be onsite at all times 24 hrs a day. As per the OHS Act, Part 18, Table 3, additional standard first-aid attendants will be onsite as required based on the number of workers present at the site during a shift.

Emergency Medical Responder:

- Site security personnel will undergo EMR training and will be qualified Emergency Medical Responders. An ambulance will be provided onsite for use by the EMRs in the event of a medical emergency.

Emergency Action Plan:

Parsons supervisors will review the ERP with each employee onsite:

- During the employee's initial site orientation;
- When the employee's responsibilities under the plan change; and,
- When the plan is updated.

Spill Response:

All employees will be trained on hazardous materials management in accordance with CSHM-13, Hazardous Waste Operations, including:

- How to recognize a hazardous material on-site;
- Understanding the risks associated with hazardous materials; and,
- How to activate alarms and report a release.

Details on spill management and response can be found in the FMC Spill Contingency Plan.

Fire Response:

Parsons will maintain an onsite Fire Response Team and provide fire response training as listed below:

- Training will be provided by fire prevention bureaus, manufacturers of extinguishers, or site personnel qualified as instructors;
- Training will be provided by fire prevention response personnel identified in this ERP, who shall be trained in their role and responsibilities at least annually, or more frequently as required, based on modifications or changes, regulatory requirements, or on lessons learned from previous response activities (real or simulated);
- Designated personnel will receive initial and refresher training in fire extinguisher selection, use of fire extinguishers to suppress fires, and the scope of fire response for incipient fires;
- It is recognized that the Town of Faro Volunteer Fire Department is unable to respond to emergencies at the Faro Mine Complex. All fire suppression action will be considered with the understanding that onsite personnel will be the sole responders to any fire event; and,
- Management must ensure that designated employees are trained and educated to recognize not only the type of fire that is being fought and how to fight it, but also when it is time to evacuate while maintaining safety for all personnel.

Additional safety training is referenced in the Parsons Safety, Health and Environmental Plan (PSHEP). For more detailed information concerning fire suppression, refer to Parsons Fire Prevention and Response Plan.

3.2 EMERGENCY DRILLS

Emergency drills serve as an important means of establishing and practicing a safety routine. They provide personnel with practical training on emergency PPE, safe mustering, means of evacuation and procedures

pertinent to their role. They also test the functioning of detection and alarms, communications, and emergency equipment and systems. As a minimum, the frequency and type of drills must conform to regulatory requirements.

The following factors provide guidance in scheduling an appropriate cycle of drill activities:

- Use a mix of exercise activities (drills, tabletops, full scale);
- Incrementally build on capabilities through a cycle of activities;
- Focus on exercise activities best suited to the Project's needs and risks;
- Plan a full-scale exercise annually. Plan for a least one spill countermeasure exercise annually; and,
- Use the Canadian Standards Association Z731 Emergency Planning for Industry document as guidance in planning, conducting, and documenting exercises.

Goals and objectives for each drill or exercise will be pre-defined and the response will be evaluated against these goals and objectives and lessons learned shared.

Document all exercises and produce a report that contains the following information:

- Name, date, and location of exercise;
- Project activity at the time of the exercise;
- Exercise objectives and scenarios;
- Attendance lists of all participants and facilitators;
- Post-exercise discussion and feedback from all participants;
- Action plan and timeline to address recommendations; and,
- Collection of exercise documentation such as responder contact / log sheets, personnel lists, reports, and other relevant materials created for, or during, the exercise.

A drill schedule will be developed by the project manager. Contractors will be included / involved in any and all drills carried out onsite.

Table 5 lists the drills that will be performed by the Parsons team during performance of the Project. Details of each drill, including lessons learned, will be summarized and filed on SharePoint at:

https://projects.parsons.com/sites/faro-mine/default.aspx

Table 5: List of Drills to Be Performed by Parsons/

Drill	Frequency	Type of Drill

Catastrophic failure (Encompassing earthquake, flood, structural failure and fire or explosion)	Annually	Full scale*
Environmental spill	At least every 90 days	Table top
Medical	Annually	Table top
Severe weather	Annually	Table top
Vehicle incidents	Annually	Table top

* Full scale drill – alarm is sounded and all personnel onsite respond as though it was a real emergency situation. Table top drill – personnel respond via a paper desktop scenario.

4.0 EMERGENCY PREVENTION

4.1 OVERVIEW

Preventing incidents from occurring is the most effective way to protect workers, the public and the environment. To that end, Parsons has put preventative measures in place for the potential emergency situations listed in Table 4.

4.2 MEDICAL EMERGENCY – OCCUPATIONAL AND NON-OCCUPATIONAL

Examples of occupational medical emergencies include lacerations, amputations, chemical exposure, sprains and fractures. Examples of non-occupational medical emergencies include heart attacks and strokes.

- Parsons ensures that all employees are physically, medically, and emotionally capable, with reasonable accommodation, of performing the essential functions of their work assignments. Factors to be considered in assigning work include strength, endurance, agility, coordination, and visual and hearing acuity;
- At no time while on duty may employees use or be under the influence of alcohol, narcotics, intoxicants, or similar mind-altering substances;
- Operators of any equipment or vehicle must be able to read and understand the signs, signals, and operating instructions in use;
- A baseline medical evaluation is provided at the start of employment to determine whether the employee is medically qualified to perform the work and if there are any limitations of work for the employee;
- If any restrictions to the fit-for-work qualification are identified, adjustments and accommodations are made to the employee's work to ensure that risks are minimized;
- Prior to the start of work, local medical providers for medical treatment, evaluations, and monitoring/surveillance, which may include hospitals and/or physicians, are identified;

- Emergency contact information for medical services in case of an emergency are listed in Appendix B of this ERP;
- A list of qualified first-aid providers and EMRs is posted with the first-aid kit;
- All workers onsite must wear the appropriate PPE required to match the potential for exposure to hazardous chemicals or contaminated soil and water;
- A list of onsite medics and a copy of their shift rotation schedule is posted; and,
- A copy of the Occupational Health and Safety Regulations will be maintained at the safety office to be available to all employees.

Medical and first aid attendants will be assigned at the start of the project. Attendants and supplies available onsite will exceed the requirements outlined in the YT OHS Act, Schedules 1, 2, and 3.

4.3 FIRE OR EXPLOSION

Parsons trains authorized employees in fire awareness and response in accordance with the Parsons CSHM Section 11, Emergency Procedures. The general fire awareness and response training includes:

- Initial employee training is provided at the start of the Project, or anytime employee duties or working conditions change. Designated personnel receive initial and refresher training in fire extinguisher selection and use, and the scope of fire response for incipient fires;
- Management ensures that designated employees are trained and educated to recognize not only the type of fire that is being fought and how to fight it (including fires involving lead/asbestos concerns), but also when it is time to evacuate the area and maintain safety;
- Subcontractors must train their own employees and proof of competency shall be provided to the site Manager and retained with onsite training records;
- Flammable and explosive substances are identified, labeled, and kept in a secure location away from sources of flame, heat, or ignition. Areas of loading/unloading, storage, and use are identified;
- All staff onsite are made aware of the presence and location of flammable and explosive materials and are trained in the use of flammable and explosive materials, when applicable;
- Smoke detectors and fire extinguishers should be inspected monthly and replaced immediately if found defective. The Joint Health and Safety Committee will review and assign the designation of an inspection schedule and assist the SH&E Lead, and Materials Management in efficient record keeping and materials replacement as required.
- Material Safety Data Sheets (MSDSs) or Safety Data Sheets (SDS) for flammable or explosive substances brought onto the site for the Project are kept onsite and are also listed on SharePoint at:

  https://projects.parsons.com/sites/faro-mine/safety/default.aspx.

Fire Suppression Capabilities

- Portable fire extinguishers are the main method of fire suppression at the Faro Mine site. Identification of type, location, and capabilities will be identified through onsite risk assessment.
- A sprinkler system services the dry and guardhouses. A previous assessment of the system determined that the sprinkler system was not required. Parsons will continue to maintain the existing system, which is undersized, offering only protection to the administrative and communications area of the site;
- Portable fire extinguishing equipment is provided at accessible, marked locations. For fire response, a minimum of one (1) ABC type dry chemical fire extinguisher will be available within all buildings and all site vehicles and heavy equipment. The Tli Cho Environmental Engineering assignation and distribution of extinguishers will be adopted until a thorough risk assessment has been completed;
- Portable fire extinguishers are inspected monthly. Annual inspection and maintenance is performed by an outside, qualified contractor; and,
- Emergency contact information for local fire response for fire emergency or vehicular accident on the main Faro Mine Complex access road is listed in Appendix B;

For more detailed information concerning fire suppression, refer to Parsons Fire Prevention and Response Plan.

4.4 POWER FAILURE

In case of a power failure, an emergency backup generator is permanently onsite. This generator can produce a good portion of the power needed for operation of the fuel depot, the guardhouse, and general lighting around the guardhouse area.

4.5 TERRORISM, SITE SECURITY BREACH, SABOTAGE, OR BOMB THREATS

Existing security fencing is used to prevent unauthorized personnel access to the Site. Please refer to the Site Security Plan for further details of security at the Faro Mine site.

- All Project and team personnel and visitors must follow sign-in procedures that include check-in at the guardhouse, which is main facility control point;
- All Project workers will have an identification tag with photo. Workers will move their tag to the ‘onsite’ board at the main building when they arrive and back to the ‘offsite’ board when they leave; and,
- Occasional vehicles that need to enter the site in order to drop off equipment or materials must adhere to the following requirements:
    - Provide Parsons with documented notice 24 hr prior to arrival;
    - All vehicles must sign in at the guardhouse and may only enter the site when escorted by authorized staff familiar with the site;
    - Security can be available on the weekends to escort vehicles as required; and,
    - The driver of the occasional vehicles will require the same basic PPE as everyone else onsite.

4.6 EARTHQUAKES

Earthquakes are unpredictable events, so preparation is essential. Therefore ensure:

- Evacuation routes and muster points are established; and,
- All staff is trained on the earthquake incident response plan in Appendix A and are provided with guidance regarding safe areas to take cover, what to do in case of downed electrical wires, and locations of off-switches for sources of heat and gas.

4.7 SEVERE WEATHER

Examples of severe weather emergencies include extremes of heat and cold, thunderstorms, electrical storms, blizzards, and hurricanes. Regional weather monitoring provides adequate warning of impending, severe weather conditions, which allow for decisions on work stoppage, shutdown, or evacuation in an orderly fashion. Use the following points to be prepared for severe weather conditions:

- Detailed information on working in extreme temperatures and precautions to be taken are available in Parsons CSHM-36, Temperature Extremes.
- A safe duration of work/rest periods should be determined based on the anticipated work rate, the ambient temperature and other environmental factors, the type of PPE worn, and individual worker characteristics and fitness.
- At air temperatures below -1 °C, measure and record the wind chill index at least every 4 hours. Use the wind chill index table here (Table 6) to estimate equivalent wind chill temperature.

Estimating Wind Chill

Wind Speed (km/h)	What to Look for When Estimating Wind Speed	Temperature (°C)									
		0	-5	-10	-15	-20	-25	-30	-35	-40	-45
10	Wind felt on face; wind vane begins to move.	-3	-9	-15	-21	-27	-33	-39	-45	-51	-57
20	Small flags extended.	-5	-12	-18	-24	-30	-37	-43	-49	-56	-62
30	Wind raises loose paper, large flags flap and small tree branches move.	-6	-13	-20	-26	-33	-39	-45	-52	-59	-65
40	Small trees begin to sway and large flags extend and flap strongly.	-7	-14	-21	-27	-34	-41	-48	-54	-61	-68
50	Large branches of trees move, telephone wires whistle and it is hard to use an umbrella.	-8	-15	-22	-29	-35	-42	-49	-56	-63	-69
60	Trees bend and walking against the wind is hard.	-9	-16	-23	-30	-36	-43	-50	-57	-64	-71

Table 6: Estimating Wind Chill

- Use engineering and administrative controls to reduce the risk of cold stress injuries:
  - Use general or spot heating to increase temperature at site. It is always easier to stay warm than to warm back up from hypothermia;
  - Shield the work area from drafts and wind;

- Dress in loose, but well-fitting layers;
- Since primary heat loss is through the head, assure proper clothing is worn on the head;
- Assure extra clothes are onsite in case clothes become wet;
- At temperatures below 5 °C, cover metal handles with thermal insulation;
- Employ a work/warm-up schedule, incorporating warm-up/rest breaks when working in temperatures lower than -7 °C;
- Urge frequent intake of warm, sweet, caffeine-free drinks at regular intervals;
- Terminate exposure to cold when sever shivering or exhaustion becomes evident;
- Arrange work to minimize sitting still or standing for long periods; and,
- Ensure cold-weather PPE is available for all employees.

4.8 VEHICLE INCIDENTS

- Work vehicles that are present onsite must meet requirements of the OH&S Act which includes but may not be limited to a beacon, a suitable audible signal, and a radio that is programmed. All parking must be "back in";
- Seatbelts must be worn at all times vehicle is in operation;
- Speed limits established for the site must be obeyed at all times;
- Cell phone use is strictly prohibited when operating a motor vehicle;
- When backing or manoeuvring in close quarters, use a spotter;
- Always perform a pre-use vehicle walk-around before moving any parked vehicle;
- Do not park or stop while blocking exits, walkways, stationary equipment, emergency equipment, designated roadways, etc.;
- Do not park behind any heavy equipment: stay back at least 40 feet;
- Leave keys in the vehicle in case it must be moved;
- Vehicle maintenance must be performed in a manner that avoids spillage of fuels, oils, grease and coolants; and,
- Place drip pans under stationary equipment with potential leaks.

4.9 ENVIRONMENTAL RELEASE (CONTAMINATED SURFACE OR GROUNDWATER)

In the event of a spill or release of contaminated water or dust, spill response must be conducted in accordance with the Spill Response Plan.

The Spill Response Plan outlines the following:

- The training program required for effective spill response;
- The response organization in the event of major or minor spills including spill containment and remediation and identification of the spill response team;
- Preventative measures to avoid spills;
- Spill emergency contacts; and,
- Standard Operating Procedures for spill response.

4.10 Environmental Release (Chemical Spill)

All personnel onsite are trained on hazardous materials in accordance with Parsons CSHM-10, Hazard Communication and CSHM-13, Hazardous Waste Operations, including:

- How to recognize a hazardous material onsite;
- To understand the risks associated with hazardous materials; and,
- How to activate alarms and report a release.

All employees are trained on how to report a spill and how to initiate the spill response system, including taking the necessary precautions when approaching a spill with the recognition that human health is the number one priority.

Employees are trained in the techniques and materials that can be employed for spill containment, including how to contain a release from a safe distance if possible, and how to protect persons and property near the incident.

MSDSs for hazardous products brought to the site for the Project can be found on SharePoint at:

https://projects.parsons.com/sites/faro-mine/safety/default.aspx.

Hard copies of all MSDSs also are available in the office.

Parsons supervisors review the spill response plan and receive initial and refresher training at the same frequency as with the ERP.

The SH&E coordinator maintains a record of all training or instruction given to employees.

4.11 Building/Structure Collapse

Many of the buildings at the Faro Mine site have not been maintained for several years and have deteriorated. As a result there is a potential for failure of structures within the Faro Mine Complex or the potential for building collapse, however, the chance of this type of failure is considered very remote and Parsons may take the following steps to prevent this type of incident if any of the buildings are determine to be at risk of collapse:

- Review by a qualified structural engineer to assess the integrity and stability of existing buildings and structures;
- Use of engineering or administrative controls to reduce the potential for failure:

- Installation of temporary stabilization structures as necessary based on inspection and the scope of the work; and,
- Identification of hazardous areas with warning lines, barriers or other effective means to prevent or limit access.
- Employees will follow all warning signs and not cross barriers or warning devices. Load limits for scaffolding and elevated structures will be strictly adhered to.

4.12 DAM FAILURE

The following mitigation measures are required to remain in place or be implemented to reduce the risk probability of dam failure:

- Close and continuous monitoring of the dams and structures, especially during the spring thaw. Conditions need to be responded to in a proactive way – we are keenly aware that these structures are the last line of defense;
- Proactive review of the reliability of the water treatment plants, including drawing on expected mean time-to-failure data and historical data. Special attention needs to be paid to the plants - Faro due to its criticality to the overall water balance and Grum due to its age;
- Continued groundwater monitoring to ensure what is unseen is understood;
- Ensure that the most rigorous standards related to water sampling are adhered to. Technical work needs to be treated with respect and diligence; and,
- Close monitoring of external factors (snow pack, long-term forecasts, etc.) to ensure contingency plans are in place in case of upset conditions.

4.13 OPEN PIT WALL/RAMP FAILURE

Open Pit wall or access ramp failures are often preceded by cracking and ground movements, which may be visible. Regular monitoring of pit walls crests and berms may help identify any potential failures.

Pit walls and ramp accesses must be monitored on a daily basis, at a minimum; additional checks should be performed after severe weather conditions or when other hazards exist. A checklist is available in appendix L of the FMC PSHEP (to be created).

4.14 CONFINED SPACE ACCIDENT/INCIDENT

Confined space procedures and protocols are described in Parsons CSHM-15 – Confined Space. All confined space entry procedures will meet or exceed those outlined in the YT OHS Regulations.

- Specific roles are assigned to personnel by the project manager for each confined space entry event. These include entry supervisor, entrant, attendant, person conducting air monitoring;
- Personnel involved in confined space entry are to have appropriate training as per the above-referenced Parsons procedure;

- A permit must be prepared by the entry supervisor and reviewed and approved by the SH&E Lead for each confined space entry event;
- The Site is evaluated for the presence of confined spaces, and a list of identified confined spaces is compiled by the SH&E Lead; and,
- Subcontractors are required to provide a written confined space entry plan to be approved by Parsons.

4.15 ANIMAL ATTACK

Potential animals that may be encountered at the Site include moose, caribou, grizzly bear, beaver, muskrat, wolves, foxes, various fish species, raptors (eagles, falcons, and owls), sheep, and wolverine.

- Existing security fencing helps to keep animals away from the Site.
- Workers will travel in vehicles rather than on foot when possible and maintain a close distance to their vehicle, particularly when working at remote locations.
- When working at remote locations, workers must remain in groups of two or more individuals and carry bear spray and bear horns. Workers are trained to inspect their equipment at regular intervals, including checking the expiry date on their bear spray.
- Workers should make noise to alert animals to their presence.
- Animal sightings and evidence of recent animal activity (e.g. droppings, tracks, prey carcasses, damaged structures) are to be reported to the Site Manager and recorded as Hazard IDs. All staff will be made aware of recent animal activity.
- Items that may attract animals such as garbage and food are to be stored in enclosed containers.
- Pets are strictly prohibited at the workplace.
- Should animal encounters become frequent or pose significant hazards to Site work, Faro Conservation Officer Services will be contacted, at 867-994-2862.

4.16 INRUSH INTO OPEN PIT

An inrush of water, mud or tailings into an open pit is only likely to occur following a major flood event or dike failure.

A daily weather forecast will be obtained and distributed to onsite supervisors each day before starting work. The Site Manager and Site Health and Safety Lead will monitor for emergency weather conditions over the course of the day and make decisions regarding work stoppage or site evacuation as required.

Dikes and dams will be monitored on a regular basis as outlined in section 4.12 of this document.

4.17 WASTEWATER TREATMENT PLANT FAILURE

Wastewater treatment systems will be equipped with emergency shut-down controls such as float switches. The systems will be visually inspected for worn or broken components on a daily basis while in operation.

Additional preventive measures are listed in the Spill Contingency Plan.

4.18 RESCUE FROM HEIGHT

Work at heights will only be completed by workers with current fall protection certification. Work at heights will require a work and rescue plan, JSA for task, and work permit. Additional mitigations are outlined in the Risk Register, Appendix E in the FMC PSHEP.

5.0 ORGANIZATIONAL RESPONSE STRUCTURE

5.1 OVERVIEW

The emergency response organization structure for the Faro Mine Complex is based on the Incident Command System (ICS). The ICS is a comprehensive, practical emergency management system widely used by government and industry for effectively organizing and using the resources available for any type or size of operation. Common terminology has been developed to identify major functions, personnel, and responsibilities.

Parsons' ICS provides a standard, seamless response structure from the incident site to the local office up to the corporate level. This section outlines the communications and actions within this structure for Parsons' operations.

5.2 INCIDENT COMMAND SYSTEM

The ICS includes the incident command team (ICT) and the emergency management team (EMT), as described in Section 6. The ICS outlines a series of supervisory levels available for implementation. The assignment of these responsibilities is based on the nature of the incident and the scale and complexity of response activities required.

The flowcharts in Section 7 show the framework for the supervisory levels of the ICT and the EMT. Both teams can be modified by those in charge (that is, the IC and Emergency Manager (EM)) to effectively manage any incident by adding to, deleting from, or combining positions as the needs of the incident change. However, both the IC and EM should clearly identify the parameters of an assignment when deviating from the standard ICS assignments.

6.0 ROLES AND RESPONSIBILITIES

6.1 GENERAL REQUIREMENTS OF ICS PERSONNEL

Personnel on the ICT and the EMT are responsible for accomplishing assigned duties relating to incidents and for the safety and health of the support personnel reporting to them in an emergency situation. The IC should maintain a constant awareness of the position and function of Parsons emergency response personnel during an incident. This awareness is the basic means of accountability required to ensure incident response safety.

6.2 INCIDENT COMMAND TEAM

6.2.1 *FUNCTIONS*

The ICT is the first line of defense in case of an incident or emergency occurring on the Project. It consists of onsite employees and works out of the incident command center, located in the Parsons / trailer onsite. From this location, the ICT can manage all onsite duties related to the incident as well as the overall incident and initial communication, sheltering, or evacuation activities.

6.2.2 *ROLES AND RESPONSIBILITIES*

The ICT chain of command is not the same as the chain of command for regular working activities. The ICT chain of command only applies in the case of an incident or emergency.

The roles and responsibilities of the IC, SH&E Lead, deputy IC, and first responder are outlined in the tables below. In cases of shift work, the IC and deputy IC positions must be staffed during each shift.

Table 7 a: Incident Commander Roles and Responsibilities

Staffed by	Mine Manager, **Stu Waring**

Role and responsibilities	The IC provides leadership for the incident response or management of an event. The IC may delegate authority to others as the complexity of the incident or event dictates. The IC: • Ensures control and containment of the incident; • Makes medical, medical evacuation, spill response, and security arrangements (for a catastrophic incident only); • Works with deputy ICs to define the hazard area and establish a perimeter of hazard zone, as required; • Directs the response efforts of the ICT; and, • Acts as information and liaison officer, providing information about the incident to: o EMT – see below o YG project manager, **Thaidra Sloane** o Contractors onsite o Refers media inquiries to YG

Table 7 b: SH&E Lead Roles and Responsibilities

Staffed by	Safety, Health and Environment Lead, **Patrick McCormick**
Role and responsibilities	The SH&E Lead works with the IC to ensure that safety, health, and the environment are all protected. The SH&E Lead: • Monitors safety conditions; • Assesses hazardous and unsafe situations; • Develops measures for assuring the safety of rescue and response personnel; • Ensures environmental issues are dealt with by appropriately trained personnel; • Advises the IC on issues regarding incident safety and may exercise emergency authority to directly stop unsafe acts; • Acts as safety record keeper o Retains records for all hazards, near misses, and incidents, including initial reports and follow up investigations; and, o Ensures that all incidents are reported to Project SH&E support, Greg Beck and John Barker, within 4 hours, using the Parsons IndustrySafe Online SH&E Reporting System. • Coordinates next-of-kin / relative contact for Parsons and contractor personnel, in conjunction with EMT; and, • Delegates above activities as required.

Table 7 c: Deputy Incident Commander Roles and Responsibilities

Staffed by	Safety, Health and Environmental Lead, **Patrick McCormick, and 1 to 3 additional workers**
Role and responsibilities	Deputy ICs work under the direction of the IC. They are fully trained and qualified to administer first-aid and CPR, in accordance with the requirements listed above. The deputy ICs have additional training in fire and spill response. Example duties include: • Communicate directions to fellow workers in cases of fire or evacuation; • Provide onsite first-aid as needed; • In cases of medical emergencies, provide onsite first-aid until fully trained emergency medical personnel arrive; and, • Lead crews in spill response, with direction from technical specialists (Section 6.4) as required.

6.3 EMERGENCY MANAGEMENT TEAM

6.3.1 *FUNCTIONS*

The EMT is responsible for the corporate response in cases of an incident or emergency at the Project. The EMT works out of the emergency operations center, which is the blanket term applied to the corporate office or offices that are home to support and offsite members of the Project team.

The EMT facilitates a coordinated response and recovery process by senior management and staff to any incident or set of circumstances that has the potential to significantly damage the organization and its employees, operations, financial condition, or reputation. Its function is to assess both the short- and long-term impacts. This team's areas of responsibility include:

- Supporting the ICT and IC;
- Managing corporate risk, potential impacts, and consequences of the incident; and,
- Notifying and providing ongoing communication with stakeholders, as required.

6.3.2 *ROLES AND RESPONSIBILITIES*

The roles and responsibilities of the Emergency Manager, and Project SH&E are outlined in the tables below.

Table 8 a: Emergency Manager Role and Responsibilities

Staffed by	Parsons project manager, **James Carss**
Role and responsibilities	The emergency manager leads the EMT and corporate response to an incident at the Faro Mine Complex. • Acts as the executive lead for Parsons; • Identifies and provides assistance to the onsite ICT; and, • Maintains the investigation file for all incidents occurring onsite.

Table 8 b: Project SH& E Support Role and Responsibilities

Staffed by	Safety, Health, and Environment Lead, **Patrick McCormick** and Safety Director, **John Barker**
Role and responsibilities	Project SH&E Support takes the lead on the SH&E response at a corporate level. • Provides support for IC and deputy ICs; • Provides policy and regulatory guidance; • Investigates or assigns an investigator to each significant incident, to determine root causes; • Submits a final investigation report using the online IndustrySafe system within 72 hours of the incident; • Ensures mitigation measures are implemented to prevent the incident from recurring; and, • Liaises with Parsons Talent Management where required for incident follow up.

6.4 INCIDENT ACTION PLANS

IAPs for the Faro Mine Complex are included in Appendix A. Every incident has an IAP, which provides all supervisory personnel with appropriate direction for actions. The roles and responsibilities in Sections 6.2 and 6.3 define the duties for each role function with regard to the initial IAP.

The IAP is intended as a guideline document, outlining the general steps to be taken in cases of incidents and emergencies. It is a dynamic document that can be updated as procedures change and that should be adjusted to suit the specific details of specific incidents.

The IC should ensure that any change in the IAP is communicated to all affected ICS command and EMT staff, as required.

6.5 RISK MANAGEMENT

During initial and ongoing response, the IC and the EM should continually evaluate the risk to personnel, the public, and the environment with respect to the purpose and potential results of their actions. The nature of

the hazards will influence the responses implemented by the IC. Parsons/ manages risks associated with incident response actions based on the following principles:

- Life preservation is the number one priority in every incident; this includes the safety of responders; and,
- Activities to protect the environment or property are recognized as presenting inherent risks to the safety of response personnel and actions should be taken to reduce or avoid these risks.

The IC is responsible for coordinating and directing all response activities at the local level. This includes responsibility for the safety and health of all personnel operating within the ICS at the local level.

The EM is responsible for evaluating risks, potential impacts, and consequences at the corporate level, which includes addressing key business issues and strategic implications.

Risks levels range from low to extremely high (see Section 2). All levels of risk require the appropriate risk transfer, reduction, or elimination as well as appropriate actions and approvals within the EMT. Risks that exceed "medium" also require implementation of a risk transfer, reduction, or elimination strategy to reduce the risk level; or, the EM shall bring the risk level to the attention of Parsons' management.

6.6 DOCUMENTATION

Documentation for incidents affecting site operations will be maintained to allow proper management of the incident and to ensure a historical record of response activities is available for future reference.

All personnel involved are responsible for maintaining a record of their activities during an emergency.

6.6.1 *INCIDENT REPORTING*

Employees involved in or witnessing an injury, worker exposure, environmental incident, or near miss must immediately report it to the IC, **Stu Waring (867-689-0455)**, who immediately relays the report to Parsons project manager, **James Carss (403-294-4243)**, or project SH&E Lead, **Patrick McCormick (867-689-1806) or John Barker (704-264-6159)**.

The Safety, Health, and Environment Lead, **Patrick McCormick**, must ensure that all SH&E incidents are reported to the GBU SH&E director and other management personnel (as required) within 4 hours using the IndustrySafe Online SH&E Reporting System. This system includes an incident investigation form, which can only be viewed by system administrators, designated managers, and the assigned investigator. The GBU SH&E director serves as the default investigator and may assign that role on a case-by-case basis.

6.6.2 *INCIDENT INVESTIGATIONS*

All accidents, worker over-exposures, environmental incidents and significant near misses are investigated by an individual or team with training in incident investigation and root cause analysis. Subcontractors must investigate incidents involving their employees or activities and submit an investigation report to the Parsons' project manager within 48 hours of an incident.

Investigation Team:

The investigation team consists of any employees who were involved in the incident, their supervisors, SH&E Lead, and the Site Superintendent. Depending on the level of severity, the project SH&E Lead, Patrick McCormick, may also be a part of the investigation team. When an incident involves a contractor, the contractor is expected to complete their own investigation as well, sharing the findings and response with Parsons.

Investigation and Root Cause:

The investigation team attempts to determine the root causes of all near misses and incidents that occur onsite through a thorough examination of the incident and the conditions leading up to it (including, but not limited to, weather conditions, worker condition, and unidentified hazards). The investigator or investigative team will determine the root cause of the incident by interviewing witnesses to the incident, including any injured workers, and examining the workplace for factors associated with the accident/exposure.

Once root causes are determined, steps are taken to adjust or eliminate the contributing factors and prevent future events. These changes could involve changes in policy, procedure, engineering controls, training processes, or PPE. The changes are communicated to all personnel onsite, making everyone aware of the changes and how they will help to prevent similar incidents in the future. Findings that may be applicable to other projects are communicated to other business units in Parsons.

7.0 LEVELS OF EMERGENCY AND NOTIFICATION

7.1 LEVELS OF EMERGENCY

Under all circumstances, employees should ensure the protection of life safety, follow the response and internal / external notification actions outlined in this ERP, and document their activities.

Table 8 describes levels of incident severity, which range from marginal, where control of the incident is retained, to critical, where control of the hazard has been lost, imminent control is not possible and public safety is, or has the potential, to be threatened. The table defines each level, provides examples, and identifies the internal notifications and the plan or team that is activated in response.

Table 8: Levels of Emergency

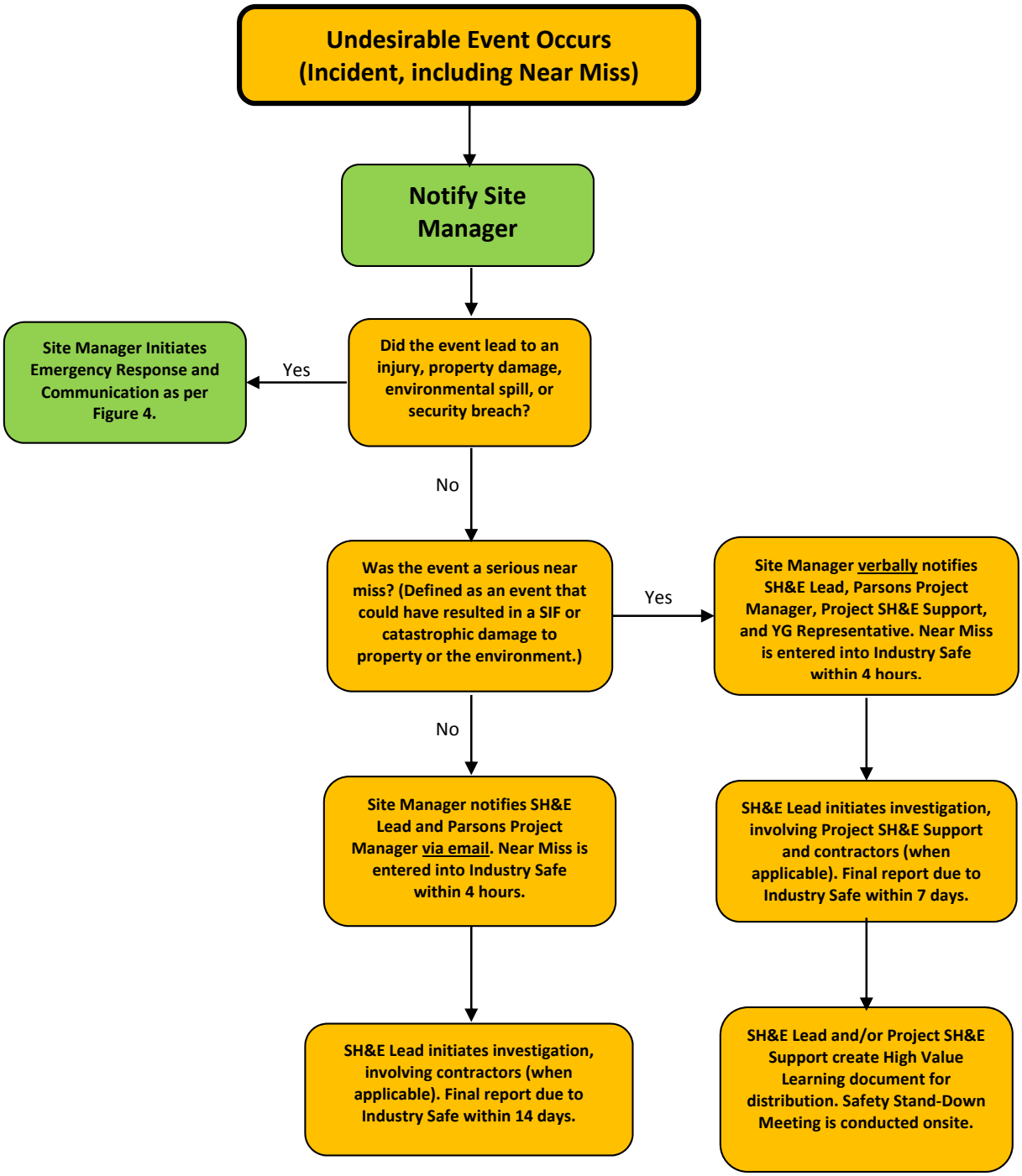
Incident Severity	Definition / Criteria	*Examples*	Internal Notification and Response
Marginal	On-site incidents where immediate control of the hazard is achieved through the application of normal operating procedures which result in the progressive resolution of the situation. **Meets all** of the following: ▪ Immediate control of the hazard is established using onsite resources; ▪ Injuries to onsite personnel require first-aid only; ▪ Public safety is not threatened; ▪ Environmental impacts are confined to the site; and, ▪ All control and relief systems and equipment are functioning normally.	▪ *Any controlled situation, outside of normal operating conditions, that has the potential to impact facility operations and has the potential to escalate in severity;* ▪ *Minor injuries to personnel requiring first-aid treatments only;* ▪ *Small volume spills and releases that are confined to the roaster complex site;* ▪ *Public concern, inquiry, complaint, or observation of an incident that does not require or result in the escalation of the incident beyond an alert level such as noise, dust, and odour complaints; and,* ▪ *Preliminary (early warning) weather reports that may threaten operations.*	Notification: ▪ Incident commander **(Stu Waring**); ▪ Site Superintendent **(Len Faber);** and, ▪ Safety, Health, and Environment Lead (**Patrick McCormick**). Response: ▪ Refer to ERP. Activation of the ICT/ IAP is at the discretion of the IC, based on the type and magnitude of the incident.
Critical	An incident where control of the hazard has been lost but where imminent and/or intermittent control of the hazard is possible. **Meets any** of the following: ▪ Immediate control of the hazard has been established using available resources; however, conditions are not improving and / or resources are being depleted; ▪ Injuries to onsite personnel require offsite medical attention; ▪ Public safety is not threatened; however there is, or may be, a public perception of moderate risk to human health or the environment; or, ▪ Environmental impacts are reportable but confined to the site.	▪ *Any controlled situation, outside of normal operation conditions, where the ability to maintain control using onsite resources is in question or offsite resources are required to maintain control, such as a fire or explosion where imminent control of the fire is probable;* ▪ *Injuries to personnel requiring offsite medical attention;* ▪ *Spills and releases in reportable quantities are contained onsite, but have the potential to extend offsite;* ▪ *Any incident requiring the advisory notification of the public of a non-routine, onsite occurrence;* ▪ *Escalating weather threats (i.e., tornado / cyclone) which threaten personnel and operations; and,* ▪ *Potential social / political unrest, labour disputes.*	Notification: ▪ Incident Commander **(Stu Waring**); ▪ Site Superintendent (**Len Faber);** ▪ Safety, Health, and Environment Lead (**Patrick McCormick**); ▪ Emergency Manager (**Jerry Naus**); and, ▪ SH&E project support (**Greg Beck and John Barker**). Response: ▪ Refer to ERP; and, ▪ Activate ICT and EMT, if required.

Incident Severity	Definition / Criteria	*Examples*	Internal Notification and Response
Catastrophic	An incident where control of the hazard has been lost, imminent control is not possible and public safety is, or has the potential, to be threatened. **Meets any** of the following: ▪ Control of the hazard has been lost and regaining control may not be possible; ▪ Injuries to onsite personnel require medical attention and may result in lost time, long term disability, or death; ▪ Public safety is or has the potential to be threatened. Alternatively, there is or may be a public perception of significant risk to human health or the environment; ▪ Environmental effects extend offsite and are resulting in minor to long-term detrimental impacts; or, ▪ Some or all of the control and relief systems are not operational.	▪ *Any uncontrolled hazard where the ability to regain control may not be imminently possible;* ▪ *Injuries to personnel which have resulted in, or are likely to result in, a lost time (beyond the day of the occurrence) injury, a short- to long-term health impact, or death;* ▪ *Spills or releases extend offsite and are, or will, result in minor to long-term detrimental impacts;* ▪ *Any incident requiring the notification of the public of a potential or imminent threat to human health or the environment;* ▪ *Imminent or present security threats, acts of terrorism or violence; and,* ▪ *Severe weather threats which threatens personnel and / or operations and require evacuation.*	Notification: ▪ Incident Commander **(Stu Waring**); ▪ Site Superintendent (**Len Faber);** ▪ Safety, Health, and Environment Lead (**Patrick McCormick**); ▪ Emergency Manager (**Jerry Naus**); and, ▪ SH&E project support (**Greg Beck and John Barker**). Response: ▪ Refer to ERP; and, ▪ Activate ICT and EMT.

7.2 INCIDENT COMMANDER INITIAL RESPONSE AND NOTIFICATION FLOWCHART

This flowchart (Figure 3) shows how the IC establishes the level of emergency and determines what response team(s) should be notified and/ or activated.

Figure 3: Incident Commander Initial Response and Notification Flowchart



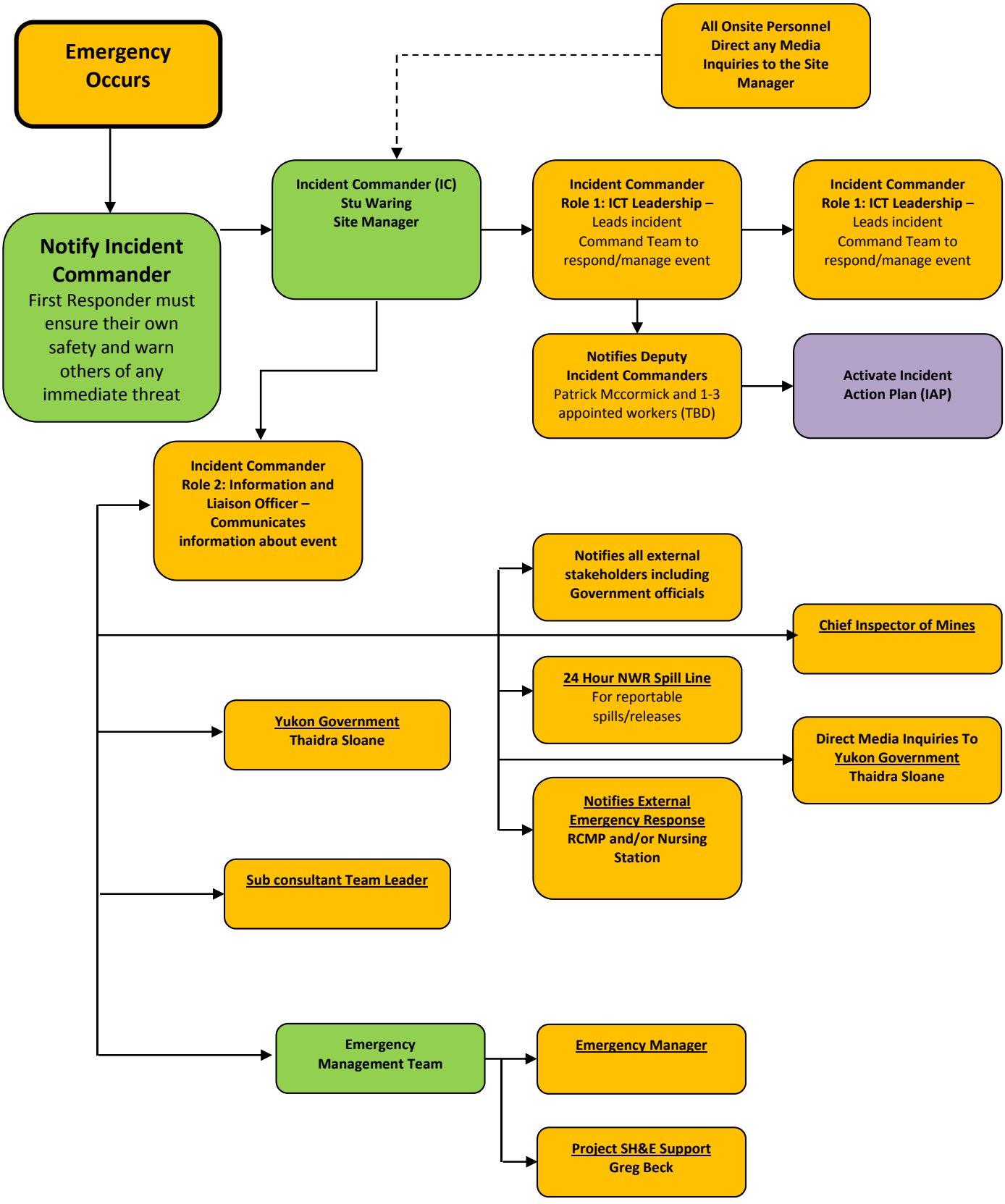
7.3 EMERGENCY RESPONSE CONTACT INFORMATION

Appendix B provides the list of telephone numbers of the external and internal resources that can assist during the rapid activation of an appropriate emergency response. All contacts on the list should be aware they are on the list and know what their role is if they are contacted. The list will be reviewed quarterly and updated as needed.

7.4 EMERGENCY RESPONSE COMMUNICATION FLOWCHART

The flowchart below (Figure 4) shows all possible communication routes for any onsite incidents. The flow and degree of involvement of team members (ICT and EMT) will depend on the severity of the incident.

Figure 4: Emergency Response Communication Flowchart



APPENDIX I

INCIDENT ACTION PLANS

INFORMATION FOR ALL INCIDENTS

- These incident action plans (IAPs) apply to Parsons and all subcontractors at the Faro Mine Complex;
- **Stop**, **Look** and **Think** prior to engaging in any first-aid activity or IAP. Use careful scene assessment prior to starting;
- Always contact the site medic as soon as possible for first and other assistance;
- IC should consider steps to be taken if outside support is not immediately available; and,
- IC should integrate Mine Rescue (Surface) to supplement EAP resources.

In the event of an emergency, call:

- (867) 994-4444 (Faro Ambulance Service)
- (867) 994-2222 (Faro Fire Department – Fire response and Vehicular accident on Faro Mine Complex access road only)
- (867) 994-4444 (Faro Nursing Station)
- (867) 994-5555 (Faro RCMP)

Emergency Muster Point:

The mine site Muster Areas are circled in green. Workers should become familiar with their locations relative to other buildings and areas of the site. There are two main muster stations at the site:

1. The main gate (Figure A1); and,
2. The entrance of the Grum/Vangorda Water Treatment Plan (Figure A2).

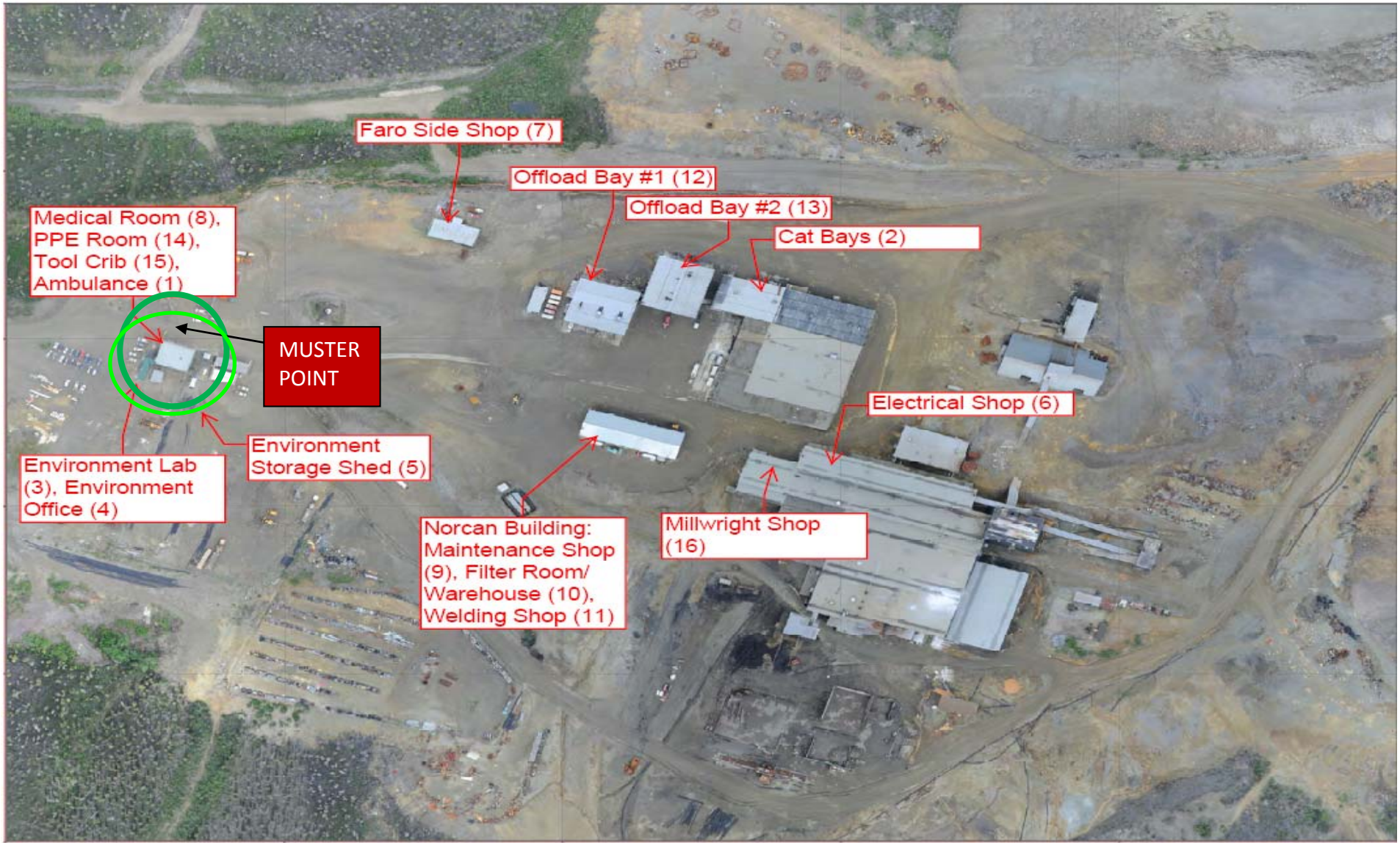


FIGURE A1: MAIN GATE MUSTER POINT

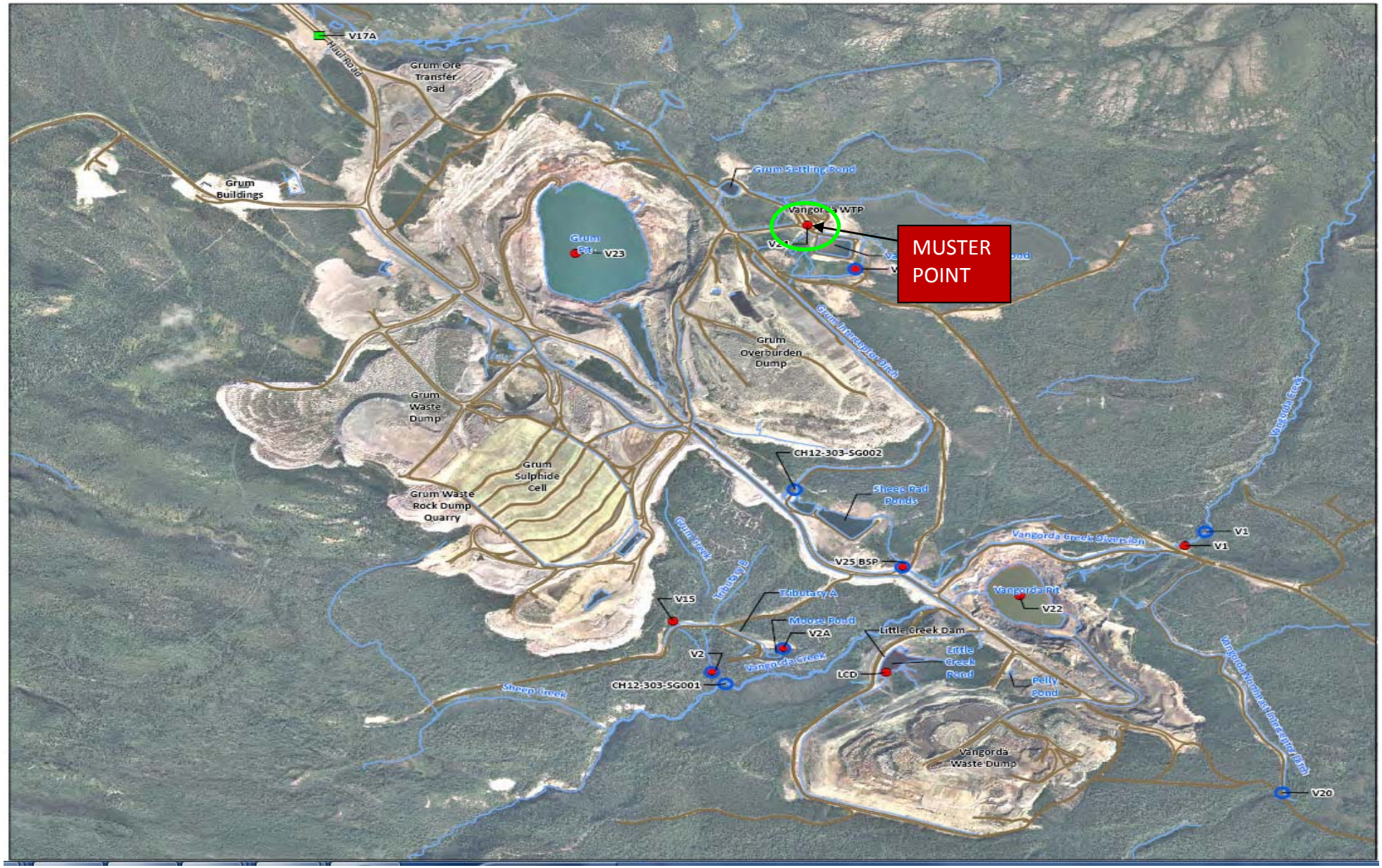


FIGURE A2: GRUM WATER TREATMENT PLANT MUSTER POINT

INCIDENT ACTION PLAN – MEDICAL EMERGENCY

EMERGENCIES

When there is a medical emergency, call:

- (867) 994-4444 (Faro Ambulance Service)
- (867) 994-4444 (Faro Nursing Station)

Initial Response:

- Assess the situation. Always put your own safety first. If it is not safe to access an area to provide first-aid, then do not enter the area;
- Contact the Incident Commander (IC) to inform them of the situation. For a catastrophic incident where emergency services are required, they will place the call;
- Let them know:
  - Location on the site;
  - Event details of what happened; and,
  - What help is required.
- Provide First-Aid. If you are a first responder and know first-aid, follow your training to provide basic first-aid to the injured person(s) until help arrives. If you do not know first-aid, request it from the IC when placing the initial call:
  - All employees must yield to first-aid providers in an emergency situation; and,
  - When a first-aid certified employee is present, untrained employees will avoid providing assistance unless they are directed by the first-aid trained employee,
- If the injured worker is in an area requiring confined space entry or high risk PPE, the onsite medics will use a four-person first-aid trained crew to enter the area and transport the injured worker to outside the restricted work area enclosure, then provide first aid to the worker until the paramedics arrive;
- Stay with the injured person(s) until help arrives; and,
- Complete safety paperwork as required, with the aid of the Safety, Health, and Environment Lead

Once the patient is receiving first-aid, or if first-aid cannot be performed due to danger to the Deputy IC(s), the Incident Commander (IC) takes the following action:

- Arranges medical transport;
- Accompanies, or assigns someone to accompany the injured person to the medical care facility;
- If the patient is being treated on site, directs medical personnel to the injured person;
- Ensures family or friends designated as the patient's emergency contact person are contacted; and,
- Notifies the Parsons' project manager and the YG project manager.

The Safety, Health, and Environment Lead ensures that the incident is reported to Project SH&E Support within 4 hours, using the IndustrySafe online reporting system.

INCIDENT ACTION PLAN – FIRE OR EXPLOSION

Due to the presence of flammable and explosive materials such as propane and other hydrocarbons, fire or explosion is a risk on this site. There is an onsite fire response team in case of emergencies.

Initial Response:

- Clear all personnel from the surrounding area.
- If the fire is small and can be controlled, use an ABC fire extinguisher to extinguish it;
- If the fire cannot be extinguished after one attempt, treat it as an uncontrolled fire and activate internal alarms and hazard communication systems to notify all facility personnel;
- For fires that cannot be controlled such as large fires or fires with a potential to cause an explosion (i.e. close to large amounts of flammable liquids), notify the Incident Commander;
- The Incident Commander (IC) is responsible for advising the Faro Fire Department of a catastrophic event (at 867-873-2222) and organizing a site evacuation, if required; and,
- The Incident Commander will initiate a lease-wide alarm or evacuation as required.

Evacuation:

- If an evacuation of the site or an area within the site is ordered, REMAIN CALM;

- Move to the designated muster point or the alternate muster point if the main point is inaccessible;
- Deputy ICs will oversee the evacuation, checking enclosed areas for any employees who may not be able to evacuate;
- Deputy ICs will report any missing person(s) to the IC after the evacuation has been completed; and,
- Remain at the muster point until the "all clear" is given by the IC or deputy IC.

In addition:

- Do not use water on petroleum liquid spills; and,
- Consult the manufacturer's SDS for details on which fire suppression materials should be used on specific materials. SDSs are available as hard copies in the Project trailer and are on SharePoint at:

  https://projects.parsons.com/sites/faro-mine/safety/default.aspx.

INCIDENT ACTION PLAN – POWER FAILURE

To be updated when onsite capabilities are determined.

In Case of a Power Failure:

- Stop work. Inspect the work area for hazards, and ensure the area is safe before resuming work;
- Use the onsite communication system to determine if the power outage is site-wide or limited to a single building;
- Notify the Incident Commander to determine options for fixing the power outage;
- Turn off and unplug all computers, appliances, electronic equipment, lights, and tools; and,
- Check equipment on emergency power. Items not permanently connected to these outlets should not be connected during a power failure.

INCIDENT ACTION PLAN – TERRORISM OR BOMB THREAT

A bomb threat is most likely to be received by administrative staff, while an act of terrorism could occur in a number of areas onsite.

Bomb Threat Response:

- Speak calmly to the individual. Make notes regarding the threat as well as any identifying characteristics (e.g. accents and mannerisms).
- Report the call immediately to the Site Manager or SH&E Lead.

Terrorism Initial Response:

- Evacuate to the muster point.
- If a disaster occurs near you, assess the situation and **if safe for you to do so**, check for injuries. Contact the Site Manager to mobilize medical aid to your location if required.
- Follow procedures outlined in the Emergency Response Plan in Case of Injury or Fire, as required.
- People who may have come into contact with a biological or chemical agent may need to go through decontamination procedures and receive medical attention.

INCIDENT ACTION PLAN – SITE SECURITY BREACH OR SABOTAGE

Initial Response:

- Assess the situation. Do not approach armed or angry individuals. Retreat to a safe distance and communicate the situation to the Site Manager.
- If you witness someone stealing equipment or materials or actively sabotaging or vandalizing equipment, make note of their appearance, mannerisms and any identifying characteristics and retreat to a safe distance. Do not chase the perpetrator.

If Attacked:

- Yell, fight back and retreat to a more populated area of site. Radio for assistance and report the incident to the Site Manager or SH&E Lead.

INCIDENT ACTION PLAN – EARTHQUAKE

Earthquakes can strike at any time. Employees should be able to identify structurally strong locations in and around their work area that they can go to for cover during an earthquake.

In Case of an Earthquake:

- If outside, go to an open area, away from buildings or any structure that could collapse;
- If in a vehicle, stop the vehicle and stay in it;
- If inside, stay inside and go to a structurally strong location (door frame, hall or pillar) or flatten yourself against an interior wall;
- Watch for falling objects such as lights fixtures, shelves, or any other furniture that may move or topple;
- Cover your head and neck with your arms. Put on your hard hat if it's not on already;
- Hold on: wait in place until the shaking stops; and,
- Expect aftershocks. Each time you feel one, DROP, COVER AND HOLD ON.

When the Shaking Stops:

- Assess the area for hazards and check for personnel injuries in your area. If the injured party is non-mobile (unconscious, trapped, leg injury), contact the Incident Commander (IC) via for first aid or medical assistance. Deputy IC and other staff with first-aid training provide first-aid assistance, if required;
- Check for fires or fire hazards, such as spills of flammable or combustible liquids, or leaks of flammable gases. Move people away if found, and put out small fires if safe to do so;
- Turn off heat and gas sources in the area if necessary;
- Follow procedures for fire, hazardous incidents, and medical aid as necessary; and,
- Go to the muster point (regular or alternate) to report injuries, damages, and potentially hazardous situations.
- If safe to do so, the Incident Commander will organize an inspection of the FMC dams to determine if the Dam Failure IAP needs to be initiated.

INCIDENT ACTION PLAN – SEVERE WEATHER

Examples of severe weather emergencies include extremes of heat and cold, thunderstorms, blizzards, hurricanes, and tornados.

Regional weather monitoring provides adequate warning of impending severe weather conditions, which allow for decisions on work stoppage, shutdown, or evacuation to happen in an orderly fashion.

In incidences of severe weather, a decision will be made by the Incident Commander (IC) whether or when work should be halted and when it can resume. In some cases, it may be determined that evacuating the site is the best course of action.

In cases of evacuation, follow the instructions as communicated by the IC and the Deputy ICs.

In case of blizzard/thunderstorm:

- In cases of severe weather systems, such as blizzards or thunderstorms, a decision should be made whether to halt work until the system has passed;
- If lightning is present, work should be halted following the 30-30 rule (if it takes less than 30 seconds to hear the thunder after seeing the lightning, halt work and wait 30 minutes before resuming outdoor activities);
- Decision regarding the halting of work and whether it will be temporary or long term (overnight or longer) will be made by the Incident Commander (IC), based on weather information provided by the meteorological stations onsite, Environment Canada and associated agencies;
- The IC will provide updates on work stoppages to the Emergency Management Team, the PWGSC project manager and AANDC contact, and the Site Manager; and,
- If work is halted, personnel should ensure that all equipment is safety stored and secured, and will follow instructions regarding evacuation or convergence on the muster point.

In case of a tornado:

- Seek shelter in a sturdy building, preferably to an enclosed, windowless area in the centre of a building (i.e. away from glass);
- Crouch down and cover your head;
- Cover yourself with thick padding, a heavy coat or other heavy material if available;

- If you cannot find shelter, lie flat and face down on low ground, protecting the back of your head with your arms; and,
- Stay well away from vehicles and trailers that may be overturned.

In case of heat stress:

A variety of factors may predispose a person to heat stress, including age, chronic disease, lack of physical fitness or acclimatization, and infection. Risk of excessive heat stress is directly influenced by the amount and type of PPE worn. PPE adds weight and bulk, severely reduces the body's access to normal heat exchange mechanisms (evaporation, convection, radiation), and increases energy expenditure.

Signs and symptoms of heat stress:

- Profuse sweating, sustained over hours of work;
- Weight loss greater than 1.5% body weight over the course of a shift;
- Symptoms of sudden and sever fatigue, nausea, dizziness or feeling lightheaded, or fainting;
- Dehydration. May be indicated by reduced urination or dark yellow/orange urine, or by a decrease in sweat;
- Heat rash; and,
- Heat cramps. Signs and symptoms include muscle spasms and/or pain in the hands, feet, and abdomen.

If an individual shows signs of heat stress, move them to a cool, shaded area and provide them with cool drinking water. Loosen or remove heavy clothing and fan or mist the person with water. Provide first-aid as necessary and treat as a Medical Emergency (see IAP page 39).

In case of heat stroke:

Heat stroke is the most serious form of heat stress. Temperature regulation fails and the body temperature rises to critical levels. Take immediate action to cool the body and obtain competent medical help. Signs and symptoms include:

- Irritability;
- Red, hot, usually dry skin;
- Lack of or reduced perspiration;
- Nausea;

- Dizziness and confusion;
- Strong, rapid pulse; and,
- Coma.

If an individual shows signs of heat stroke, move them to a cool, shaded area and if they are fully conscious, provide them with cool drinking water. Loosen or remove heavy clothing and fan or mist the person with water. Treat as a Medical Emergency (see IAP page 39) and call for medical assistance immediately.

In case of frostbite:

- Never rub the affected area;
- Warm the area by gradually soaking it in steadily increasing temperature, starting with cold water. Do not immerse frostbitten tissue into water that is more than 40 °C;
- Loosely bandage the area with dry, sterile dressing, separating fingers or toes with cotton or gauze before bandaging;
- Do not break blisters; and,
- Obtain professional help immediately.

In case of hypothermia:

- If an employee becomes fatigued, move him/her to a warm environment and allow them to rest;
- Remove any wet clothing and dry the victim;
- Warm the body gradually through the addition of warm, dry blankets or clothing and moving to a warmer place;
- If the victim is alert, give them warm liquid to drink. Never give liquids to an individual who is unconscious or semiconscious; and,
- If the victim loses consciousness, get professional help immediately.

INCIDENT ACTION PLAN –VEHICLE ACCIDENT

Driving is one of the most dangerous tasks that employees engage in. Traffic accidents, both onsite and on the road can have serious, long lasting, or fatal consequences.

In Case of a Vehicle Accident:

NOTE: No person shall, except for the purpose of preventing injury or relieving suffering, move or otherwise interfere with any wreckage or equipment at the scene of or connected with a reportable incident until an inspector has conducted an investigation of the incident and has given permission to do so.

- Contact the Incident Commander (IC);
- Assess the situation while ensuring your safety. Check for evidence of:
  - Injured people;
  - Fire, smoke, or the potential for a fire to ignite;
  - A hazardous materials leak;
  - Live electrical wires; or
  - Unstable vehicle.
- If there are injured people, do not move anyone unless they are in immediate danger. Initiate Medical Aid IAP if required.
- If there is evidence of smoke or fire, initiate the Fire/Explosion IAP.
- If there is evidence of a hazardous materials leak, initiate the Environmental Release IAP and the Spill Contingency Plan.
- The IC will contact emergency services for catastrophic incidents only; otherwise the IC will notify the project manager and the YG project manager.
- The SH&E Lead will work with involved parties and Project SH&E support to report and investigate the incident.

If you are Involved in a Vehicle Accident:

- If you are injured, stay still and contact the Incident Commander (IC) using the onsite communication system (to be determined); and,
- If you are not injured, follow the procedures above.

INCIDENT ACTION PLAN – ENVIRONMENTAL RELEASE (SPILL)

Precaution should always be taken as polluting discharges may pose serious threats to personnel health and safety. A release of chemicals or contaminated water or dust constitutes a threat to human health, while spilled fuel constitutes a fire and explosion hazard with associated threats

to human life and property. Even at less than explosive levels, petroleum or solvent vapours can be hazardous to personnel due to anesthetic and toxic effects that can result in vertigo, loss of consciousness, and death. If anyone is injured, call an ambulance immediately. Remain upwind of spill site.

IF A SPILL HAS OCCURRED REFER TO SPILL CONTINGENCY PLAN

Initial Response:

- As soon as the incident is noticed, STOP the work;
- Assess the hazard. Safety and protection of life and limb take precedence over environmental protection. If there is a threat to personnel safety, evacuate the area immediately;
- Stop, contain, or minimize the effects of the spill, provided it is safe to do so. Turn off any valves, pumps, vacuums, or other delivery equipment if possible and applicable;
- Report the spill to the Incident Commander (IC). If possible, identify the spilled product, including the amount spilled and the extent of release, and relay this information to the IC;
- The IC will alert other personnel onsite, the Parsons project manager and the YG project manager;
- If the quantity or volume of material spilled is reportable, the IC will contact the Parsons project manager and the YG project manager, who will notify the Yukon Environment 24-hour spill report line (867-667-7244) and other regulatory agencies;
- **If the spill is small and contained**, clean up the spill, following the instructions in the Spill Contingency Plan and referring to the MSDS/SDS for the product;
- **If the spill is major** (defined as a spill of an immediately reportable quantity), the IC will coordinate the containment and clean-up of the spill, designating the tasks outlined below to workers as needed:
    - Cordon off the incident area and keep unauthorized persons away;
    - Workers who are not involved in the spill response should go outside the incident area, upwind of the spill. Account for all personnel;
    - Initiate containment strategies and prevent the spilled material from entering watercourses (ex. streams, creeks, and ditches), catch basins, and/or sewers by dyking ditches. If the material is a dust or airborne contaminant, shut off air intake valves, spray the area with mist, or use a hydro-vac to collect particles;

- Assess the possible hazards to human health and the environment due to the release. This assessment must consider both the direct and indirect effects of the release (i.e., the effects of any toxic, irritating, or asphyxiating gases that may be generated or the effects of any hazardous surface water runoffs from water or chemical agents used to control fire and heat-induced explosion);
- Assess and implement prompt removal actions to remove the spilled substance;
- Coordinate rescue and response actions as previously arranged with all response personnel, as required; and,
- Ensure site is safe and determine adequate timing for work to resume with the Incident Commander.

- **If the spill is on water:**
  - Containment procedures will vary on the type of contaminant and whether it is standing water or flowing water;
  - For contaminants that float, a surface boom may be utilized. In flowing water, the boom must be placed across the flow, downstream of the release, in an area of decreased water velocity; and,
  - For contaminants that are heavier then water, a containment dyke should be constructed if possible.
- **If the spill is on land:**
  - If the spill involves liquids, spread absorbent materials from the spill kit to stop percolation of spilled substances. Block the spill's pathway to any waterways. If necessary, provide temporary curbing using sorbent booms, dyking or sandbags to limit the spread of spilled materials. If spill is a dust like material, use a mister or a hydro-vac to stop the dust from spreading.

Reporting Environmental Releases:

Notification numbers are listed in Appendix B of the ERP.

Reportable spill quantities are listed in Appendix B of the Spill Contingency Plan. In addition, all releases of harmful substances, regardless of quantity, are to be reported to the Yukon Environment 24-Hour Spill Line by the Parsons' project manager if the release:

- Is near or into a water body;
- Is near or into a designated sensitive environment or sensitive wildlife habitat;

- Poses imminent threat to human health or safety;
- Poses imminent threat to a listed species at risk or its critical habitat; and/or,
- Is uncontrollable.

INCIDENT ACTION PLAN – STRUCTURAL FAILURE OR BUILDING COLLAPSE

Many of the buildings at the Faro Mine site have not been maintained for several years and have deteriorated. As a result there is a potential for failure of structures within the Faro Mine Complex or the potential for building collapse, though the chance of this type of failure is considered very remote.

In case of a structural failure or building collapse:

- If outside, go to an open area, away from buildings or any structure that could collapse;
- If in a vehicle, stop the vehicle and stay in it;
- If inside, sound the general alarm (air horn or radio) stay inside and go to a structurally strong location (door frame, hall or pillar) or flatten yourself against an interior wall;
- Watch for falling objects such as lights fixtures, shelves, or any other furniture that may move or topple;
- Cover your head and neck with your arms. Put on your hard hat if it's not on already;
- Hold on: wait in place until building movement stops; and,
- Proceed to the exits in a safe and orderly fashion if safe to do so, if not shelter in place until help arrives. Make your location known with air horn or radio if feasible.

After initial failure or collapse:

- Assess the area for hazards and check for personnel injuries in your area. Emergency Responders and other staff with first-aid training provide first-aid assistance, if required;
- Check for fires or fire hazards, such as spills of flammable or combustible liquids, or leaks of flammable gases. Move people away if found, and put out small fires;
- Turn off heat and gas sources in the area if necessary;
- Follow procedures for fire, hazardous incidents and serious injury as necessary; and,
- Go to the mustering point (regular or alternate) to report injuries, damages, and potentially hazardous situations.

INCIDENT ACTION PLAN – DAM FAILURE

There are three alert levels for dam failure:

- Yellow – Alert Level: First or lowest level of action. At this point, the site superintendent and mine manager should be contacted to determine a course of action.
- Orange – Emergency Level: IAP should be initiated. Dam failure is high risk.
- Red – Failure Level: IAP should be initiated immediately, as dam failure is imminent.

For conditions that should trigger an Alert, refer to section 7 (Emergency Response Plan) of the "Operations, Maintenance, and Surveillance Manual for: Intermediate Dam, Cross Valley Dam, and Little Creek Dam", available on the Sharepoint site: https://projects.parsons.com/sites/faro-mine/Manuals%20and%20Site%20Documents/default.aspx (160229DR-OMS_Manual).

EMERGENCIES

Initial Response:

- Red or Orange Alert Level: Notify Incident Commander immediately to initiate a lease-wide alarm and evacuation to muster points.
- Incident Commander will notify town of Faro immediately. Inform Town representatives of level of risk (whether failure is likely or imminent) so that they can initiate evacuation procedures as required.
- Refer to Spill Management Plan and Spill Response IAP to address clean-up and reporting requirements.

INCIDENT ACTION PLAN – OPEN PIT WALL/RAMP FAILURE

Open Pit wall or access ramp failures are often preceded by cracking and ground movements, which may be visible. Regular monitoring of pit walls crests and berms may help identify any potential failures.

Initial Response:

- Workers outside the pit should evacuate from the area and notify the Incident Commander.
- Workers within the pit should move to a safe location when possible; egress from the pit can then be made once an access way is cleared.

- If workers within the pit are injured, initiate the IAP for Medical Emergencies, as required.

INCIDENT ACTION PLAN – CONFINED SPACE ACCIDENT/INCIDENT

Prior to confined space entry, a rescue plan must be created. The following Incident Action Plan provides general guidelines from Parsons CSHM-15, Confined Space, and should be incorporated into the task-specific rescue plan.

Initial Response:

- The entry supervisor coordinates emergency and rescue procedures before entry and records them the on the Confined Space Entry Permit.

- The SH&E Lead notifies rescue providers of planned entry, and coordinates the entry with a trained and properly equipped emergency rescue team that can reach the victim(s) within a time appropriate for the permit space hazards identified.

- Conduct emergency rescue with entry or non-entry methods (mechanical retrieval). Use mechanical retrieval systems for rescues when the vertical depth is greater than 5 feet.

- If an injured entrant is exposed to a substance that requires an SDS or other similar written information to be kept at the worksite, make that information available to the medical facility treating the exposed entrant in accordance with CSHM-1, Medical Qualification and Surveillance.

- Inform the rescue/emergency service of the hazards they may confront when called on to perform rescues.

- To develop and practice appropriate rescue plans and operations, allow the rescue/emergency service access to all permit spaces from which rescue may be necessary.

INCIDENT ACTION PLAN – ANIMAL ATTACK

If an animal is sighed, immediately evacuate the area. Remain calm and slowly back away from the animal.

In case of Attack:

- Retreat to a safe and secure location, such as a building or vehicle.

- **Brown/Grizzly Bears:** If you are attacked by a brown/grizzly bear, and are unable to reach a secure location, PLAY DEAD. Lay flat on your stomach with your hands clasped behind your neck. Spread your legs to make it harder for the bear to turn you over. Remain still until the bear leaves the area. Fighting back usually increases the intensity of such attacks. However, if the attack persists, fight back vigorously. Use whatever you have at hand to hit the bear in the face.
- **Black Bears:** If you are attacked by a black bear and are unable to escape to a secure location, DO NOT PLAY DEAD. Fight back using any object available. Concentrate your kicks and blows on the bear's face and muzzle.
- If any bear stalks you and then attacks, do NOT play dead—fight back! This kind of attack is very rare, but can be serious because it often means the bear is looking for food and sees you as prey.
- Utilize bear spray and bear horn in accordance to manufacturer's instructions.
- Immediately report the incident to the Site Manager or SH&E Lead.
- Initiate IAP for Medical Emergencies, as required.
- Contact Faro Conservation Officer Services at 867-994-2862.

INCIDENT ACTION PLAN – INRUSH INTO OPEN PIT

An inrush of water, mud or tailings into an open pit is only likely to occur following a major flood event or dike failure.

Initial Response:

- Evacuate the pit or move to a safe location within the pit itself, depending on the location of the inrush and volume of material involved.
- Egress from the pit should be made once the inrush has stabilized.
- If workers are injured and unable to exit the pit, the incident response team will be mobilized to evacuate the injured persons over the pit wall. Enact Rescue from Height IAP as required.

INCIDENT ACTION PLAN – WASTEWATER TREATMENT PLANT FAILURE

System failure at the Faro Mill Water Treatment Plant (WTP) or Vangorda/Grum WTP may occur during the water treatment season. Examples of a failure are pumping systems, containment tanks, lime delivery systems, electrical components, etc.

Initial Response:

- Notify Site Manager regarding the extent of the failure. Site Manager will determine if mobilization of the Incident Response Team is required.
- Isolate any energy sources or hazardous substances by turning off equipment (power, pumping systems, chemical addition, etc.)
- Initiate any additional IAP as required (e.g. medical, fire, etc.)
- Secure area and maintain until Site Manager calls a stand-down.
- Initiate cleanup measures, as outlined in the Spill Contingency Plan.

INCIDENT ACTION PLAN – RESCUE FROM HEIGHT

Means of rescue must be determined in the Project Fall Protection Plan as part of the work at heights plan. Employees who use fall arrest systems must be able to rescue themselves, or arrangements must be made for prompt rescue services. Rescue service options onsite will be confirmed prior to work start.

Initial Response:

- Assess the situation. Always ensure your own PPE is on properly, i.e. harness. If it is not safe to enter an area, do not enter the area;
- Contact the IC to inform them of the situation.
- The IC will contact the site medic and possibly the Mine Rescue (Surface) Team for additional resources and expertise;
- The site medic will guide the stabilization and possible transport of the injured employee from the elevated work area to the ground for transport; and,
- The IC and onsite first-aid personnel will provide support to the site medic.

APPENDIX II

EMERGENCY CONTACT INFORMATION

EMERGENCY CONTACT INFORMATION

Onsite personnel such as the Incident Commander/Site Manager, SH&E Lead/ Deputy Incident Commander, and sub-consultant team leader should be reached using radios.

Person or Organization	Phone Number
Ambulance	(867) 994-4444
Nursing Station	(867) 994-4444
Fire Dept.	(867) 994-2222
Police (RCMP)	(867) 994-5555
Parsons PM/EM: James Carss	(403) 294-4243
Parsons SH&E Lead: Patrick McCormick	(867) 689-1806
YG Project Manager: Thaidra Sloane	(867) 456-6117
Mine Manager: Stu Waring	(867) 689-0455
24-Hour YT Spill Line	(867) 667-7244
WorkCare Hotline	1-888-449-7787
Town of Faro	(867) 994-2728
Faro Mine Site	(867) 994-2348

NOTE: 911 Service is **NOT** available in Faro or the surrounding areas and cell service can be unreliable.

In the event of an emergency, a siren will be used. This indicates all site personnel must evacuate to the muster area.

First Nations Contacts

First Nation	Contact	Phone Number	Fax Number
Liard First Nation	Terry Szabo	867-536-2393	867-536-2392
Ross River Dena Council	Mary Maje	867-969-2097	867-969-2405
Selkirk First Nation	Ellie Marcotte	867-537-3331	867-537-3902

APPENDIX III

SAFETY DATA SHEETS

Not included in this document.

These are maintained as hard copies in the Main Dry Building and are online on the Project SharePoint site at:

https://projects.parsons.com/sites/faro-mine/default.aspx

APPENDIX IV

ORDER FOR TREATMENT FORM

PARSONS

100 West Walnut Street • Pasadena, California 91124 • (661) 904-0978 • Fax: (866) 293-0114 • www.parsons.com

ORDER FOR WORK-RELATED INJURY/ILLNESS EVAL/TREATMENT (CANADA)

_____ _____ of Parsons
(Employee Name) (Occupation)

is authorized to go to _____ for the following service(s):
(Name of Medical Provider)

Treatment for a Work-Related Injury/Illness for Date of Injury: _____.

In the event the above medical provider determines this injury or condition NOT TO BE WORK RELATED, the employee and Parsons understand that this employee may then be referred by the above medical provider to his/her personal medical doctor.

Employer Information:	Parsons 100 West Walnut Street Pasadena, CA 91124
Workers' compensation carrier:	**Insurance Information:**
Adjusting Office and Telephone No.:	

Comments to Provider: Parsons attempts to provide any modified, alternate, light duty recommended._____

_____

_____ _____ _____
Authorized Employer Signature Print Name Date

661-904-0978 866-293-0114
Phone Number Fax Number

Disability slips and return-to-work notifications: Immediately fax to Parsons ***and*** provide copy to employee at conclusion of every evaluation/treatment.

Attention Emergency Department: After acute care, please refer patient back to a _____ for followup treatment.
(Medical provider—to be completed by Parsons—where permitted by law.)

PARSONS

Clinic Protocol Guidelines and WorkCare

- Parsons uses WorkCare as our Corporate Medical Director and Occupational Health Consultant. Parsons is committed to the health and well being of its employees. WorkCare's role is to ensure that Parsons employees receive timely, appropriate, high-quality medical care and that necessary work restrictions are accommodated.

- WorkCare may call the clinic prior to the employee's arrival.

- Please note that Parsons expects WorkCare to assist in the process of developing a course of treatment.

- Please also note that you may receive calls from both Parsons and WorkCare.

- WorkCare is available 24/7, 365 days a year at: 1-888-449-7787

- A "Doctor's Work Status Report" form is attached so that you can make recommendations regarding the injured employee's work capacity. The medical provider's role is to identify any activity restrictions that will allow the injured body part to heal. These activity restrictions should be adhered to 24/7. Parsons responsibility is to determine what work can be done safely with these activity restrictions. Parsons is committed to providing temporary modified duty (transitional work) for those employees who are unable to return to work on full duty. **WorkCare requests that Parsons employees return-to-work unless their injury is so severe that they are confined to bed rest with no activity permitted.**

- Parsons is also committed to reducing OSHA recordable injuries. We request that you keep these OSHA recordability guidelines in mind when treating Parsons employees. We are not in any way encouraging under treatment of employees but at the same time, over treatment should be avoided. For example, use of steri-strips instead of sutures is preferred if such treatment is proper for a given laceration. Use of over-the-counter (OTC) medications at OTC dosages is also preferred if deemed adequate for treatment. Provide prescription level medication to employees if it is required for proper medical treatment

- IMMEDIATELY upon conclusion of EVERY medical evaluation (initial and all follow-up evaluations), place phone call and/or email and/or fax to Donna Miller to provide diagnosis and return-to-work restrictions. Also, provide copy to injured worker.

- Parsons Workers' Compensation Analyst
  Donna P. Miller
  Office Telephone No. and Cell No.: (661) 904-0978
  Fax No.: (866) 293-0114
  100 West Walnut Street
  Pasadena, CA 91124
  Email: donna.miller@parsons.com

PARSONS

Parsons
100 West Walnut Street
Pasadena, CA 91124

Doctor's Work Status Report

◆ Please Fax to Donna Miller (866) 293-0114 and Provide Copy to Employee ◆

Note: Job duties assigned to this employee will match the capabilities you define.

Employee Name:	Claim Number:	
Diagnosis:	Date of Injury:	_____/_____/_____ (mm / dd /yyyy)

RETURN TO WORK STATUS

☐ May return to regular work (Date): / /
☐ Released to full duty with intention given not to aggravate injury (Date): / /
☐ May return to modified work (Date): / /
☐ May not return to work until (Estimated Date): / /
Estimated Duration of Modified Work:

PHYSICAL LIMITATIONS: I certify the employee can perform duties within the capabilities defined as follows:

☐ Without any restrictions.

OTE: In terms of an 8 hour workday, Occas. (Occasionally) equals 1–33%; Freq. (Frequently) equals 34–66%; Contin. (Continuously) equals 67–100%

Capabilities	Never	Occas.	Freq.	Contin.	Lifting\Carrying	Never	Occas.	Freq.	Contin.
Bend	☐	☐	☐	☐	0–5 lbs	☐	☐	☐	☐
Squat	☐	☐	☐	☐	6–10 lbs	☐	☐	☐	☐
Crawl	☐	☐	☐	☐	11–20 lbs	☐	☐	☐	☐
Reach above shoulders	☐	☐	☐	☐	21–25 lbs	☐	☐	☐	☐
Kneel	☐	☐	☐	☐	26–50 lbs	☐	☐	☐	☐
Stoop	☐	☐	☐	☐	51–100 lbs	☐	☐	☐	☐
Climb stairs, steps and step stools	☐	☐	☐	☐	Repeated push/pull	☐	☐	☐	☐
Climb ladders	☐	☐	☐	☐	Repeated simple grasp	☐	☐	☐	☐
Walk on uneven ground	☐	☐	☐	☐	Repeated fine manipulation	☐	☐	☐	☐
Other (Specify):	☐	☐	☐	☐	Other (Specify):	☐	☐	☐	☐

Restrictions of Activities	None	Mild	Moderate	Total	Comments
Unprotected heights	☐	☐	☐	☐	
Be around moving machinery	☐	☐	☐	☐	
Exposure to changes in temperature and humidity	☐	☐	☐	☐	
Driving automotive equipment	☐	☐	☐	☐	
Exposure to dust, fumes, and gases	☐	☐	☐	☐	

In an 8 hour workday, Worker can: (CHECK full capacity for each activity)

Total at One Time (Hours)											Total During Entire 8-Hour Day (Hours)										
Hours	0	1/2	1	2	3	4	5	6	7	8	Hours	0	1/2	1	2	3	4	5	6	7	8
Sit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Sit	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Stand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Stand	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Walk	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Walk	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

☐ Job duties were explained to me by (Name/Title): On (Date): / /
☐ I have received a written list of job tasks.
☐ I have NOT received a written list of job tasks, BUT I AGREE THAT DUTIES MAY BE ASSIGNED AND/OR CHANGED, SO LONG AS THEY MATCH THE LIMITS DEFINED BY ME ABOVE. ☐ No ☐ Yes

PROGNOSIS

Permanent Restrictions Likely? ☐ No ☐ Yes ☐ Unknown at this time
Medically Stationary? ☐ No ☐ Yes Date: / /

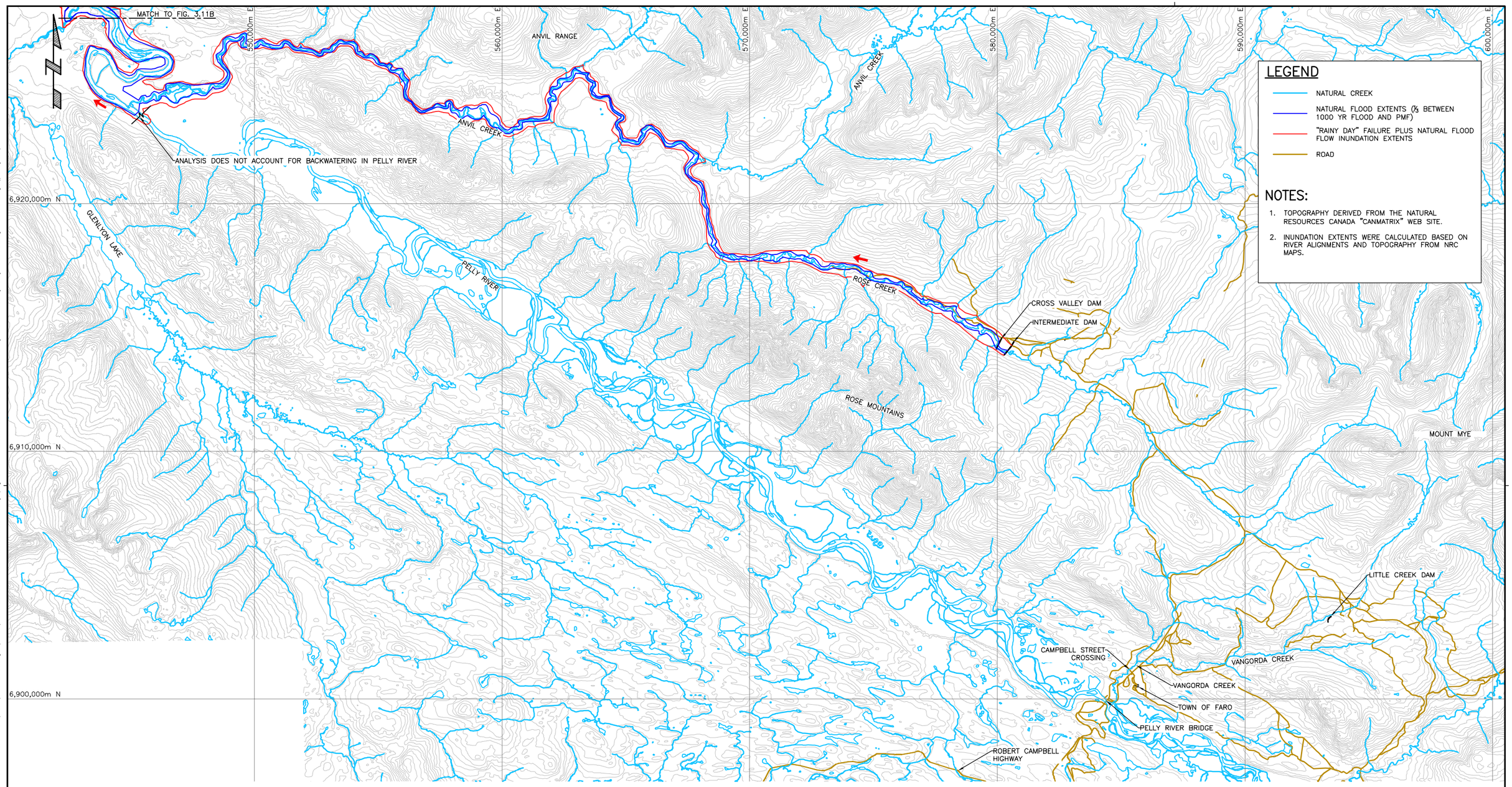
Physician Name (PRINT):	Telephone No.:
Signature:	Date: / /

APPENDIX V

Dam Breach Flood Inundation Maps

(Note: Figure numbers are those used in the Dam Breach and Inundation Study (KCB 2014a)

Figure 3.11A	Intermediate and Cross Valley Dam Rainy-day Cascading Failure Inundation Extents (Sheet 1 of 3)
Figure 3.11B	Intermediate and Cross Valley Dam Rainy-day Cascading Failure Inundation Extents (Sheet 2 of 3)
Figure 3.11C	Intermediate and Cross Valley Dam Rainy-day Cascading Failure Inundation Extents (Sheet 3 of 3)
Figure 3.12	Little Creek Dam Sunny-day Failure Inundation Extents



LEGEND

- NATURAL CREEK
- NATURAL FLOOD EXTENTS (⅓ BETWEEN 1000 YR FLOOD AND PMF)
- "RAINY DAY" FAILURE PLUS NATURAL FLOOD FLOW INUNDATION EXTENTS
- ROAD

NOTES:

1. TOPOGRAPHY DERIVED FROM THE NATURAL RESOURCES CANADA "CANMATRIX" WEB SITE.
2. INUNDATION EXTENTS WERE CALCULATED BASED ON RIVER ALIGNMENTS AND TOPOGRAPHY FROM NRC MAPS.

NOT FOR CONSTRUCTION

To be read with Klohn Crippen Berger report dated FEB. 2014

SCALE A=1:150,000 0 2 km

AS A MUTUAL PROTECTION TO OUR CLIENT, THE PUBLIC AND OURSELVES, ALL REPORTS AND DRAWINGS ARE SUBMITTED FOR THE CONFIDENTIAL INFORMATION OF OUR CLIENT FOR A SPECIFIC PROJECT AND AUTHORIZATION FOR USE AND/OR PUBLICATION OF DATA,STATEMENTS,CONCLUSIONS OR ABSTRACTS FROM OR REGARDING OUR REPORTS AND DRAWINGS IS RESERVED PENDING OUR WRITTEN APPROVAL.

CLIENT: YUKON GOVERNMENT

Klohn Crippen Berger

PROJECT: FARO MINE REMEDIATION PROJECT
DAM BREACH AND INUNDATION STUDY

TITLE: INTERMEDIATE & CROSS VALLEY DAM
RAINY DAY CASCADING FAILURE
INUNDATION EXTENTS SHEET 1 OF 3

PROJECT No. M09770A02

FIG. No. 3.11A

KCB-R-MLD

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Date: 2/27/2014
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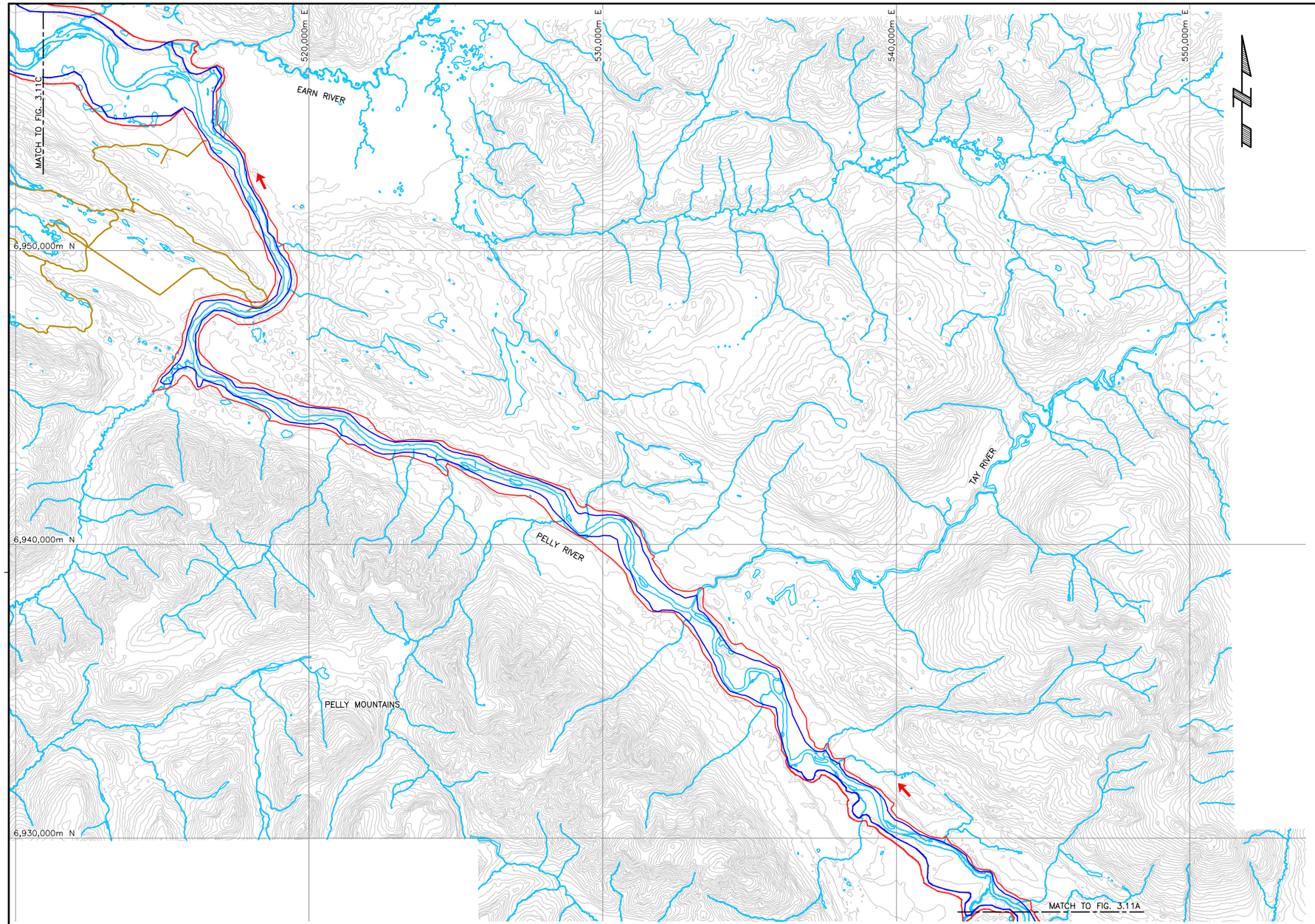
Drawing File: Z:\M\VCR\M09770A02 - Gov't Yukon-Faro Complex\400 Drawings\CAD\Dam Breach and Inundation Study\Fig 3.11 - Intermediate and Cross Valley Dam -Rainy Day Cascading Failure.dwg (persyem)



LEGEND

- NATURAL CREEK
- NATURAL FLOOD EXTENTS (⅓ BETWEEN 1000 YR FLOOD AND PMF)
- "RAINY DAY" FAILURE PLUS NATURAL FLOOD FLOW INUNDATION EXTENTS
- ROAD

NOTES:

1. TOPOGRAPHY DERIVED FROM THE NATURAL RESOURCES CANADA "CANMATRIX" WEB SITE.
2. INUNDATION EXTENTS WERE CALCULATED BASED ON RIVER ALIGNMENTS AND TOPOGRAPHY FROM NRC MAPS.

NOT FOR CONSTRUCTION

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SCALE A=1:150,000 0 2 km

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CLIENT: YUKON GOVERNMENT

Klohn Crippen Berger

PROJECT: FARO MINE REMEDIATION PROJECT
DAM BREACH AND INUNDATION STUDY

TITLE: INTERMEDIATE & CROSS VALLEY DAM
RAINY DAY CASCADING FAILURE
INUNDATION EXTENTS SHEET 2 OF 3

PROJECT No. M09770A02

FIG. No. 3.11B

KCB-R-MLD

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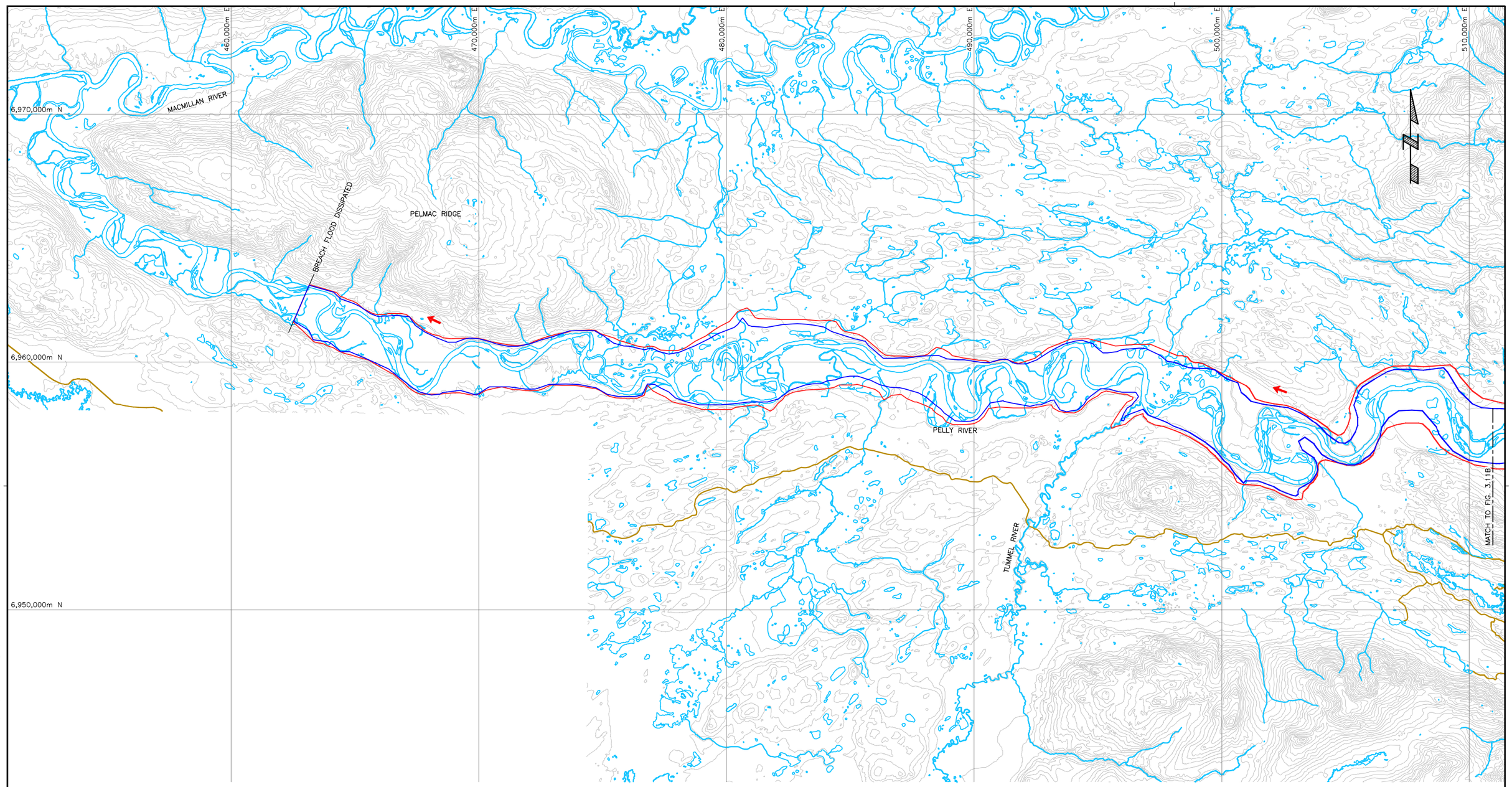

LEGEND

- NATURAL CREEK
- NATURAL FLOOD EXTENTS (⅓ BETWEEN 1000 YR FLOOD AND PMF)
- "RAINY DAY" FAILURE PLUS NATURAL FLOOD FLOW INUNDATION EXTENTS
- ROAD

NOTES:

1. TOPOGRAPHY DERIVED FROM THE NATURAL RESOURCES CANADA "CANMATRIX" WEB SITE.
2. INUNDATION EXTENTS WERE CALCULATED BASED ON RIVER ALIGNMENTS AND TOPOGRAPHY FROM NRC MAPS.

NOT FOR CONSTRUCTION

To be read with Klohn Crippen Berger report dated FEB. 2014

SCALE A=1:150,000 0 2 km

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CLIENT: YUKON GOVERNMENT

Klohn Crippen Berger

PROJECT: FARO MINE REMEDIATION PROJECT
DAM BREACH AND INUNDATION STUDY

TITLE: INTERMEDIATE & CROSS VALLEY DAM
RAINY DAY CASCADING FAILURE
INUNDATION EXTENTS SHEET 3 OF 3

PROJECT No. M09770A02

FIG. No. 3.11C

KCB-R-MLD

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Date: 2/27/2014
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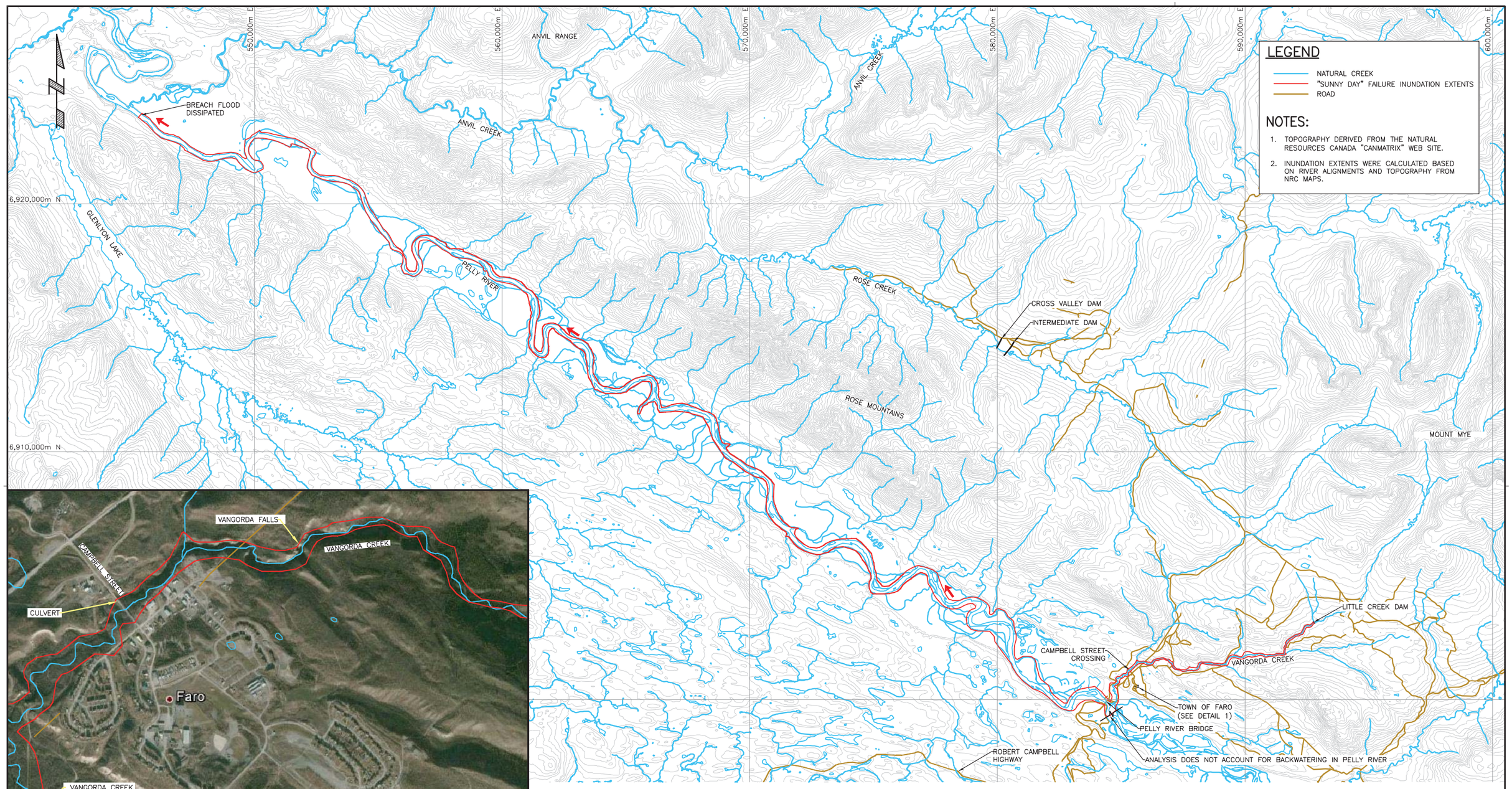

LEGEND

- NATURAL CREEK
- "SUNNY DAY" FAILURE INUNDATION EXTENTS
- ROAD

NOTES:

1. TOPOGRAPHY DERIVED FROM THE NATURAL RESOURCES CANADA "CANMATRIX" WEB SITE.
2. INUNDATION EXTENTS WERE CALCULATED BASED ON RIVER ALIGNMENTS AND TOPOGRAPHY FROM NRC MAPS.

DETAIL 1 - TOWN OF FARO
SCALE B

NOT FOR CONSTRUCTION

To be read with Klohn Crippen Berger report dated FEB 2016

SCALE A=1:150,000 0 2 km
B=1:20,000 0 300m

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CLIENT: YUKON GOVERNMENT

Klohn Crippen Berger

PROJECT: FARO MINE REMEDIATION PROJECT
DAM BREACH AND INUNDATION STUDY

TITLE: LITTLE CREEK DAM
SUNNY DAY FAILURE
INUNDATION EXTENTS

PROJECT No. M09770A05

FIG. No. 3.12

KCB-R-MLD

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Date: 2/27/2014
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