

APPENDIX D
Geotechnical Support Services
**PROJECT BRIEF / TERMS OF
REFERENCE**

FARO MINE COMPLEX

Faro, Yukon

FOR

**Public Services and Procurement Canada (PSPC) and
Crown-Indigenous Relations and Northern Affairs Canada
(CIRNAC)**

March 3, 2022

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LIST OF ACRONYMS AND DEFINITIONS

<u>Terminology / Acronyms</u>	<u>Definitions</u>
Affected First Nations / AFN	The Ross River Dena Council, Liard First Nation, Dease River First Nation, Kwadacha Nation and Selkirk First Nation.
As-built drawings	Official record drawings prepared by the MCM or their Subcontractors showing the work completed and deviations from design. They represent as constructed conditions including location and size of equipment, devices, plumbing lines, mechanical and electrical equipment, structural elements etc. As-built drawings shall be updated in CADD.
Budget	The annual approved expenditures for the Work, organized according to the approved Work Breakdown Structure (WBS) into Work Packages (WPs), against which cost performance will be measured and assessed.
Buildings and Facilities	The Real Property, which includes, but is not limited to: the Faro Housing, all the buildings fixtures, and facilities included at FMC.
Canada	Government of Canada as represented by PSPC.
CDA	Canadian Dam Safety Association.
CIRNAC	Crown-Indigenous Relations and Northern Affairs Canada
Contract	The Contract Documents.
Construction Manager	For the overall remediation project, construction services will be provided by the MCM, “Contractor”, “Construction Manager” and “MCM”. They all refer to the same entity.
Contingency	An amount of identified funds within the Budget that may be made available for payment to the MCM by Canada only through a contemplated change notice or change order as required, specifically to account for fluctuations in prices and quantities of goods or services or other changes required for completing the work.
CVPTP	The Cross-Valley Pond Water Treatment Plant, which is an approximately 2000 USgpm treatment system located adjacent to the Cross Valley Pond at the Faro Mine Site.
CA	Commissioning Authority. The party responsible for leading the commissioning or re-commissioning of a facility.
DR	Departmental Representative.
DFO	Department of Fisheries and Oceans.
ERP	Geotechnical Emergency Response Plan. The overarching emergency response plan for Site is called “Site-wide ERP”. The Geotechnical emergency response plan is an Annex to the overall Site-wide ERP that details specific triggers/actions for physical stability of structures at Site.

<u>Terminology / Acronyms</u>	<u>Definitions</u>
FMC	Faro Mine Complex, which is comprised of the Faro Mine Site and the Vangorda / Grum Mine Site.
FMRP	Faro Mine Remediation Project. In this document, the term FMRP includes the remediation of the Faro Mine Site.
FY	Fiscal Year (Federal, April 1 - March 31).
Geotechnical Consultant	The geotechnical team retained by Canada to provide detailed geotechnical advisory services to the Project. (this Standing Offer Agreement).
Geotechnical Consultant Team or Consultant Team	The Geotechnical Consultant and sub-consultants presented in this proposal to deliver the services requested in this RFSO.
Ground Control Management Plan (GCMP)	This document has hazard overviews, monitoring requirements, maintenance activities, and training requirements for all open pits for the entire Faro Mine Complex.
IFT and IFC	Issued for Tender and Issued for Construction
Indigenous Business	For the purpose of this Contract, it's an enterprise that is a sole proprietorship, limited company, co-operative, partnership, or not-for-profit organization where at least 51 per cent of the firm is owned and controlled by a member of the Kaska Nation. In the case of a joint venture, at least 51 per cent of the joint venture must be controlled and owned by an Indigenous Business, as defined above.
Infrastructure	The physical structures of the systems providing commodities and services essential to the function of the Site.
IOC	Indigenous Opportunities Considerations. Means a plan of action designed to maximize Indigenous Employment, training/Skills Development and subcontracting.
IWTS	6,000 USgpm Interim Water Treatment System at the Site; system based on lime precipitation and Actiflo technology, with post pH adjustment.
Kaska Dena Citizen	Defined as a member of the Kaska Nation; or a First Nation, Inuit or Metis living within the Kaska territory. Proof of residency may be requested (Driver's License, Territorial Health Card).
Kaska Dena Subcontractor / Supplier	Enterprise that is a sole proprietorship, limited company, co-operative, or not-for-profit organization in which Kaska persons have majority ownership and control; or a joint venture or consortium in which an Indigenous business or businesses as defined above have at least 51 percent ownership and control.

<u>Terminology / Acronyms</u>	<u>Definitions</u>
Material	Includes all commodities, articles, machinery, equipment, fixtures and things required to be furnished in accordance with the Contract for incorporation into the Work.
MCM	Main Construction Manager. For this project, construction services will be provided by the MCM, “Contractor”, “Construction Manager” and “MCM”. They all refer to the same entity.
NFRC	North Fork of Rose Creek.
Notice	A written form of communication between the Parties that is transmitted in such manner as confirmation of receipt is required.
OGD	Other Governmental Department.
OMS	Operations, Maintenance and Surveillance Manual. This document has operations, maintenance and surveillance procedures for all dams, diversions and waste rock facilities for the entire Faro Mine Complex.
Proposal	The document submitted by a Proponent to Canada in response to the RFSO.
Project Sponsor	CIRNAC
Project Team or FMC Project Team	This team includes staff from CIRNAC and PSPC, as it relates to the Faro Mine Complex.
PSPC	Means the Department of Public Works and Government Services Canada, also known as Public Services and Procurement Canada.
Records	Any works, information, data (including field data and metadata), reports, documents, databases, GIS maps, manuals, plans, drawings, sketches, designs, specifications, diagrams, certificates, illustrations, photos, videos, graphics, schedules, charts, inspection reports, permits, test results, products, correspondence, or materials that, directly or indirectly, are produced under, arise out of, or are related to the Work or this Contract, whether in electronic or written format.
RFP	Request for Proposal.
RPD/SS	Remediation Plan Design and Support Services
RPD/SS Consultant or RPD/SS Engineering Consultant	The consultant that will be responsible for the design or the Faro Mine Remediation Project (FMRP) and for the Vangorda / Grum Mine Remediation Project.
Required Services (RS)	Means the required engineering services provided by the Consultant and as set forth in the Standing Offer and subsequent Call-up documents.

<u>Terminology / Acronyms</u>	<u>Definitions</u>
Site	The Faro Mine Complex located approximately 360 km northeast of Whitehorse, Yukon, and 22 km from the Town of Faro including, but not limited to: lands, buildings and other structures. The FMC is comprised of the Faro Mine Site and the Vangorda / Grum Mine Site.
Site Infrastructure	The infrastructure and systems, which are used or related to the performance of the Work.
ToR	This document is known as the Terms of Reference/Project Brief. For this Standing Offer Agreement, the Terms of Reference and the Project Brief may be used interchangeably.
TRC	Technical Review Committee.
VGMRP	Vangorda / Grum Mine Remediation Project. In this document, the term VGMRP includes the remediation of the Vangorda / Grum Mine Site.
WMC	Water Management Committee.
Work Breakdown Structure (WBS)	The mandated framework, as may be amended by Canada, for organizing the Required Services activities.
Work Package (WP)	The mandated organization of portions of the Work, typically occurring at the lowest levels articulated in the approved Work Breakdown Structure (WBS), to facilitate effective and efficient planning, management and control of scope, schedule and budget for included activities.
YESAB	Yukon Environmental and Socio-economic Assessment Board consisting of an executive committee of three persons; four other members; and an even number of additional members that may be fixed from time to time by the federal minister following consultation with the territorial minister and the first nations.

1. PROJECT BRIEF / DESCRIPTION OF PROJECT

1.1 CONTRACT OVERVIEW

1.1.1 General

- ..1 Canada is seeking professional advisory and technical services in the area of Geotechnical Engineering and Science and associated Support Services, to assist Canada in successfully implementing remediation measures at the Faro Mine Complex (FMC).
- ..2 Canada intends to separately engage other professional services such as a Remediation Plan Design and Support Services (RPD/SS) Engineering Consultant (under a separate contract) to produce the design and support services for a Remediation Plan for the Faro Mine Complex. Other supporting consultants will be engaged under separate contracts.
- ..3 The successful Geotechnical Consultant established under this Standing Offer will support the operations at site by monitoring, reviewing and interpreting geotechnical instrumentation data and other information to provide recommendations to Canada and the site operators regarding safe and efficient operations at site..
- ..4 As further detailed in the Required Services, and as set out in one (1) or more Call Ups to be issued against this Standing Offer Agreement, the scope of work may include but is not limited to:
 - ..4.1 Overall program management services for the Standing offer agreement
 - ..4.2 Dam system technical support services
 - ..4.3 Dam Safety Engineer for the ongoing monitoring, surveillance and safety of the dams at the FMC
 - ..4.4 Operational support and technical expertise
 - ..4.5 Emergency response guidance services
 - ..4.6 Geotechnical hazard monitoring and interpretation
 - ..4.7 Geotechnical data and instrumentation monitoring, installation maintenance, and data interpretation;
 - ..4.8 Pit wall stability monitoring
 - ..4.9 Geotechnical consultant advisory and technical support
 - ..4.10 Geotechnical monitoring
 - ..4.11 Site investigation and geotechnical design

1.1.2 Project Objectives

- ..1 The objectives of the project are to define, design and remediate the FMC in a manner that:
 - ..1.1 protects human health and safety;
 - ..1.2 protects and, to the extent practicable, restore the environment including land, air, water, fish and wildlife;
 - ..1.3 returns the mine site to an acceptable state of use that reflects pre-mining land use where practicable;
 - ..1.4 maximizes local and Yukon socio-economic benefits; and
 - ..1.5 manages long-term site risk in a cost-effective manner.

1.2 Project Background

1.2.1 Site History

- ..1 The Faro Mine Complex (FMC) is an abandoned lead-zinc mine located in south-central Yukon, approximately 90 km driving distance, northwest of Ross River, and approximately 350 kilometers northeast of Whitehorse. The site is approximately 25 square kilometers in size. The access road to the Faro Mine Complex extends approximately 22 km from the Town of Faro to the mine, gaining over 400 m in elevation.
- ..2 The Faro Mine Site was in production from 1969 to 1992 (with production rates of 5,000 and 9,300 tons of ore per day), and the Vangorda Plateau Mine was in production from 1986 to 1998. The ore at the Faro Mine site contained valuable quantities of lead, zinc, gold and silver.
- ..3 When Anvil Range Mining Corporation declared bankruptcy in 1998, the site was subsequently entered into receivership and Deloitte and Touche was court appointed as Interim Receiver to manage the environmental care and maintenance of the mine site. As the Faro Mine is located on Crown land, once it was abandoned by operators, it became the financial responsibility of the Government of Canada who funded the care and maintenance of the site under the management of the Receiver. On April 1, 2003 a new Yukon Act came into effect reflecting the Government of Yukon's increased control. The authority to manage public lands and resources in the Yukon Territory, including abandoned mine sites, was transferred from the Government of Canada to the Government of Yukon pursuant to the Yukon Northern Affairs Program Devolution Transfer Agreement. In 2009, the Government of Yukon took over responsibility for care and maintenance at the site. In 2017, the Government of Yukon along with Affected Yukon First Nations requested the governance of the FMRP be revised further. In May 2018, the Government of Canada took over responsibility for care and maintenance of the site and implementation of construction activities.
- ..4 The overall remediation approach is based on a “stabilize-in-place” concept and all future design work must follow this approach.

1.2.2 Geographic Context

- ..1 The FMC includes two main areas:
 - ..1.1 **Faro Mine Site**, situated in the Rose Creek watershed, which drains to the Pelly River via Anvil Creek. The Faro Mine Site consists of the Rose Creek Tailings Area and the Faro Mine Area (i.e., the Faro Pit, waste rock dumps and former mill, associated buildings and the Emergency Tailings Area). During the operation of the Faro Mine, a 3.8 km long channel was constructed to divert the flow of Rose Creek, such that 70 million tonnes of tailings were deposited in the Rose Creek Valley. A series of dams were built to retain the tailings and to allow for storage of water prior to its treatment and release into the environment. The Faro Mine site has two (2) water treatment plants (the IWTS and the CVPTP), both are anticipated to be decommissioned following planned construction and commissioning of a permanent water treatment plant. The Faro Pit is approximately 1,675 m long and 975 m wide at the crest; and,
 - ..1.2 **Vangorda / Grum Mine Site**, located in the Vangorda Creek watershed, which joins the Pelly River at the Town of Faro. The Vangorda / Grum Mine Site includes the Vangorda and Grum pits and their associated waste rock. The Vangorda / Grum Mine shares a single water treatment plant. The Vangorda Creek is diverted around the perimeter of the Vangorda Pit.
- ..2 Site plans showing the Site boundaries and all FMC features are included in Appendix 9.
- ..3 The Faro Mine Complex is found primarily on National Topographic System Map 105K/6, with a small portion on 105K/3, within Watson Lake Designated Office district. Vehicle access to/from Faro is served by the Robert Campbell Highway, which is an approximate 5 hour drive from Whitehorse.

- ..4 Faro has very cold winters and mild to warm summers. The average temperature in January is around -20°C and 15°C in July. Months with above zero mean temperatures are May, June, July and August. Snow accumulation at the Faro tailings impoundment typically begins in October and the snow cover is generally melted by the end of April. Prevailing wind direction in the region is from the southeast.
- ..5 Faro's high latitude causes a large variation between day and night. Daylight hours range from five hours of daylight in December to twenty hours in June. Twilight lasts all night from late May to July.

1.2.3 Cultural Context

- ..1 The 25 sq. km Faro Mine Complex is located in the Kaska Traditional Territory (see map at Annex 10), as claimed by the Kaska Nation. At present time, the Kaska Nation is comprised of four Indian Act bands. This includes Ross River Dena Council and Liard First Nation in the Yukon, and the Dease River First Nation and Kwadacha First Nation in British Columbia. None of these First Nations have a land claim agreement at present, but several land sections surrounding the FMC are currently subject to interim protection for the Ross River Dena Council.
- ..2 This section is provided by the Ross River Dena Council and is included at their request to highlight the history and importance of the area encompassing the Faro Mine Complex and the impact of mining activity to the Ross River Dena:
- ..3 Tse Zul (Mt. Mye) lies in a unique ecological setting. Here two major rivers converge in the rain-shadow of the Pelly Mountains, separated by blocks of mountains where changes in elevation yield a variety of habitats. Scattered wetlands add further diversity. Three different caribou types/herds used the area, moose were at densities believed to be the highest in the Yukon, and a unique colour phase of thinhorn sheep, called Fannin sheep, were abundant here. These sheep were of special importance to the Ross River Dena; many wintered along the Pelly River and were accessible to hunters in the winter. The Tintina Trench that runs at the foot of Tse Zul was the migration corridor for thousands of migrating geese, ducks and cranes, and the hills around Blind Creek were home to Blue Grouse. Along the Pelly River, sharp-tailed grouse could be found - the only place in the region where they occurred. The diversity of habitats produced many different medicinal and food plants, and one of few places where birch trees could be harvested (birch was used for many purposes). Salmon were more abundant here than anywhere else in the region - so abundant that "nets had to be checked three times a day". It is also one of few places where fishing wheels were used. The Tse Zul area was one of the most important breadbaskets to the Ross River Dena, or as Weinstein (1992) remarked, "one of the rare places where, as the elders say 'there is everything' – moose, caribou gophers, whistlers, fresh water fish and salmon".
- ..4 As well as being a special place for a variety of animals that lived there, Tse Zul was also special for the unique rocks found there. In fact, even the name Tse Zul is a reference to the "Hollow Rock" on the mountain. Al Kulan got to know some of the local people that lived in the area. In a kind and welcoming gesture, three Ross River Dena - Dena Cho, Joe Ladue and Arthur John Sr. - showed this prospector some of the special rocks at Tse Zul that eventually led to the Anvil Mine. For their part, the three men received no recognition or benefits from the mine.
- ..5 The importance of the Tse Zul area to Ross River Dena was exemplified by the significant use of the area. At least eight extended families lived here. There were three permanent centres of habitation in the area, and seasonal encampments were scattered everywhere. The area was also a major transportation hub, laced by a network of trails. A number of sacred areas are also found here, signifying a deep reverence to the area, and a long history of occupation. At least 26 archaeological sites found in the area provide further physical evidence of the importance of this place to the Ross River Dena.

- ..6 The development of the Faro mine and its infrastructure was one of the most debilitating events in the Ross River Area, causing significant environmental and social impacts. Heavy metal leaching, acid rock drainage, and airborne pollutants poisoned the region. This, combined with habitat destruction, displacement of animals, and an invasion of outside hunters, resulted in declines of most fish and wildlife species. A population of wintering caribou disappeared, as did lake trout and grayling from a number of creeks. The Ross River Dena were displaced, further depriving them of the bush economy. The late Arthur John senior sadly commented; “Now no one goes there. The mine tore up half the mountain now. People from that country try other areas, could not find anything as good.” Racism and bigotry also played a role. As Weinstein (1992) pointed out, “The changes to Ross River which accompanied the mine development affected all band members. The village changed fundamentally and very rapidly, from an isolated Indian community to a mixed-racial regional service centre. Indians became a marginalized minority, facing bigotry and discrimination... The traumas that resulted were profound, leading to alcoholism, family breakdowns, and self-inflicted violence”. Indeed, the social and environmental impacts of Faro have been disastrous to the Ross River Dena.

1.2.4 Site Conditions

- ..1 The main components of the FMC include: open pits, waste rock dumps, tailings storage facilities and associated dams, water treatment facilities, access roads, haul road, stream diversions, water storage areas, and buildings previously used for milling-related activities. The FMC is within the watersheds of Rose and Vangorda creeks, which both drain into the Pelly River upstream of the Town of Faro.
- ..2 Some of the waste rock dumps and parts of the Rose Creek Tailings Area are producing acid rock drainage resulting in the deterioration of the surface water quality in the receiving environment, with increasing trends in the concentrations of sulphate and a number of metals, including iron (total and dissolved), manganese, and zinc.
- ..3 Groundwater under the Rose Creek Tailings Area and waste rock dumps, and water in the Faro Pit are contaminated with metals at concentrations that, without treatment, would result in adverse effects to aquatic organisms, wildlife, and people. Over time, site-wide acid drainage is expected to occur. As a result, the trend of increasing contaminant concentrations in groundwater and surface water is expected to continue into the foreseeable future.
- ..4 Existing conveyance structures at the FMC include the Faro Creek Diversion, North Fork Rose Creek clean water diversion, Rose Creek Diversion Channel, Upper Guardhouse Creek and the North Wall Interceptor Ditch. Many of these conveyance structures are currently being impacted by contaminated groundwater. In addition, many of these structures for non-contact water, including the Rose Creek Diversion, are too small to convey large scale flood events. If such an event should occur, it could lead to catastrophic failures and the release of contaminants into the downstream environment.
- ..5 The Faro Pit, waste rock dumps, and Rose Creek Tailings Area each have stabilization and contamination challenges. Stability is of concern for the waste rock dumps, the Secondary Dam and Intermediate Dam in the Rose Creek Tailings Area and along the northwest side of the Faro Pit, which has the potential to threaten the Faro Creek Diversion.

1.2.5 Environmental Risks

- ..1 The Faro Mine Complex is one of the largest contaminated sites within the federal sites inventory. There are 70 million tonnes of tailings, 320 million tonnes of waste rock, areas of contaminated soil, open pits, various types of structures, 3 water treatment plants, and a highly contaminated mill. There are ongoing concerns related to the capacity of the interim water treatment plant to treat additional volumes of water while maintaining discharge standards, the migration of contaminants

downstream of the North Fork and the Cross Valley / Rose Creek areas, potential impacts from, contaminated groundwater appearing in wells down gradient of Cross Valley Pond in the Rose Creek Valley, the physical instability of the Faro Pit walls and deteriorating structures on site, are examples of the environmental hazards on site.

..2 The Site is a heavily contaminated abandoned industrial site, which contains many hazards, both evident and hidden, posing risk to human health and safety and the environment. These general hazards include, but are not limited to:

- ..2.1 Mine workings: there are 3 partially flooded open pits containing contact water.
- ..2.2 Dams and diversions of insufficient capacity / robustness: the current flood-routing capacity of the major tailings retention structures and associated diversions on the site are less than those recommended by the CDA guidelines.
- ..2.3 Acid-generating waste rock and tailings: the tailings impoundment contains approximately 70 million tonnes of acidic lead/zinc tailings. Much of the 330 million tonnes of waste rock is acid generating and many of the seeps emanating from waste rock piles across the Site contain elevated levels of metals and sulphate;
- ..2.4 Contaminated groundwater: Contaminated groundwater underlying the waste rock piles and tailing impoundment area is contaminated and the movement of these contaminant plumes is being monitored;
- ..2.5 Metal contaminated soil: there is an undetermined quantity of lead/zinc contaminated soil throughout the Site, most noticeably in the vicinity of the former concentrate storage and load-out building;
- ..2.6 Hazardous materials: there are many decommissioned buildings and facilities at the Site that are contaminated with lead concentrate dust, asbestos and other harmful substances, and are awaiting demolition as part of the remediation effort. Despite previous removal efforts, there is a possibility that hazardous materials may remain in other locations on the Site;
- ..2.7 Hydrocarbon contaminated soil: there is an estimated 90,000 cubic meters of un-remediated hydrocarbon contaminated soil at the Site;
- ..2.8 Faro mine road: this road is a public roadway that passes through the Site adjacent to the tailings impoundments and ends at the Site Guardhouse. YG Highways and Public Works is responsible for maintenance of the road which can be made challenging by weather conditions, glaciation, and/or competing maintenance priorities as the road is classified as secondary. Seasonally, there are hunters and recreational users camping on this road;
- ..2.9 Limited access control: site security facilities would consist primarily of a few sections of fence and lockable gates at key areas. The site has a long-standing history of public use for activities such as hunting and recreational use; and
- ..2.10 Unsafe infrastructure: aged and deteriorating buildings and other types of built infrastructure are located throughout the Site and pose a challenge for the protection of worker and public health & safety.

..3 Other known hazards include, but are not limited to:

- ..3.1 Dust Hazards: the contaminated soils can be disturbed by vehicles or heavy equipment use. The resulting dust can pose a risk to human health.
- ..3.2 Terrain Hazards: Steep/slippery slopes, cliffs, open water, remote areas, partially buried debris and sinkholes exist.

- ..3.3 Wildlife Hazards: The Site is accessible to wildlife, including bears, wolves, foxes, and ungulates.
- ..3.4 Other Contractor/Activity Hazards: Multiple contractors may be present on the Site at all times, and may be performing hazardous operations.
- ..3.5 Vehicle Hazards: Vehicles move around the Site, both on- and off-road. Road systems include one- and two-way traffic sections.
- ..3.6 Temperature Hazards: Extreme cold conditions are frequently encountered.
- ..3.7 Electrical Hazards: High AC voltages.
- ..3.8 Contaminated Water: some surface water and groundwater within and around the Site may be contaminated.
- ..3.9 Confined Space Hazards exist.
- ..3.10 Elevated work areas.

1.2.7 Geology

- ..1 The Faro mining complex is located within the Yukon Plateau, on the north side of the Tintina Trench. This trench forms a broad, northwest trending valley occupied by the Pelly River, with a floodplain at about El. 600 m above sea level. The Vangorda Plateau is a subdivision of the Yukon Plateau, rising from El. 1000 m to El. 1400 m, and is drained by the Vangorda Creek and Rose Creek watersheds. To the northeast, the peaks of the Anvil Range Mountains rise above El. 2000m.
- ..2 Bedrock consists of regionally metamorphosed sedimentary rock ranging in age from late Precambrian to Permian (approximately 900 million to 250 million years ago). Metamorphic grade ranges from moderate (schist) to low (phyllite). Phyllites are common in the area and are classified as carbonaceous, calcareous or non-calcareous. The calcareous phyllite becomes calc-silicate rock at higher metamorphic grade.
- ..3 Five stratiform, massive sulphide lead-zinc-silver ore bodies were discovered in the area: Faro, Grum, Vangorda, Grizzly and Swim.
- ..4 The bedrock surface was shaped during the last ice age and covered with surficial deposits between 35,000 and 10,000 years ago. The surficial deposits consist of colluvial, glaciofluvial and morainal (till) as a discontinuous cover over bedrock in the upland areas. These deposits increase in thickness towards valleys such as Rose Creek. Glacial deposits are relatively absent above 1500 m elevation. The area surrounding the Vangorda Mine is characterized by a thick till blanket overlying bedrock. The till comprises a poorly sorted deposit of clay, silt, sand, gravel and angular boulders, commonly underlying glaciofluvial deposits in areas of former melt water drainage.
- ..5 The Rose Creek Valley is infilled with a complex assemblage of fan and outwash sand and gravel deposits, dissected by stream channel and lacustrine materials. On the north side of the valley, prominent terraces and fans partly underlie the existing Down Valley tailings area. A large colluvial apron covers the south slope of Rose Creek Valley, extending upslope of the Cross Valley Dam to downstream of the Down Valley Tailings Facilities. Another colluvial apron extends along the base of the south slope of the Rose Creek Valley between the site of breached Fresh Water Storage Dam and the Original Impoundment. A large colluvial fan is located east of the upper Rose Creek near the Faro Pit.
- ..6 Most of the surficial deposits in the Faro mine area are granular glacial or fluvial deposits. Glaciolacustrine deposits were noted near the Cross Valley and Intermediate dams, comprising fine sand to sandy silt up to 20 m thick. This unit is commonly buried by a sequence of sand and gravel.
- ..7 The region is located within the discontinuous permafrost zone. In the Rose Creek Valley, most of the south valley wall consisted of frozen coarse till, whereas the same material in the north valley

wall was unfrozen. Solifluction is common on slopes above the tree line. Frost shattered bedrock (Felsenmeer) is frequently found in the alpine areas of the Anvil Range.

1.2.8 Hydrology

..1 Rose Creek and Vangorda Creek are the main watercourses on the property. As part of the 1996 closure plan, a comprehensive hydrological assessment was carried out for the Faro and Vangorda Plateau mine site areas (Robertson Geoconsultants 1996). A hydrotechnical assessment of the Faro mine site was undertaken in 2001 (NHC 2001) for the now breached Fresh Water Supply Dam and Down Valley Tailings Facility at the Faro mine site. The table below presents a summary of the Estimated Floods for the Faro Mine Site. Note that hydrology work at the site is ongoing and relevant background information would be provided prior to each call-up on this Standing Offer.

Mine Site Sub-Basins	Drainage Area (km ²)	2-Year (m ³ /s)	50-Year (m ³ /s)	100-Year (m ³ /s)	200-Year (m ³ /s)	500-Year (m ³ /s)
North Fork Rose Creek at Flow Through Rock Drain	118	9.3	48	54	72	92
Fresh Water Supply Dam Catchment	67	5.6	31	33	49	63
Rose Creek above Tailings Diversion Channel	203	15	71	86	105	135
Rose Creek downstream of Tailings Diversion Channel	230	17	78	96	115	145

- ..2 Rock outcrops are extensive in the upper portion of the basin, while the lower portions of the basin are overlain by low-permeability tills, frequently containing permafrost. These factors, in addition to the general lack of tree cover and topsoil or forest litter, result in increased runoff potential.
- ..3 The Vangorda Creek watershed area is about 92 km², of which 17.7 km², lies above the headworks for the Vangorda Creek Diversion (Curragh 1988). The stream drops about 760 m in elevation from the highest point on Mt. Mye to the Pelly River over a distance of about 18 km. The major tributary is Aex Creek, which joins Vangorda Creek, just above the Town of Faro.
- ..4 Flow in Vangorda Creek has been monitored intermittently since 1975 at a hydrometric station located upstream of the Faro town site road crossing (Station no. 29bc003). Since 1977, this station has been operated by Department of Indian Affairs and Northern Development (DIAND), with flow measurements being taken only during ice-free periods. The catchment area above this gauging station is 91.2 km² (Robertson Geoconsultants 1996). Hydrology studies have used long period year-round data from Water Survey of Canada (WSC) stations to "patch" the missing stream flow data, using a series of analytical steps. The patched daily record was then converted into a monthly record to calculate mean monthly and mean annual flows. Mean annual runoff for the period from 1977 to 1995 (Robertson Geoconsultants 1996) for Vangorda Creek at Faro town site road was 0.68 m³/s, equivalent to 235 mm of runoff over the catchment area.
- ..5 Freshet occurs around May 31, based on when the peak is observed to occur at stream flow stations in the region.

1.3 Project Context:

1.3.1 Overview

- ..1 Work under Call Ups issued against this Standing Offer Agreement must be coordinated with other work on the overall project to support other components of the overall Site Remediation planning. The FMRP is a complex undertaking with multiple parties supporting the project. The Geotechnical Consultant shall work in a professional and cooperative manner with representatives from all levels of government, Affected First Nations (AFN), other contractors and regulatory and oversight agencies in the completion of its work.
- ..2 The Geotechnical Consultant will work as part of a collaborative team including Canada (consisting of CIRNAC and PSPC), the Remediation Plan Design and Support Services (RPD/SS) Consultant (design team), Main Construction Manager (MCM), Environmental Monitoring Consultant, and other consultants and contractors.

1.3.2 Roles and Responsibilities of the Faro Mine Complex Project Team

- ..1 Remediation Plan Design and Support Services (RPD/SS) Consultant

The RPD/SS Consultant is required to produce the design and support services for the Faro Mine Remediation Project (FMRP) and for the Vangorda / Grum Mine Remediation Project, provide the technical documents (specifications, drawings, etc.), cost estimates for each package, as well as oversee the implementation of the work, mainly for Quality Assurance purposes.
- ..2 Main Construction Manager (MCM)

A Main Construction Manager (MCM) will be responsible for the delivery of the overall remediation of the Faro Mine Site, continued Care & Maintenance of the FMC. The MCM will use its own forces and sub-contractors using various contracting approaches to deliver upon this program of works. The MCM assumes the responsibility of Constructor for health and safety management of the FMC under the Yukon Occupational Health and Safety Act and Regulations. The MCM will also conduct environmental monitoring, including geotechnical monitoring, within the MCM work areas.
- ..3 Environmental Monitoring Consultant

An Environmental Monitoring Consultant will be responsible for the delivery of a comprehensive environmental monitoring program at the FMC outside of MCM work areas, and auditing for environmental compliance. The Environmental Monitoring Consultant will take routine data collection at Site, which is anticipated to include geotechnical monitoring data, and will provide data to the Geotechnical Consultant via upload to the EQUIS database.
- ..4 Other Consultants

Other Consultants for the FMRP are engaged by Canada under separate contracts:), Permanent Water Treatment Plant (PWTP) Design and Support Services Consultant, and Regulatory Services Consultant, among others.

1.4 Existing Documentation:

- ..1 The appendices listed in the Table of Contents are provided as reference.
- ..2 The following documents provide additional requirements the Geotechnical Consultant shall adhere to in the delivery of services, and made available following award as required:
 - ..2.1 Project-Specific Occupational Health & Safety Plan – developed by the MCM, updated as required and no less frequently than annually;
 - ..2.2 Canadian Dam Association - The Dam Safety Guidelines 2007 (Revised 2013);
 - ..2.3 Canadian Dam Association - Technical Bulletin: Application of Dam Safety Guidelines of Mining Dams (2019 Edition);
 - ..2.4 Developing an Operation, Maintenance, and Surveillance Manual for Tailings and Water Management Facilities (Second Edition) – The Mining Association of Canada (current version);
 - ..2.5 Ground Disturbance Plan;
 - ..2.6 Copies of other existing analyses; and
 - ..2.7 Any outcomes from the Water Licence process.
- ..3 The Geotechnical Consultant must adhere to the most recent approved versions of site plans, policies and protocols throughout the delivery of services.

2. PROJECT ADMINISTRATION (PA)

2.1 General Information

- ..1 The management of all project administration services is the responsibility of the Geotechnical Consultant and can be performed at the location of their choice.
- ..2 This section describes the requirements of the Geotechnical Consultant to provide management and administration of their own activities as well as of their Sub-Consultants in accordance with the needs of Canada.
- ..3 The following administrative requirements apply during all phases of project delivery and will apply to each Call Up.
- ..4 This project is to be organized, managed and implemented in a collaborative and integrated manner between PSPC and CIRNAC.

2.2 Roles and Responsibilities

- ..1 Departmental Representative:
 - ..1.1 The assigned Departmental Representative (DR), as determined on a Call Up by Call Up basis, has overall responsibility for the progress of the project, including management, administration and coordination of the activities as set out in this document.
 - ..1.2 The DR is responsible for managing the given Call-Up. The DR:
 - ..1.2.1 Is directly concerned with this callup and is responsible for its progress;
 - ..1.2.2 Liaises with the FMC Project Team, obtains their requirements, and conveys these requirements to the Geotechnical Consultant;
 - ..1.2.3 Briefs and directs the Geotechnical Consultant, seeks approvals, exchanges information between the Geotechnical Consultant and the FMC Project Team, and authorizes the Geotechnical Engineering Consultant to act under each Call-Up; and
 - ..1.2.4 Liaises with the PSPC Contracting Authority who is responsible for the establishment of the callup, its administration and any contractual issues related to it.
- ..2 Geotechnical Consultant:
 - ..2.1 The Geotechnical Consultant team are to provide guidance and recommendations on the safe operation of the dams, open pits, diversions and waste rock facilities. They are responsible for, but not necessarily limited to:
 - ..2.1.1 Providing guidance on safe operation of the dam system in accordance with best practices;
 - ..2.1.2 Providing operational guidance for all facilities at site;
 - ..2.1.3 Providing guidance on geotechnical emergency response;
 - ..2.1.4 Responding to geotechnical emergencies as per the ERP, and;
 - ..2.1.5 Performing detailed inspections of dams, diversions, pits and waste rock dumps on behalf of Canada.
 - ..2.2 Be responsible for gathering and identifying the needs of the client department and incorporating those needs into a Call Up Proposal, including work plan and schedule for client review and approval prior to being authorized to proceed with the work under any Call Up.

- ..2.3 Establish and maintain, throughout the duration of the project, a team available and capable of effectively delivering the services described under any Call Up.
 - ..2.4 Team to include members taking professional responsibility for the services licensed in their field at time of Call Up to provide the services in the Yukon Territory (or in a jurisdiction in Canada if no equivalent professional designation exists in the Yukon Territory). Team members must have extensive relevant experience in their assigned role(s)/discipline(s) and be capable of providing all required services for the duration of each assigned Call Up.
 - ..2.5 The team must include qualified Engineering, Geoscience and Scientific professionals registered (or eligible for registration) in the Yukon Territory (or in another Canadian jurisdiction, in instances where Yukon registration for a specific profession is not currently available), with extensive relevant experience, capable of providing all required services for the duration of the callup.
 - ..2.6 Team members may be qualified to provide services in more than one discipline. The Geotechnical Consultant may be asked by the Project Authority to expand the team to include additional disciplines.
 - ..2.7 For each Call Up, provide a mutually agreed-upon principal Point of Contact for the consultant, who will be actively involved in, and responsible for, all activities undertaken.
 - ..2.8 Deliver the Call Up work within the time frame and assigned budget in accordance with the approved work plan.
 - ..2.9 Upon execution of the Geotechnical Consultant Call Up, be responsible for producing all work described in the Call Up document, in a conscientious and professional manner and in accordance with identified standards, and provide quality assurance for all deliverables.
 - ..2.10 Supply all of its own tools, facilities, equipment (including Personal Protective Equipment where required, and including instrument probes and other equipment required to conduct independent readings of monitoring equipment installed on site), and software required for completion of the work, unless otherwise directed in writing by the DR.
 - ..2.11 The DR will provide the Geotechnical Consultant with access to the EQUIS environmental management system.
 - ..2.12 Coordinate project requirements with work of other contractors that may be underway. This includes, but is not limited to:
 - ..2.13 Preparing and submitting a Site Access Plan and Geotechnical Consultant Health and Safety Plan for review and approval by the MCM, at least two (2) weeks prior to travelling to the site, for any and all site visits.
 - ..2.14 Reporting all incidental observation of wildlife at site to the MCM, in the format prescribed by the MCM.
 - ..2.15 The Geotechnical Consultant and sub-consultants team members must meet the minimum experience shown in the Qualifications Framework, provided in Appendix 1.
- ..3 Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)
- ..3.1 The Project Sponsor and Client Department referred to throughout this Project Brief is Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC).
 - ..3.2 CIRNAC's mandate is to meet the Government of Canada's obligations and commitments to First Nations and for fulfilling the federal government's constitutional responsibilities in the North.

- ..3.3 CIRNAC is the Project Sponsor responsible for the remediation and for the continued care & maintenance of the FMC. It is responsible for protecting the environment, the public and the FMC infrastructure. It is also responsible for keeping the FMC in compliance with all applicable Acts and regulations, as well as ensuring the FMC is secure and contamination is addressed within the risk management strategy.
- ..3.4 As the Project Sponsor, CIRNAC has the following role:
 - ..3.4.0 Securing Funding and Project Approval from Treasury Board.
 - ..3.4.1 Accounting for the expenditure of public funds and outcomes of the project in accordance with terms accepted by the Treasury Board.
 - ..3.4.2 Accounting to Treasury Board for the overall planning, management, and execution of the project, including quality and risk management.
 - ..3.4.3 Providing Project Scope Definition to the FMC Project Team and verifying that:
 - Project scope requirements are thoroughly understood.
 - The functional and operational requirements are met.
 - Approvals, as required, are signed off.
 - ..3.4.4 Engaging with PSPC DR and the Geotechnical Support Services on technical matters pertaining to the project.
 - ..3.4.5 Serving as a technical resource.
 - ..3.4.6 Securing the necessary authorizations to proceed with the Project.
 - ..3.4.7 Engaging and consulting with Indigenous, and other interested parties (including Media relations).
 - ..3.4.8 Liaising with internal and external stakeholders and other groups and reporting on project progress and performance.

2.3 Coordination with Canada

- ..1 A Departmental Representative (DR) will be assigned for each Call Up.
- ..2 The DR is directly concerned with the project and responsible for its progress. The DR is the liaison between the Geotechnical Consultant, Public Services and Procurement Canada or Other Government Department (OGD) and CIRNAC.
- ..3 Public Services and Procurement Canada or CIRNAC administers the project and exercises continuing control over the Consultant's work during all phases of development. Unless directed otherwise by the DR, the Geotechnical Consultant obtains all Federal requirements and approvals necessary for the work. The Geotechnical Consultant shall:
 - ..3.1 Carry out services in accordance with approved documents and directions given by the DR;
 - ..3.2 Prior to starting any project, obtain the DR's approval of sub-consultant(s). Upon receipt from the DR of written confirmation that the proposed sub-consultant(s) are acceptable, execute the Geotechnical Consultant Call-Up;
 - ..3.3 Ensure all communications carry the Project Title, Project Number and File Number, Call Up Number, and WBS Number;
 - ..3.4 Advise the DR of any changes that may affect schedule or budget or are inconsistent with instructions or written approvals previously given. The Geotechnical Consultant shall detail the extent and reasons for the changes and obtain written approval before proceeding. All major changes in the callup must be documented through proposal amendments.

2.4 Coordination with Sub-Consultants and Sub-Contractors

- ..1 Throughout all stages of the work, coordinate and assume responsibility for the work of any sub-consultants, sub-contractors and specialists retained by the Geotechnical Consultant.
- ..2 Ensure clear, accurate and ongoing communication of concept, budget, and scheduling issues (including changes) as they relate to the responsibilities of all sub-consultants, sub-contractors and specialists retained by the Geotechnical Consultant.
- ..3 Ensure sub-consultants, sub-contractors and specialists provide adequate site inspection services and attend all required meetings.

2.5 General Project Deliverables

- ..1 Where deliverables and submissions include summaries, reports, drawings, plans or schedules, electronic copies shall be provided including native electronic format (source files). Electronic format shall mean (Canada's most current version of):
 - ..1.1 For written reports and studies: Microsoft Word and PDF;
 - ..1.2 For Spreadsheets, and budgets: Microsoft Excel and PDF;
 - ..1.3 For Presentations: Microsoft Power Point;
 - ..1.4 For Drawings: AutoCad 2019 (*.dwg) refer to Doing Business with A&ES;
 - ..1.5 For Specifications: MS Word as specified by the DR;
 - ..1.6 For Schedules (Time Plans): Microsoft Project.
 - ..1.7 EQulS database
- ..2 As Canada's software standards evolve over the duration of the Agreement, the Geotechnical Consultant shall adapt its deliverables to Canada's then current version.
- ..3 The Geotechnical Consultant will place the documents in the appropriate file on Canada's secure shared document management site and advise the DR, unless otherwise directed in writing

2.6 Lines of Communication

- ..1 In general, communications will be through the DR, unless directed otherwise.
- ..2 This includes formal contact between the Geotechnical Consultant, the design team, the regulators, the PSPC Project Team and CIRNAC.
- ..3 Direct communication between members of the Project Team and the Geotechnical Consultant on routine matters may be required for resolution of technical issues.
- ..4 However, this will not alter project scope, budget or schedules, unless confirmed in writing by the DR.
- ..5 If any direct communication with the DR results in the need for any change to the scope of work, quality, cost or schedule, the Geotechnical Consultant will inform the DR, and seek direction, before taking any action.
- ..6 No communication will alter the terms of the project scope, budget or schedules unless directed in writing by the DR.
- ..7 The DR will arrange for the Geotechnical Consultant to obtain access to PSPC's secure shared document management site. All correspondence from the Geotechnical Consultant will be distributed as directed by the DR.

2.7 Media

- ..1 No personnel from either the Geotechnical Consultant team, or any sub-consultants/sub-contractors are to communicate with the media, unless requested to do so by the DR. If contacted by reporters or others, refer reporters to the CIRNAC Communications Manager immediately and notify the DR immediately. Do not publish or agree to have published information on this project or the callup without the prior written approval of the DR.
- ..2 All personnel from the Geotechnical Consultant team and all sub-consultants/sub-contractors are to follow Canada's guidelines in reference to the use of social media. The Geotechnical Consultant team and all sub-consultants/sub-contractors must not share any project information, videos or photographs pertaining to the project publicly, including but not limited to, by social media or other online platforms unless previously authorized by DR.
- ..3 The Geotechnical Consultant must receive DR's prior permission to provide any public or media tours of the site and for any capture of video or photographic footage by any parties (including Geotechnical Consultant personnel and sub-consultants/sub-contractors), excluding photogrammetry (as already included here as core responsibility associated with this contract).

2.8 Business Environment and Meetings

- ..1 Business Environment:
 - ..1.1 The headquarters of PSPC's Pacific Region is in Vancouver, BC, those of CIRNAC's NCSB is in Gatineau, QC and project operations are based in Whitehorse, YT. Canada's regular operating hours are Monday to Friday, 8 a.m. to 5 p.m., local time, excluding statutory and federal government holidays. The Geotechnical Consultant shall be available to meet with project representatives and to respond to inquiries related to the work mainly within CIRNAC's regular operating hours, but must accommodate meetings and inquiries within PSPC Pacific Region's regular operating hours and/or regular operating hours in Yukon Standard Time.
 - ..1.2 Any work on site at the FMC may allow for extended operating hours in the summer, and in contrast, the potential for shorter operating hours in the winter, given seasonal differences.
- ..2 Project Team Meetings:
 - ..2.1 Unless meetings at the FMC or at departmental facilities are required, meetings will normally be held remotely using MS Teams, or equivalent software.
 - ..2.2 Arranging meetings as detailed in each Call-up relative to the scope and phase of work, for members of the project team. Meetings will typically include representatives from:
 - ..2.2.0 CIRNAC;
 - ..2.2.1 PSPC;
 - ..2.2.2 Geotechnical Consultant Team (including any sub-consultants, sub-contractors, and specialists as required);
 - ..2.2.3 As required, other consultants/contractors retained by Canada (e.g. RPD/SS Consultant, MCM (e.g. for weekly water management meetings), Environmental Monitoring Consultant, etc.).
 - ..2.3 The Geotechnical Consultant shall attend the meetings, chair the meetings when requested in a call-up, record the issues and decisions and prepare and distribute minutes to the participants within 48 hours of the meeting.

..3 Regulatory Meetings:

- ..3.1 The Geotechnical Consultant will attend meetings and public forums or hearings to support Canada on technical matters relating to the Environmental Assessment, Water Licence or other Consultation processes, as requested.
- ..3.2 Meetings and public forums may be held remotely or in-person, as specified by the DR.

..4 Water Management Committee:

- ..4.1 The Water Management Committee (WMC) includes members of CIRNAC, representatives of the Geotechnical and RPD/SS Consultants, and representative of the Care and Maintenance provider (MCM Site Manager or MCM Superintendent). Additional participants involved in water management for care and maintenance, urgent works and remediation planning, may support the WMC as determined necessary by CIRNAC.
- ..4.2 The WMC provides a forum for team members involved in water management at the FMC to work collaboratively to develop and monitor a strategic, holistic, and integrated approach to water management. The WMC is a coordination, integration, and communication body and not a decision-making body. Line responsibility and accountability for water management rests with the assigned managers.

..5 Risk Management Committee:

Annually, the Geotechnical Consultant will participate in a Technical Risk Workshop and associated preparatory interviews. This is typically in the fall.

..6 Detailed Work Planning (DWP) Meetings:

Annually and periodically throughout each year (as required by CIRNAC), the Geotechnical Consultant will participate in DWP meetings and workshops, and provide any updates required to Call-up Work Plans, schedules and other project documentation as identified in the DWP meetings.

..7 Technical Review Committee (TRC) Meetings:

The Geotechnical Consultant may be requested to attend some TRC meetings. The specific topics of discussion, frequency, duration, meeting format, and location will be confirmed in a call-up.

..8 Independent Peer Review Panel (IPRP) Meetings:

The Geotechnical Consultant may be requested to attend some IPRP meetings. The specific topics of discussion, frequency, duration, meeting format, and location will be confirmed in a call-up.

2.9 Schedule Management

..1 Project Schedule:

- ..1.1 A Detailed Project Schedule is a schedule developed in reasonable detail to ensure adequate Time Management planning and control of the project.
- ..1.2 Project Schedules are used as a guide for the various phases of the project, as well as to communicate to the project team when activities are to happen, based on network techniques using Critical Path Method (CPM).
- ..1.3 When building a Project Schedule, the Geotechnical Consultant must consider:
 - ..1.3.1 The level of detail required for control and reporting;

- ..1.3.2 The reporting cycle will be monthly, unless otherwise identified in the Call-up;
- ..1.3.3 What is required for reporting in the FMC Project Teams Communications Plan; and
- ..1.3.4 The nomenclature and coding structure for naming of scheduled activities, which must be submitted to Canada for acceptance.

..2 Milestones:

- ..2.1 The Major Milestones are standard Deliverables and Control Points and are required in all schedule development.
- ..2.2 These Milestones will be used in Time Management Reporting as well as used for monitoring project progress using Variance Analysis.
- ..2.3 Milestones may also be external constraints such as the completion of an activity, exterior to the project, affecting the project.

..3 Activities:

- ..3.1 All activities will need to be developed based on:
 - ..3.1.1 Project Objectives;
 - ..3.1.2 Project Scope;
 - ..3.1.3 Milestones;
 - ..3.1.4 Meetings with the FMC Project Team; and
 - ..3.1.5 The scheduler's full understanding of the project and its processes.
- ..3.2 Subdivide the elements down into smaller more manageable pieces that organize and define the total scope of work in levels that can be scheduled, monitored and controlled.
- ..3.3 Each activity will describe the work to be performed using a verb and noun combination (i.e. Review Design Development Report).
- ..3.4 These elements will become activities, interdependently linked in the Project Schedule.
- ..3.5 If unforeseen or critical issues arise, the Geotechnical Consultant will advise the DR and submit proposed alternative solutions in the form of an Exception Report. An Exception Report will include sufficient description and detail to clearly identify:
 - ..3.5.0 Scope Change: Identifying the nature, reason and total impact of all identified and potential project scope changes affecting the project;
 - ..3.5.1 Delays and accelerations: Identifying the nature, the reason and the total impact of all identified and potential duration variations;
 - ..3.5.2 Options Enabling a Return to the project baseline: Identifying the nature and potential effects of all identified options proposed to return the project within baselined duration.
- ..3.6 At each submission or deliverable stage (see section 0), provide an updated schedule and Exception Report.

2.10 Project Response Time

- ..1 It is a requirement of all Call-ups covered under this Standing Offer that the Geotechnical Consultant's project working staff and their sub-consultants and specialists be:
 - ..1.1 Personally available to respond to Call-Ups against this Standing Offer or general inquiries within one (1) working day of the DR's request.

- ..1.2 Able to respond to an emergency at site as expeditiously as possible through phone call or email (within four (4) hours), as well as travel to Site (within one (1) day), including but not limited to: conducting site geotechnical inspections, participating in specific ERP development, providing mitigation recommendations and providing general geotechnical-specific guidance;;
- ..1.3 Able to respond to urgent, problem-solving meetings, as may occasionally arise. The Geotechnical Consultant must be available to send representation to attend meetings (including meetings on site at the FMC) within one (1) day of request, while all Personnel required to respond to the emergency must travel to site as expeditiously as possible.
- ..2 The Geotechnical Consultant must ensure that personnel are personally available to attend meetings as required and respond to inquiries promptly.

2.11 Submissions, Reviews and Approvals

- ..1 For each Call-up, work in progress may be reviewed by the DR as well as any combination of PSPC or CIRNAC in-house resources.
- ..2 Unless otherwise specified in the Required Services, submission schedules and turnaround times for reviews and approvals for specific project engagements will be as defined in the Call-up.

3. REQUIRED SERVICES (RS)

3.0 Purpose

- ..1 The purpose of this stage is to describe, in general terms, work that is planned for completion during the term of the Standing Offer, so the Geotechnical Consultant can understand the type of work that will or may occur under Call-ups. The specific scope of work to be undertaken for each individual type of service will be described in detail in each Call-up request that will form the basis of the issued Call-up(s).
- ..2 The services will be broadly related to geotechnical engineering, geoscience, dam safety and related support services. Some Call-ups may also require the Geotechnical Consultant to provide “prime consultant” services for multidisciplinary projects, where coordination of work with other disciplines will be led by the Geotechnical Consultant. Specific services will be identified in each Call-up.

RS 1 Standing Offer Agreement Overall Program Management Services

- ..1 Work with Canada, the MCM, RPD/SS Consultant, the Environmental Monitoring Services Consultant, and other consultants to coordinate the Geotechnical Consultant’s role within the overall Faro Mine Remediation Project (FMRP) and for the Vangorda / Grum Mine Remediation Project. This includes, but is not limited to, managing the support services to other contractors and consultants of the FMRP Team, as stated within this RS Section, attending technical and informational stakeholder meetings, and providing on-going advice as requested by the DR on an as and required basis.
- ..2 Develop, or participate in the development, an overall process to provide safe management of the geotechnical features of the existing mine infrastructure within the context of public policies and Canada’s project objectives. The process should include, but is not limited to, an internal organizational structure with the appropriate disciplines, a thorough database of all dams situated at Faro Mine Site and the Vangorda / Grum Mine Sites, and a clear decision making process.
- ..3 Lead a team of expert services to support the following Required Services such as, but not limited to:
 - ..3.1 Dam Safety Management
 - ..3.2 Geotechnical Engineering
 - ..3.3 Hydrotechnical Engineering
 - ..3.4 Hydrogeology
 - ..3.5 Civil Engineering
 - ..3.6 Other engineering and science disciplines required to carry out the work

RS 2 Dam System Technical Support Services

- ..1 Support the operation of the dam system and provide continuity of knowledge related to the, current operating regime, remediation design, construction, operation and performance of the dam system.
- ..2 Take the necessary measures to become familiar with the design, construction, performance and operation of the dam system.
- ..3 Confirm the dam systems are performing in accordance with the on-going operation intent and water license, laws, regulations, CDA, OMS manual, and all other applicable requirements.

- ..4 Advise the DR, in a timely fashion, of discrepancies and make recommendations regarding the necessary corrections or remedial actions to achieve compliance with the requirements of applicable guidelines, standards and regulations, including all authorizations and permits.
- ..5 Notify the DR in writing of assessment results as well as any unresolved safety issues that may compromise the integrity of the dam system.
- ..6 Have an active role in water management planning at site, specifically for dam operations.
- ..7 Prepare (if necessary), review and accept the following documents, plans, manuals, and assessments:
 - ..7.1 A memorandum summarizing the consequence classification of the Dam including rationale;
 - ..7.2 A Hazard and Failure Modes Matrix;
 - ..7.3 An appropriate breach or inundation study or failure runout assessment;
 - ..7.4 A formal quantitative risk assessment of the Dam;
- ..8 Participate in Dam Safety Reviews conducted by an Independent Qualified Engineer.
- ..9 Perform dam safety inspections at a frequency described in the Call-Up. Site visits may be scheduled to provide for periodic review (e.g. Spring and late Summer).
- ..10 Prepare an annual Dam Safety Inspection Report, summarizing activity conducted during the year and any concerns about the dam system.
- ..11 Collaborate with the DR and the MCM to be part of the development and updating, on an on-going basis, of an Action Plan summarizing all requirements and recommendations of the Dam Safety Report, Dam Safety Inspections and Dam Safety Reviews, including, but not limited to:
 - ..11.1 Advice on/input into prioritizing deficiencies and task list from inspections;
 - ..11.2 List of deficiencies and non-conformances;
 - ..11.3 Recommended schedule for addressing deficiencies and non-conformances;
 - ..11.4 Scope required to address deficiencies and non-conformances;
 - ..11.5 Cost estimates;
 - ..11.6 Responsible party;
 - ..11.7 Any required long-term maintenance activities.

RS 3 N/A, not used

RS 4 Operational Support And Technical Expertise

- ..1 Review and provide comments and recommendations on the adequacy of operation, monitoring, surveillance and care and maintenance plans of the dam system. Conduct verification and site inspection (as required), and provide the DR with an opinion as to whether or not those plans are being properly implemented.
- ..2 Be involved in the preparation the Operations, Maintenance, and Surveillance (OMS) Manual, the Ground Control Management Plan (GCMP) and the Geotechnical Emergency Response Plan (ERP). The preparation of these documents may be led by the MCM.
- ..3 Provide review of the OMS Manual. Consider a wide range of information, including, but not limited to:

- ..3.1 Performance of the facility;
- ..3.2 The current life cycle phase of the facility;
- ..3.3 Status of progressive reclamation activities;
- ..3.4 Relevant advice and recommendations from site inspections, Independent Review, audit, and
- ..3.5 Evaluation of effectiveness;
- ..3.6 Changes since the last review in:
 - ..3.7 Site conditions;
 - ..3.8 Performance objectives and indicators;
 - ..3.9 Risk profile of the tailings dams;
 - ..3.10 Critical controls;
 - ..3.11 Personnel or organizational structure;
 - ..3.12 Methodologies and technologies for OMS activities;
 - ..3.13 Legal requirements;
 - ..3.14 Plans to address any gaps or deficiencies in performance;
 - ..3.15 Plans for continual improvement; and
 - ..3.16 Future plans for the tailings dams.
- ..4 Provide expert support and resources to Site Operations which includes but is not limited to:
 - ..4.1 Have an active role in water management at site, including during freshet every year, participation in review and comment on water balance updated by the MCM;
 - ..4.2 Participate in a regular water elevation/water balance review meetings between CIRNAC and the MCM, providing expert advice and input;
 - ..4.3 Provide other technical guidance and analysis on operational-related questions as required.

RS 5 Emergency Response Guidance Services

- ..1 Notify the DR immediately if any member of the Geotechnical Consultant is made aware of an emergency situation at the FMC while on site. The Consultant is expected and responsible to be able to determine what an emergency situation entails.
- ..2 Work with Canada and the MCM to establish a communication plan to ensure that emergency situations (made aware by other parties) can be responded within four (4) hours of request, if the need arises.
- ..3 Be prepared to and provide remote assistance to an emergency at site including but not limited to: providing geotechnical review of emergency response plans, proposed monitoring requirements and mitigation measures.
- ..4 Be prepared to and respond to an emergency at site as expeditiously as possible through phone call or email (within four (4) hours), as well as travel to Site (within one (1) day), including travel to Site, including but not limited to: conducting site geotechnical inspections, participating in specific ERP development, providing mitigation recommendations and providing general geotechnical-specific guidance.
- ..5 Update Canada and the MCM daily while on site, when a site visit is requested

- ..6 As soon as practicable following resolution, provide a technical memorandum detailing the events, any recommendations made and implemented, and other information pertinent to the emergency response.

RS 6 Geotechnical Hazard Monitoring And Interpretation

- ..1 Perform geotechnical hazards monitoring, including inspection of waste rock dumps, earthen structures, diversions and open pits, and all other geotechnical site features. This may include any of the following, without limitation:

Faro Site	Vangorda / Grum Site
Faro Creek Diversion Channel	Grum Overburden Dump
North Wall Interceptor Ditch	Vangorda Waste Rock Dump
Rose Creek Diversion Channel and dike	Grum Interceptor Ditch
North Fork Rock Drain and K8 Rock Drain	Vangorda Northeast Interceptor Ditch
Secondary Tailings Dam	Fresh Water Pond
Intermediate Dam and spillway	Little Creek Dam and spillway
Cross Valley Dam and spillway	Sheep Pad Sediment Ponds
Faro Waste Rock Dumps	Vangorda Creek Diversion Flume
Faro Open Pit	Vangorda Drop Structure
	Grum Sulphide Cell cover
	Grum Settling Pond
	Grum Ore Transfer Pad
	V-15 Seepage Ditch and Moose Pond
	Sludge Pond Embankment at Vangorda Water Treatment
	Vangorda Open Pit
	Grum Open Pit

- ..2 Conduct review of historical and background data or documents as required including but not limited to previous inspection reports, instrumentation installation reports, monitoring data and reports, locations of historical movement, and as-built documentation.
- ..3 Conduct site visits (typically one in each of the spring and fall) to inspect site facilities (anticipated to include those listed in the table above, and as may be added to or otherwise updated from time to time and included in the Call-up).
- ..4 All facilities identified in the Call-up will be inspected for general geotechnical stability, which may include but is not limited to the following: instability, tension cracks at the crest or on slopes of engineered structures, erosion (rills, sloughing), seepage (downstream of dams and diversion dikes, on open pit walls), piping, vegetation (removal), functionality of water management structures, seismic events/earthquakes, flood event/high precipitation, construction activities or excavation at the toe of the waste rock, etc. Additional inspection parameters may be added at time of Call-up.
- ..5 Meet with the DR, MCM and Care and Maintenance staff immediately following on-site inspections to discuss observations, answer questions pertaining to geotechnical hazards and monitoring, and indicate any immediate concerns to the DR upon inspection.
- ..6 Prepare and provide a summary presentation describing any observed changes in site conditions within one (1) week of the site visit. Provide the final presentation one (1) week after receiving comments from the DR.

- ..7 Prepare and provide a Geotechnical Hazards review report (draft and final) within 60 days of inspection.
- ..8 For each finding, describe, document with photos, and locate on the plan map. Provide recommendations for monitoring or work to be performed where deficiencies are noted, assign a level of priority for each recommendation, and indicate timeframes to rectify deficiencies.
- ..9 Prepare an annual report that will include but is not limited to:
 - ..9.1 Notable annual events
 - ..9.2 Annual observations of each facility
 - ..9.3 Current instrumentation condition of each facility
 - ..9.4 Geotechnical monitoring data analysis of each facility
 - ..9.5 Recommendations and mitigation measures for each facility
 - ..9.6 Prioritized list of all recommendations

RS 7 Geotechnical Data And Instrumentation Monitoring, Installation And Maintenance

- ..1 Complete a monthly review and analysis of the freshet monitoring data / reports, geotechnical and hydrotechnical monitoring data collected at site by the Care & Maintenance Contractor and /or the Environmental Monitoring Consultant. Review to be completed within one (1) week of receiving access to the data in EQULS. Report on readings that raise any safety concerns immediately to the Environmental Monitoring Consultant and DR, and provide further direction on next steps (e.g., a second instrument reading).
- ..2 Review the monitoring data collected, and assess the functionality of the instrumentation.
- ..3 Prepare and submit a monthly summary memorandum on data analysis of the freshet, geotechnical and hydrotechnical monitoring data.
- ..4 Perform an annual geotechnical instrumentation audit at site. The Environmental Monitoring Consultant is to maintain and calibrate instrumentation. The Geotechnical Consultant shall perform an annual audit of functionality and readings.
- ..5 Audit the site MCM and the Environmental Monitoring Consultants' data collection to verify that it is being collected in accordance with the Operations, Maintenance and Surveillance Manual, Ground Control Management Plan, and Geotechnical Emergency Response Plan and is acceptable for use.
- ..6 Conduct instrumentation condition survey including visual inspection and check of the operability status of all geotechnical instruments used in the monitoring program.
- ..7 Take a reading of all geotechnical instrumentation, and review data collected with routine monitoring data Environmental Monitoring Consultant provides.
- ..8 Provide comments on the condition and operability status of each instrument. Assign priorities and associated timelines to any recommended action items.
- ..9 Shadow Environmental Monitoring Consultant personnel performing readings and provide coaching to ensure they properly calibrate and collect geotechnical data as required/requested by the DR.
- ..10 Complete review (monthly) of the geotechnical inspection reports completed at site by the MCM. Review to be completed within one (1) week of receiving access to the data. Report on readings that raise any safety concerns immediately to the MCM and the DR, and provide further direction on next steps (e.g., additional photos, further inspections etc.).

- ..11 Conduct an annual site visit (in summer months) to audit MCM inspection process and provide support and training as necessary. Note instrumentation requiring relabeling and provide a list to both the Environmental Monitoring Consultant personnel to action and the DR.
- ..12 Plan for and conduct geotechnical drilling programs for additional instrumentation which includes procurement and management of any drilling sub-contractors and provision of on-site support to the program, as well as supply and installation of appropriate instrumentation (e.g. slope inclinometers, vibrating wire piezometers etc.). Instrumentation is to be compatible with EQuIS and with existing equipment as required by Canada.

RS 8 Pit Wall Stability Monitoring

- ..1 Conduct remote sensing monitoring of known instabilities within the three (3) open pits (Faro, Vangorda and Grum). The current monitoring program is a photogrammetry program, and it is preferred to continue with this monitoring method for continuity, unless otherwise recommended by the Geotechnical Consultant and approved by Canada. This may include any of the following, without limitation:
- ..2 Collect data monthly from May to September.
 - ..2.1 Process, analyze, and review the pit slope stability monitoring data monthly. identify any safety concerns immediately to the MCM, Environmental Monitoring Consultant and DR
 - ..2.2 Prepare and provide a pit wall stability monitoring data summary technical memorandum (Draft and Final) following the September monitoring collection. Draft to be provided three (3) weeks following September data collection, and final to be provided two (2) weeks after receiving comments from the DR.
 - ..2.3 If data shows worsening trends throughout on-going data collection and analysis, prepare and provide additional interim monitoring data summary technical memorandum(s) following monthly monitoring collection.
 - ..2.4 If required, ensure that all monitoring points (e.g., Access to photogrammetry camera tripods) are maintained to allow for collection of the data, in accordance with the site-wide EMP and Ground Disturbance Plan.
- ..3 Survey open pit survey pins. The resulting data shall be inputted into EQuIS.

RS 9 Geotechnical Consultant Advisory And Technical Support

- ..1 Participate in Technical Risk Workshop(s) to provide geotechnical expertise: The workshop may take place at least annually in Whitehorse, YT for a period of approximately three (3) days. Include preparation time for pre-workshop meetings. Details to be provided in each call-up.
- ..2 Participate in Water Management Committee Meeting(s) to provide geotechnical expertise. This workshop(s) may take place in Vancouver, BC, Ottawa ON, or in Whitehorse, YT for a period of approximately three (3) days. Location and duration would be confirmed in a call-up.
- ..3 Attend Technical Review Committee (TRC) meetings. Frequency, duration, and location to be confirmed in a call-up.
- ..4 Attend and participate in meetings of regulatory authorities, community meetings and other fora to discuss geotechnical issues related to the site or design and support resolution of these issues, including through incorporation of Traditional Knowledge into plans and approaches and to ensure compliance with required regulations, codes, permits, licences and authorizations.

- ..5 Provide technical review, advice and/or presentation on geotechnical matters and designs to support tendering processes.
- ..6 Present results of site visits, annual report and other tasks as required to TRC
- ..7 Provide other related ad hoc advisory and technical support services to respond to program and project requirements including but not limited to data analysis and interpretation, stability analyses, and geotechnical modelling, review of the MCM project plans etc.

RS 10 Geotechnical Monitoring

- ..1 Support oversight of construction activities, audit, and/or to supplement capacity within the project (if required), plan and carry out geotechnical monitoring and sampling programs for any or all geotechnical structures (dams, diversions, pit walls, waste rock facilities, roads, etc.) in accordance with the OMS Manual, the GCMP, and the Geotechnical ERP. (see Appendices 2-4). This may include but is not limited to:
 - ..1.1 Ensuring all field monitoring data, in electronic format, is entered in the EQUIS monitoring database at the frequency that it was collected.
 - ..1.2 Notifying DR of any observations or instrumentations requiring an immediate response, as detailed in the ERP. This includes instrumentation thresholds.
 - ..1.3 Marking and maintaining all geotechnical monitoring locations. This may include brush clearing to instrument locations in accordance with the ERP, and ensuring proper identification markers are on instruments.
 - ..1.4 Maintaining all geotechnical instrumentation and instrumentation read-out equipment including required calibration. Maintenance and calibration are to be performed by persons who are adequately trained to do so.
 - ..1.5 Preparation and submission of geotechnical reporting, which may include monthly field monitoring (including description of work completed, date of inspections and measurements taken, photographs, instrumentation readings and measurement data, identification of any equipment that is not accessible or not functioning), quarterly and/or annual reports, together with recommendations for improvements to subsequent monitoring programs.

RS 11 Site Investigation And Geotechnical Design

- ..1 Support the investigation and advancement of the project through required interim measures, urgent works, etc. While it will not be the Geotechnical Consultant's responsibility to design the overall remediation plan as this is the responsibility of the RPD/SS consultant, the Geotechnical Consultant may be called upon to provide design services for e.g. mitigations or to respond to other needs at site. The Geotechnical Consultant will provide, as-and-when-required, Geotechnical review, Site investigation and associated design services, which may include coordination with specialists or multi-disciplinary teams, including specialists retained by the Geotechnical Consultant and/or coordination with the RPD/SS and/or PWTP Consultants and/or the MCM, in consultation with Canada. Services may include but are not limited to:
 - ..1.2 Conduct feasibility study and analysis to determine the viability and practicality of projects through site investigation, review of existing and new technologies, analysis of economic, financial, market, regulatory, environmental impact / sustainability, and technical issues in consideration of site conditions (e.g. soil conditions, existing infrastructure, applicable codes, regulations, standards and permits, service capacities, support systems, required functionality, operations and maintainability, etc.).

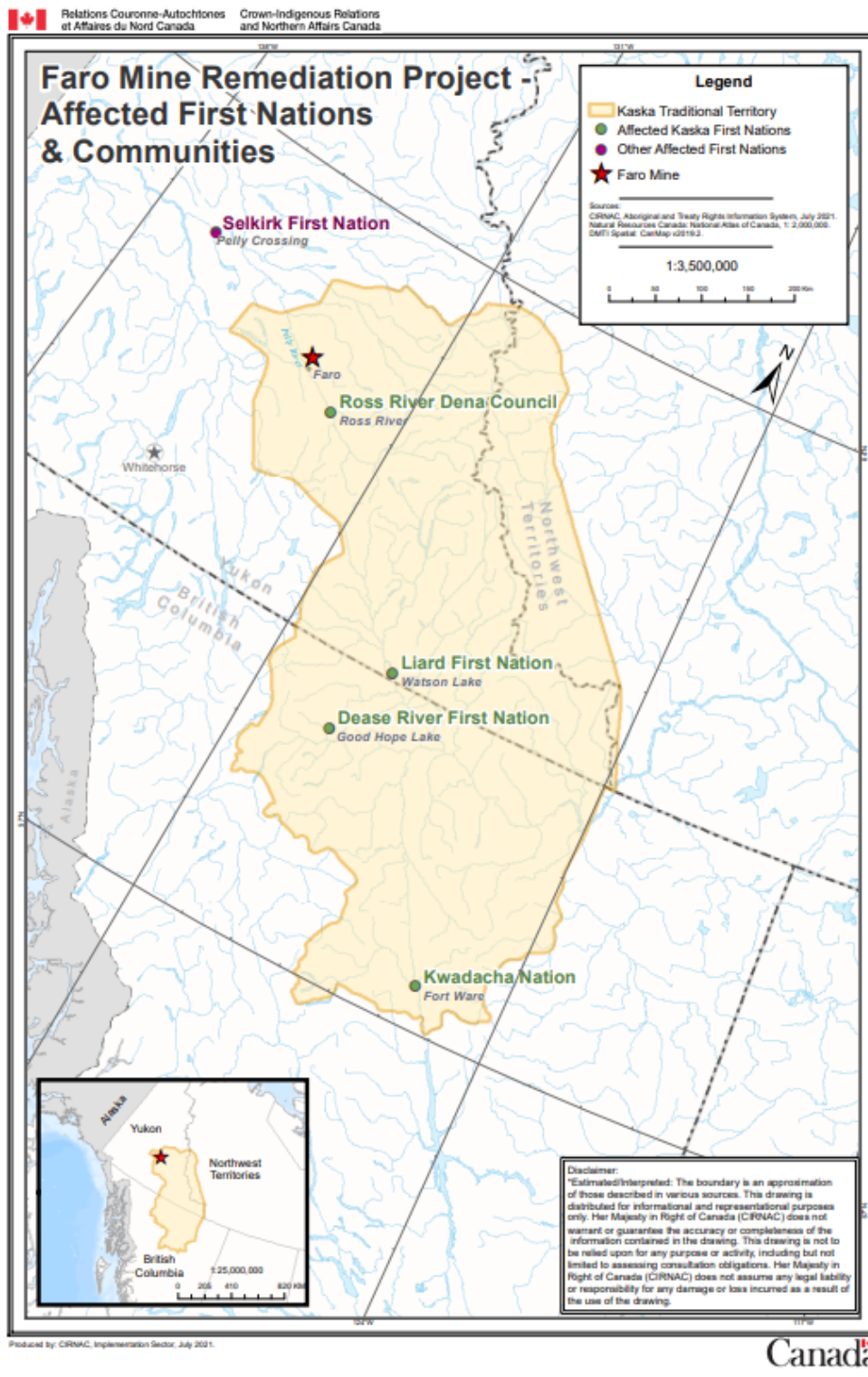
- ..1.3 Test the feasibility study recommendations through preparation of schematic options and associated analysis, including pro's/con's, financial analysis including life cycle and best value for operations and maintenance, schedule and cost impact and associated plans, dependencies and integration required with other project works, and make recommendations on the preferred option.
- ..1.4 Examine the project/site in detail to define design objectives, site requirements and constraints, equipment and systems and requirements to deliver upon an identified project. These requirements will inform the Geotechnical Consultant's development of criteria to evaluate potential design solutions and strategic alternatives in consideration of potential impacts to the environment, communities, infrastructure, long-term maintenance and operational needs. This may include:
 - ..1.4.1 Preparation of sketches and technical requirements for the proposed works;
 - ..1.4.2 Definition of site requirements, including space, functional requirements and relationships, technical requirements;
 - ..1.4.3 Preparation of preliminary budgets;
 - ..1.4.4 Identification and analysis of regulatory compliance requirements and issues, other requirements of Authorities Having Jurisdiction, community goals and concerns, and ecological and environmental concerns;
 - ..1.4.5 Recommendation of construction delivery method (e.g., design-bid-build, design-build, construction management, PPP, etc.).
- ..1.5 Perform site and/or infrastructure inspection and evaluation to determine the most appropriate management strategy for aspects of the site/infrastructure to satisfy current and future requirements. This may include review of any one or more of: operational, functional, financial, technical and environmental performance. This may include:
 - ..1.5.1 Preparation of detailed inventory of equipment and infrastructure, including drawings of location and layout;
 - ..1.5.2 Evaluation of condition against functional requirements, including consideration of appropriate options for intervention (e.g., reuse/refurbishment, procurement, new construction, use of current or new technologies) and cost analysis and assessment of impact to schedule and budget for options evaluated.
- ..1.6 Plan and conduct geotechnical and engineering investigations required to prepare and carry out the necessary activities to establish the required infrastructure or conditions for the site/project, providing a report on the required information and results of the investigation.
- ..1.7 Prepare preliminary concept designs, including associated cost estimates, draft schedules and alternative procurement and construction strategies and plans, to support exploration of design options and provide associated analysis to assist Canada in determining the appropriate option to proceed to further design development. This may include:
 - ..1.7.1 Preparation of schematic design drawings;
 - ..1.7.2 Preparation of site plans showing proposed works, existing and proposed infrastructure;
 - ..1.7.3 Options description and recommendations;

- ..1.7.4 Preparation of waste management plans;
 - ..1.7.5 Support to or development of components of regulatory submissions;
 - ..1.7.6 Preparation of draft specifications.
- ..1.8 Further develop selected concept designs through development of drawings and other documents to describe the size and character of the project. This may include work ranging from post-concept design through to Issued For Construction (IFC) documentation, which may include but is not limited to:
- ..1.8.1 Analysis of impact to other project components / site infrastructure/works;
 - ..1.8.2 Preparation of work plans / site preparation plans;
 - ..1.8.3 Preparation of engineering details, elevations, site models, outline specifications, refined cost and schedule estimates and plans, and other associated documents, including assumptions;
 - ..1.8.4 Presentation of design materials to Canada, design review or other committees and meeting fora;
 - ..1.8.5 Coordination of design with other required design disciplines;
 - ..1.8.6 Participation in constructability and/or HAZOP analysis of the design;
 - ..1.8.7 Advice on construction materials, sequencing and duration;
 - ..1.8.8 Review to ensure compliance with all applicable statutes, regulations, codes, standards, permits, licenses, and authorizations;
 - ..1.8.9 Definition of commissioning requirements and/or operating procedures;
 - ..1.8.10 Development of full specifications and/or payment structures.
- ..1.9 Provide advice and recommendations as required during the tendering period.
- ..1.10 Provide geotechnical support and design Quality Assurance during construction, commissioning and/or warranty testing and inspections.

RS 12 Indigenous Opportunities Consideration (IOC)

- ..1 The Government of Canada is committed to reconciliation and meaningful engagement with Indigenous Peoples. The Faro Mine Complex is located in south-central Yukon, near the town of Faro, in the traditional territory of the Kaska Nation, and upstream from Selkirk First Nation. Ross River Dena Council is the closest First Nation community to the site. At present time, the Kaska Nation is comprised of four Indian Act bands. This includes Ross River Dena Council and Liard First Nation in the Yukon Territory, and Dease River First Nation and Kwadacha First Nation in British Columbia (herein jointly referred to as “Indigenous Peoples”). As part of Canada’s commitment to reconciliation with Indigenous Peoples, some callups issued will require the Geotechnical Consultant to include an Indigenous Opportunities Consideration (IOC) that would provide the local Indigenous Peoples on whose traditional territories the project is located, opportunities to participate in the performance of the federal Work through the provision of services, training, employment, apprenticeship or sub-contracting opportunities. When required, the Geotechnical Consultant must provide specific planned participation for the Indigenous Peoples and firms owned by Indigenous Peoples throughout the duration of the callup.
- ..2 When requested, the Geotechnical Consultant must include a plan for meaningful opportunities, connected with the Work, for local Indigenous Peoples to participate in those specific callups. Such opportunities may then include the provision of services, training, employment, apprenticeship and/or sub-contracting. The Geotechnical Consultant must ensure the opportunities provided are maximizing the capacity of the Indigenous Peoples to participate in the Work being procured. This will require the Geotechnical Consultant to engage with the local Indigenous Peoples to determine the Indigenous Peoples’ capacity to perform portions of the Work as a subcontractor, supplier, employee or apprentice.
- ..3 A completed IOC Form (to be provided by Canada) satisfying the content and estimated value of the IOC elements will be submitted with individual call-up proposals. The IOC Form will be provided at time of Services called-up. The IOC must include work opportunities though the provision of services, training, employment, apprenticeship or sub-contracting. Opportunities must contribute directly to the performance of the Work being procured.
- ..4 If the Geotechnical Consultant is owned by any one of the identified Indigenous Peoples or is part of a joint venture or a partnership with a firm owned by any one of the Indigenous Peoples, this will be calculated as being equivalent to sub-contracting and must be entered as such in the IOC form.
- ..5 The Geotechnical Consultant must use all reasonable commercial efforts in meeting the commitments included in the IOC submitted. In the event that the Geotechnical Consultant becomes aware that there are circumstances outside of their control that impact their ability to meet the IOC commitment values, the consultant is to notify Canada in a diligent and timely manner that the IOC commitment values may not be met, and suggest a mitigation strategy.
- ..6 For the purpose of this contract, we would like to offer an example for which Canada would require an IOC to be included in a particular call-up. When Canada decides to issue a call-up for photogrammetry work as part of the pit wall stability assessment, we would require an IOC from the Geotechnical Services consultant. We know that some Kaska Dena Citizens have already been trained to collect data from the photogrammetry systems (tripods) at site and that more could be trained as part of this IOC.

Figure 1. Kaska Dena Traditional Territory



APPENDIX 1 – QUALIFICATIONS FRAMEWORK

#	Description	Minimum Experience	Asset Qualifications
1	<p>Principal/Director</p> <p><i>Principal/Director of the firm will have overall corporate accountability and oversight of the delivery of the Geotechnical Consultant's services under this Standing Offer and all Call-ups. Acts as a corporate "executive sponsor" for the project between the Geotechnical Consultant and Canada, and provides a point of escalation and issues resolution.</i></p>	<p>Minimum of one (1) year experience in an executive role with the Geotechnical Consultant's organization.</p> <p>Currently engaged in an executive management function responsible for overall account management and issue resolution.</p>	N/A
2	<p>Subject Matter Expert</p> <p><i>Provides services requiring scientific, environmental or engineering specialist level expertise and/or experience under this Standing Offer.</i></p>	<p>Masters-level degree or higher in a related scientific, environmental or engineering field.</p> <p>Minimum of 20 years directly related experience in implementation in a Northern environment of: mine reclamation / remediation projects OR mining projects OR heavy civil construction projects.</p>	N/A
3	<p>Project Manager</p> <p><i>Main point of contact between Canada and the Geotechnical Consultant, responsible for Call-Up and contract management.</i></p>	<p>Minimum of 10 years' experience in project management of large, complex and similar engineering projects, including experience in managing projects in a Northern environment.</p>	<p>PMP or comparable Project Management designation (e.g. PRINCE2, etc.).</p> <p>Experience managing multidisciplinary project teams, and ensuring adequate resources are involved to meet strict deadlines.</p>
4	<p>Senior Dam Safety Engineer</p>	<p>P.Eng. required.</p> <p>Minimum 15 years of directly related experience providing services requiring specialist level expertise.</p> <p>Experience managing or providing expertise and guidance for projects in a Northern operational environment (e.g., mining site that is active, in transition, or under Care and Maintenance).</p> <p>Experience on projects performing an "Engineer of Record" function.</p>	<p>Experience providing dam safety expertise and guidance on tailings dams.</p> <p>Experience performing dam safety monitoring, reviews or inspections for a legacy or abandoned site.</p> <p>Is currently or was assigned as a an EOR for a tailings dam with Significant and/or High consequence of failure as defined by CDA.</p>

#	Description	Minimum Experience	Asset Qualifications
		<p>Experience on projects performing dam safety reviews and inspections in accordance with the Canadian Dam Association’s Dam Safety Guidelines.</p> <p>Experience conducting dam safety analysis and assessment (geotechnical and seismic) in accordance with CDA recommendations to support decision making related to dam safety.</p> <p>Experience with emergency preparedness and respond planning for tailings dams in accordance with the latest published guidance by Canadian Dam Association and Mining Association of Canada.</p> <p>Experience preparing, implementing, and monitoring the Operations, Maintenance, and Surveillance manual for mine waste storage facilities in transition phase or under care and maintenance.</p>	<p>Experience with providing remedial action recommendations for a tailings dam (with High consequence of failure) anticipated to experience large deformations due to strength reduction of soil deposits susceptible to liquefaction within the foundation after the design seismic event.</p> <p>Experience dealing with an “Emergency Situation” as defined in the OMS manual or ERP for a mine waste storage facility.</p>
5	Senior Rock Mechanics Engineer	<p>P.Eng. required.</p> <p>Minimum 15 years of directly related experience providing services requiring specialist level expertise.</p> <p>Experience managing or providing expertise and guidance for projects in a Northern operational environment (e.g., mining site that is active, in transition, or under Care and Maintenance).</p>	<p>Experience on projects providing pit wall stability monitoring for hard rock mine sites is considered an asset.</p> <p>Experience on projects providing expert emergency response for open pit, hard rock mine sites.</p> <p>Experience performing hazard monitoring, reviews.</p> <p>Experience performing inspections for a legacy or abandoned open pit hard rock site.</p>
6	Senior Hydrotechnical Engineer	<p>P.Eng. required.</p> <p>Minimum 15 years of directly related experience providing services requiring specialist level expertise.</p> <p>Experience conducting dam safety analysis and assessment</p>	<p>Experience managing or providing expertise and guidance for projects in a Northern operational environment (e.g., mining site that is active, in transition, or under Care and Maintenance).</p>

#	Description	Minimum Experience	Asset Qualifications
		<p>(hydrotechnical) in accordance with CDA recommendations to support decision making related to dam safety.</p> <p>Experience with emergency preparedness and respond planning for tailings dams in accordance with the latest published guidance by Canadian Dam Association and Mining Association of Canada.</p> <p>Experience preparing, implementing, and monitoring the Operations, Maintenance, and Surveillance manuals for mine waste storage facilities in transition phase or under care and maintenance.</p>	<p>Experience with complex water management planning during freshet for a tailings facility with High consequence of failure as defined by CDA.</p> <p>Experience dealing with an “Emergency Situation” as defined in the OMS manual or ERP for a mine waste storage facility.</p>
7	<p>Senior Hydrogeologist / Senior Hydrogeological Engineer</p>	<p>P.Geo. or P.Eng. required.</p> <p>Minimum 15 years of directly related experience providing services requiring specialist level expertise.</p>	<p>Experience managing or providing expertise and guidance for projects in a Northern operational environment (e.g., mining site that is active, in transition, or under Care and Maintenance).</p> <p>Experience with design, installation, and monitoring complex groundwater seepage interception systems</p> <p>Experience modelling and predicting groundwater flow regime for large scale mining facilities.</p>
8	<p>Other Senior Engineer / Scientist Personnel</p> <p><i>Provides services requiring scientific, environmental or engineering specialist level expertise and/or experience to deliver the Required Services under this Standing Offer for disciplines not listed in the four categories above.</i></p>	<p>P.Eng. or other professional scientific designation (P.Geo, P.Bio, etc.) applicable to the discipline.</p> <p>Minimum 15 years of directly related experience providing services requiring specialist level expertise.</p>	N/A
9	<p>Intermediate Engineer / Scientist Personnel</p> <p><i>Provides services requiring scientific, environmental or engineering</i></p>	<p>P.Eng. or other professional scientific designation (P.Geo, P.Bio, etc.) with minimum of 8 years of directly related experience providing most of the</p>	N/A

#	Description	Minimum Experience	Asset Qualifications
	<i>expertise and/or experience under this Standing Offer.</i>	professional services under this Standing Offer.	
10	Senior Technician <i>Provides services requiring specialist level expertise and/or experience under this Standing Offer, including drafting, analysis and related field services.</i>	Minimum of 10 years directly related experience OR ASTT (Applied Science Technologists and Technicians) certified or equivalent and minimum of 10 years directly related and recent* experience.	N/A
11	Junior Engineer / Scientist Personnel	BSc in Engineering or Geoscience and P.Eng, or EIT registration or P.Geo or GIT registration required. Minimum of 3 years directly related experience	N/A
12	Intermediate Technician <i>This category includes Intermediate Technician or Experienced Labour and Draftspersons and Data Analysts.</i>	Minimum of 5 years directly related experience OR ASTT (Applied Science Technologists and Technicians) certified or equivalent and minimum of 5 years directly related experience.	N/A
13	Junior Technician <i>This category includes Junior Technician or Experienced Labour and Draftspersons and Data Analysts.</i>	Currently enrolled in ASTT (Applied Science Technologists and Technicians) or equivalent. OR Students currently enrolled in, or graduated from, an engineering, science or technician/technologist course of study in a related field.	N/A
14	Administrative, Clerical Services and Project Management Support <i>Provides administrative, clerical services and related Project Management Support directly to the project under this Standing Offer.</i>	N/A	N/A