Public Works and Government Services Canada

Issued for Tender Specifications for the Environmental Site Remediation at

CAM-C, Matheson Point, Nunavut
Project No.: R.064062

Public Works and Government Services Canada

Project No.: 60516763

Folder: 436 / CAM-C / IFT Specs Rev 4

November 24, 2016

PART 1 - GENERAL

1.1 Precedence

.1 Division 1 Sections take precedence over technical specification sections in other Divisions of this specification.

1.2 Background Information

.1 CAM-C, Matheson Point is a former Intermediate Distant Early Warning (DEW) Line radar station constructed in the 1950s by the United States Air Force (USAF) and was subsequently abandoned in 1963. Responsibility for the site was assumed by the Department of Indian Affairs and Northern Development (DIAND) now Indigenous and Northern Affairs Canada (INAC) in 1965. The site is located on the southeast coast of King William Island, with access to Rae Strait in the Gulf of Boothia, at 68.819ºN, 95.289ºW.

.2 The nearest community to CAM-C is Gjoa Haven, located approximately 30 kilometres (km) to the southwest. There is overland access from Gjoa Haven to CAM-C via ATV trails.

.3 The CAM-C Intermediate DEW Line site included station area facilities, consisting of a module train, warehouse, garage, two (2) petroleum, oil and lubricants (POL) storage facilities and a radar tower. Access to the site is provided by a 900 metre (m) long airstrip, located northeast of the station facilities and northwest of the beach landing area (southeast of the station facilities). A Freshwater Lake is located approximately 1.3 km northwest of the airstrip. Gravel roads were built to connect the airstrip, Beach Area and Freshwater Lake to the Station Area facilities.

.4 Infrastructure remaining on site includes a felled communication tower and concrete anchor pads, a garage foundation, a warehouse foundation, POL tank foundations, a pumphouse foundation, a beacon foundation and miscellaneous POL pipes, POL cribbing and marker barrels, sewage outfall lines and culverts.

.5 The results of previous assessments have identified that the site roads are generally in good condition. The roads are split into three sections as shown on the Drawings.

.1 Station Area to the Freshwater Lake: This road section is approximately 5 to 6 m wide and 1.7 km long. There are two (2) 600 millimetre (mm) diameter culverts located along this section of the road. The road is built from granular fill and was generally in good condition for heavy equipment, however, near the Freshwater Lake, there were several erosion areas that will need to be regraded prior to use.

.2 Station Area and connection to the Airstrip: This road section is approximately 5 to 6 m wide and 467 m long. The road is built from granular fill and was generally in good condition for heavy equipment. One (1) 600 mm diameter culvert is located along this road.

.3 Airstrip to Beach POL: This road section is approximately 5 to 6 m wide and 2 km long. Portions of the road are elevated above the surrounding terrain and two (2) 600 mm diameter barrel culverts are located along this road. The road was partially washed out at the culvert located closest to the Airstrip; the remainder of the road was generally in good condition for heavy equipment. Construction of pull-out sections may be required to facilitate two-way traffic.

.6 The results of previous assessments have identified two major dump areas, the Station West Landfill and the Airstrip Landfill, which are located to the southwest and southeast of the station facilities, respectively.

.7 Barges have historically landed at the Beach Area. A nautical chart for the Queen Maud Gulf Eastern Portion, published by the Canadian Hydrographic Service has been included for information in Appendix D. The nautical chart indicates the presence of an anchorage area approximately 1 km off shore from the Beach Area and ocean depth information for access corridors to Matheson Point.

.8 Supporting documents pertaining to the site include, but are not limited to, the following:

.1 Andzans and Associates. 1984. DEW Line Data File. Department of Indian and Northern Affairs (referenced in WESA report).

.2 Environmental Sciences Group (ESG). 1995. Environmental Study of Abandoned DEW Line Sites III: Six Intermediate Sites in the Canadian Arctic. Volumes I, II and III.

.3 Public Works and Government Services Canada (PWGSC). 2003. Environmental Review of DIAND Contaminated Sites in the Territory of Nunavut.

.4 WESA. 2012. Limited Environmental Investigation EK002, Matheson Point, CAM-C. February 2012.

.5 AECOM. 2013. Phase III Environmental Site Assessment, CAM-C, Matheson Point, NU Intermediate DEW Line Site.

.6 AECOM. 2013. CAM-C, Matheson Point, Remedial Action Plan Report.

1.3 Definitions

.1 Departmental Representative: Within the context of these Specifications, the term Departmental Representative refers to persons exercising the roles and attributes of Canada under the contract including but not limited to Public Works and Government Services (PWGSC) personnel and the Resident Engineer.

.2 Departmental Representative's Authorized Personnel: Within the context of these Specifications, the term Departmental Representative's Authorized Personnel refers to personnel appointed by Departmental Representative or authorized on-site by Departmental Representative. Departmental Representative's Authorized Personnel provide recommendations/technical guidance to Departmental Representative, as required, for the enforcement of these specifications.

.3 Contractor: The Contractor procured to undertake the site management and operation services, decontamination/demolition, remediation and restoration work is defined, within the context of these specifications, as the Contractor.

.4 Contractor's Site Superintendent: Contractor's resident site representative, who is authorized to make decisions on behalf of Contractor.

.5 Contractor's Charter Base: The community with a commercial airport where the Contractor will provide a charter plane, or equivalent mode, to transport the departmental Representative and staff to the CAM-C site.

.6 Authorities Having Jurisdiction (AHJ): Governmental agency or sub-agency that regulates the codes and standards that are to be met during the remediation processes.

.7 Work: The remediation activities undertaken to complete the requirements of these specifications.

.8 CAM-C Project Area: The location of the CAM-C site as shown on Drawings C01 and C02.

1.4 Site Hazards

.1 Site hazards that the Contractor must be aware of include, but are not limited to, the following:

.1 Physical hazards of dilapidated structures and uneven terrain.

.2 Fuels and lubrication fluids.

.3 Wildlife.

.4 Extreme cold and remote site conditions.

.5 Petroleum hydrocarbon (PHC) contaminated soil.

.6 Metal contaminated soil.

.7 Polychlorinated biphenyl (PCB) contaminated soil.

.8 Hazardous waste (PCBs, batteries, asbestos).

.9 Unexploded Ordinance (UXO).

.10 Physical hazards of water bodies.

.11 Traffic along site roads.

.2 The Contractor is responsible for managing site hazards as specified in Section 01 35 32 – Site Specific Health and Safety of Contaminated Sites.

1.5 Description of Work

.1 Work of this Contract comprises the site remediation activities at the CAM-C Site including, but not limited to, the following:

.1 Preparation of planning documents and submittals including, but not limited to, Site Specific Health and Safety Plan (SSHASP). The SSHASP includes but is not limited to On-Site Contingency and Emergency Response Plan, Spill Contingency Plan and Fire Safety Plan.

.2 Mobilization and demobilization of all personnel, equipment, support facilities and materials required to complete the Work.

.3 Upgrading and maintenance of site roads and airstrip to facilitate construction activities.

.4 Demolition, waste stream segregation, containerization and on-site transport of infrastructure, as indicated on the Drawings.

.5 Collection, waste stream segregation, containerization, and on-site transport of surface debris.

.6 Excavation, containerization and and off-site transport and disposal of Tier I, Type A PHC, Tier II Contaminated Soils and Hazardous Contaminated Soils.

.7 Excavation and treatment of Type B PHC Contaminated Soils.

.8 Development, operation and closure of PHC soil treatment facilities.

.9 On-site incineration of non-hazardous, unpainted, untreated combustible wood waste, including collection, testing and disposal of ash.

.10 Collection, cleaning and disposal of barrels and contents.

.11 On-site incineration of POL storage tank and barrel contents that meet incineration criteria.

.12 Packaging, transportation and off-site disposal of barrel contents not meeting incineration criteria.

.13 Excavation of landfill and buried debris areas, segregation of debris into waste streams (hazardous and non-hazardous) and on-site transport of waste.

.14 Off-site transport and disposal of non-hazardous waste, treated or painted wood and contaminated soil at the Contractor's Designated Non-Hazardous Waste Disposal Facility.

.15 Off-site transport and disposal of Hazardous Waste at the Contractor's Designated Hazardous Waste Disposal Facility.

.16 Documentation and record keeping of non-hazardous waste and hazardous waste manifests, bills of lading, copies of Transportation of Dangerous Goods (TDG) documentation, final disposal location acceptance, disposal or proof of destruction.

.17 Development and reclamation of local granular borrow sources.

.18 General site grading and reshaping of work areas.

.19 Regrading or excavation of buried debris areas, as indicated on the Drawings.

.20 Backfilling and grading of all excavated areas.

.21 Provision of the following site support services:

.1 Construction Camp as specified in Section 01 54 00 - Camp Facilities, including operation, maintenance, catering and janitorial service.

.2 Provision and maintenance of Departmental Representative's Vehicles.

.3 Safety, fire protection, office and medical services, as specified in Section 01 35 32 - Site Specific Health and Safety for Contaminated Sites.

.4 Transportation services for Departmental Representative and Departmental Representative's support staff from the Contractor's Charter Base to CAM-C, as specified in Section 01 54 00 - Camp Facilities.

.5 Communication services for the Contractor, Departmental Representative, and Departmental Representative's support staff.

.6 Provision of Wildlife Monitors, as specified in Section 01 35 32 - Site Specific Health and Safety for Contaminated Sites.

.7 Specific testing requirements of the Contractor as specified within Section 01 29 83 – Payment Procedures for Laboratory Services.

1.6 Description of Potential Additional Work Items

.1 Potential Additional Work (PAW) indicates potential Work, or Work where durations or quantities are unknown. PAW items may include, but are not limited to, the following:

.1 Testpitting under direction of the Departmental Representative.

.2 Supply of additional materials, as requested by the Departmental Representative.

.3 Additional Site earthworks not otherwise indicated.

.4 Collection, decommissioning and disposal of unknown blasting caps or unfired explosives.

.5 Excavation, containerization and removal from site of unknown hydrocarbon, metal, PCB and hazardous contaminated soils.

.6 Unknown buried debris excavation, stockpiling, sorting and disposal.

.7 Processing, containerization, transport and disposal of unknown hazardous material.

.8 Supply of Emergency Flights.

.9 Additional general site reshaping for drainage not otherwise indicated.

.10 Additional meetings, as requested by the Departmental Representative.

1.7 Submittals

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit all requests for payment to Departmental Representative for review.

.3 Submit requests for interpretation of Contract Documents and obtain instructions through Departmental Representative.

.4 Submit one (1) electronic copy of the Worker Orientation Seminar course material to Departmental Representative for review at least thirty (30) days prior to the seminar.

1.8 On-Site Documents

.1 Maintain at each Project Area, one copy each of the following:

.1 Contract Drawings.

.2 Specifications.

.3 Request for clarification and responses.

.4 Addenda.

.5 Change orders.

.6 Reviewed shop drawings.

.7 Other modifications to Contract.

.8 Field test reports.

.9 Copy of accepted Work schedule.

.10 Copies of any test results.

.11 Manufacturers' installation and application instructions.

.12 Safety Data Sheets Specifications.

.13 Site Specific Health and Safety Plan (SSHSP) including:

.1 Spill Contingency Plan.

.2 Fire Safety Plan.

.3 Emergency Response Plan.

.14 Waste Management Plan

.15 Copies of permits/approvals and/or authorizations including:

.1 Water Licence.

.2 Land Use Permit.

.3 Quarry Permit.

.16 Inuit Owned Lands (IOL) Exemption Certificate.

.17 Labour conditions and wage schedules.

.18 Site Medic credentials.

.19 Up-to-date record drawings.

.20 License for Radio Communication.

.21 All applicable Territorial permits and licenses.

.22 All applicable Federal permits and licenses.

.23 Copies of manifests and bills of lading.

.24 Workers' Safety and Compensation Commission (WSCC) Notification of Project.

.25 Letter of Good Standing with WSCC.

1.9 Work Schedule

.1 Provide and maintain Work Schedule in accordance with instructions of Section 01 32 18 Construction Progress Schedules - Bar (GANTT) Chart.

.2 Keep the Departmental Representative advised of planned Work activities in accordance with the instructions of Section 01 33 00 - Submittal Procedures.

1.10 Contractor's Use of Site

.1 Contractor's use of site is restricted to the terms and conditions of the issued permits, and all applicable guidelines and regulations.

.2 Coordinate use of premises under the direction of the Departmental Representative.

.3 Do not disturb archaeological features as indicated in the contract drawings or as identified during site work.

.4 Use of site shall comply with the environmental requirements of Section 01 35 43 - Environmental Procedures.

.5 Maintain the airstrip and all access roads used by the Contractor during the cleanup/construction activities.

1.11 Examination of Site

.1 Commencement of mobilization constitutes acceptance of existing conditions, and verification of dimensions.

1.12 Permits and Licenses

.1 INAC will obtain a Land Use Permit, Water License, and Quarry Permits. All restrictions and requirements of these apply to Contractor. Permits will be made available for the Contractor once they have been received.

.2 Be responsible for obtaining and paying for all permits, licenses and approvals associated with the development and operation of a construction camp.

.3 Register, obtain and pay for all required licenses and permits for individual tradesmen employed for Work as referenced in the various Sections of the Contract Specifications.

.4 Obtain and pay for any other licenses or permits required to complete the activities required on site, i.e. burn permit, etc.

.5 Provide supplemental information to the regulators for any necessary license amendments or reporting requirements.

.6 Pay all costs associated with complying with the requirements for the permits and licenses noted in the above clauses.

1.13 Site Supervision

.1 Designate Contractor's Site Superintendent to be on-site at all times during construction, to have full authority to make decisions on behalf of the Contractor, to be knowledgeable of the requirements of the contract, and to act upon Departmental Representative's instructions.

.2 Notify Departmental Representative two (2) weeks in advance of changing the Site Superintendent and provide an updated chain-of-command. The Site Superintendent is subject to approval by the Departmental Representative.

1.14 Additional Drawings

.1 Departmental Representative may furnish additional drawings to assist with proper execution of the work. These drawings will be issued for clarification only. Such drawings are to have the same meaning and intent as if they were included with plans referred to in Contract documents.

1.15 Worker Orientation Seminar

.1 Develop, prior to the start of Work, course material for a Worker Orientation Seminar. The outline of this seminar is to be reviewed and accepted by Departmental Representative and is intended to describe the remediation activities at the site, and provide instruction for the applicable health, safety, and environmental policies and regulations as related to the site Work activities. Course material will be prepared and presented in English and the local language and dialect.

.2 The Worker Orientation Seminar is to address, but is not necessarily limited to, the following topics:

.1 Project Communication:

.1 Roles of Departmental Representative and Departmental Representative's authorized representatives.

.2 Roles of Contractor and Contractor's authorized representatives.

.3 Lines of Project communication.

.2 Remediation Activities (Scope of Work):

.1 Mobilization and demobilization.

.2 Upgrading and maintenance of site roads and airstrip.

.3 Development and reclamation of local granular borrow sources.

.4 Demolition and packaging of non-hazardous demolition waste materials.

.5 Excavation, containerization and transportation of contaminated soils.

.6 Excavation and treatment of Type B PHC contaminated soils.

.7 Asbestos abatement.

.8 Collection, packaging and disposal of non-hazardous site debris.

.9 Collection, containerization and transportation of hazardous waste material.

.10 Regrading or excavation of existing dumps, as required.

.11 General site grading and reshaping of work areas.

.12 Backfilling and grading of all excavated areas.

.3 Regional Overview of the sites:

.1 Land use of area (hunting, fishing activities, etc.).

.2 Location of site relative to communities.

.3 Heritage resources including location of gravesites.

.4 Climate.

.5 Geology and hydrology.

.6 Flora and fauna.

.4 Project Organization/Schedule/Administration:

.1 Personnel policies.

.2 Supervisory reporting relationships.

.3 Communication.

.4 Payroll and banking procedures.

.5 Work Schedules and hours.

.6 Camp rules.

.7 Social Media Policy.

.5 Environmental Issues and Protection Procedures:

.1 Climate and weather.

.2 Land use.

.3 Water resources/fisheries.

.4 Terrestrial resources.

.5 Heritage resources.

.6 Spill contingency plans/procedures.

.7 Training activities.

.6 General Site Specific Health and Safety:

.1 Responsibility for safety.

.2 Team Work.

.3 Work attitudes/productivity.

.4 Anti-Harassment Policy.

.5 First aid procedures.

.6 Protective equipment and clothing.

.7 Safe operation of equipment and tools.

.8 Workplace Hazardous Materials Information System 2015 (WHMIS) requirements.

.9 Wildlife awareness and safety.

.10 Marine Safety.

.11 Weather Safety.

.12 Unexploded Ordnance Awareness.

.13 Smoking Regulations.

.14 Drug and Alcohol Policy.

.15 Aircraft Safety.

.7 Work Specific Task Requirements:

.1 Asbestos abatement.

.2 Contaminated soil cleanup.

.3 Demolition and material disposal.

.4 Transportation of Dangerous Goods (TDG).

.5 Permafrost protection.

.6 Environmental mitigation procedures.

.7 Emergency spill response training.

.8 Barrel collection and disposal/containerization.

.3 Prior to the start of Work, conduct Worker Orientation Seminars for all supervisors, foremen, Contractor's general workforce, Departmental Representative and Departmental Representative's Authorized Personnel staff based on the course material accepted by Departmental Representative. Require each attendee to sign a record of attendance upon completion of the seminar. Retain, for Departmental Representative's review at any time, this record of attendance.

.4 All workers must attend the Worker Orientation Seminar prior to commencing Work on the Site.

1.16 Measurement for Payment

.1 Work under this Contract will be paid for as follows:

.1 Lump Sum pay items will be paid under the price tendered for the Lump Sum Amount (LSA-1) in the Basis of Payment Schedule and in accordance with the value of the Lump Sum price indicated in the accepted Lump Sum Amount Breakdown Schedule.. Lump Sum pay items will include both direct and indirect costs.

.2 Unit Price items will be paid at the Unit Price tendered for each unit price item listed in the Basis of Payment Schedule.

.3 Indirect project costs will be paid under the price tendered for LSA-1 in the Basis of Payment Schedule and in accordance with the value of the Lump Sum price indicated for Item BOPC-1 in the accepted Lump Sum Amount Breakdown Schedule.

.4 Provisional Cost Sum items will be paid according to the actual costs expended, as certified by the Departmental Representative, plus Contractor overhead and profit. Retain and submit receipts for all Provisional Cost Sum Items.

.5 Level of effort for authorized Potential Additional Work (PAW) will be negotiated with the Departmental Representative and paid according to the firm all-inclusive Unit Prices in the Potential Additional Work (PAW) Schedule. Daily records will be submitted for all personnel and equipment time expended. Daily records must be signed by the site Supervisor or Foreman on-site and by the Departmental Representative. Payment will not be made until signed records are received.

.2 Unit Price items, Lump Sum items and Provisional Cost Sum items will be paid under the Basis of Pricing of the proposed contract. All other items, whether specifically defined in the specific sections of the Specifications or not, are to be included in Item BOPC-1, Balance of Project Costs, under the price tendered for LSA-1, in the Basis of Payment Schedule.

.3 Direct costs include all costs directly attributable to a particular pay item including equipment, operators, materials, etc. All direct costs for Lump Sum and Unit Price items are to be included in the appropriate price item in the Basis of Payment Schedule.

.4 Indirect costs include all costs not directly attributable to the pay items including profit, supervision, overhead, administration, Commercial General Liability (CGL) Insurance, Workers' Safety and Compensation Commission (WSCC), Contractor's allowance for equipment repairs and depreciation, and any other relevant costs. All indirect costs, excluding Lump Sum items, Provisional Cost Sum items and Potential Additional Work items, will be included in Item BOPC-1, Balance of Project Costs, in the Lump Sum Amount Breakdown Schedule.

.5 Include costs for work, goods or services required in this section that are not covered by appropriate payment clauses in other sections in Item LSA-1 in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for Item BOPC-1 Balance of Project Costs, in the Lump Sum Amount Breakdown Schedule.

.6 All costs, both direct and indirect, for Potential Additional Work Labour, are to be included in the Unit Prices tendered for Potential Additional Work Labour in the Potential Additional Work (PAW) Schedule.

.7 Contractor's Potential Additional Work Equipment Costs will be paid in accordance with the current Alberta Roadbuilders and Heavy Construction Association Equipment Rental Rates Guide and Membership Roster handbook. All indirect costs are to be included in the Contractor's Equipment Mark-up indicated in the Potential Additional Work (PAW) Schedule.

.8 Potential Additional Work Materials costs will be paid in accordance to the actual costs expended, as certified by the Departmental Representative. All indirect costs are to be included in the Contractor's Materials Markup indicated in the Potential Additional Work (PAW) Schedule.

.9 Notify Departmental Representative of planned Work activities in accordance with requirements of Section 01 33 00 - Submittal Procedures, and at least four (4) days in advance of commencing operations.

.10 Include all costs for the preparation of the Worker Orientation Seminar Material and for completing the orientation seminars, including the provision of meeting room facilities as required are to be included in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item 01 11 00-1, Worker Orientation Seminar in the accepted Lump Sum Amount Breakdown Schedule. Worker Orientation Seminar costs will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment for the Worker Orientation Seminar will be paid upon demonstration by the Contractor to the Departmental Representative that the Contractor's entire project workforce has attended the seminar prior to the start of Work.

.11 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 General

.1 Requirements for inspection and testing, to be carried out by a testing laboratory approved by the Departmental Representative, are specified under various sections.

.2 Provide and pay for all transportation and analysis required for all Contractor's samples to an accredited laboratory to meet the requirements specified.

.3 Provide and pay for all transportation required for all Departmental Representative's samples to the Departmental Representative's designated commercial analytical laboratory in Edmonton, AB.

1.2 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit to the Departmental Representative sixty (60) days prior to the initiation of on-site remediation activities, details of Contractors proposed methodology to complete sampling and testing requirements including, but not limited to:

.1 The Contractors proposed analytical laboratory.

.2 Details of proposed sampling personnel and protocols.

.3 Details of the proposed sample packaging and transportation methods.

.4 A copy of the proposed laboratory's current ISO 17025 certification valid for all analytical tests to be completed.

.3 Proposed methodologies are to meet or exceed requirement of specifications, certified laboratory requirements and industry best practice. Departmental Representative will review Contractor's submittal.

.4 The analytical testing laboratory designated by the Contractor to carry out off-site tests must be independent from the Contractor and acceptable to the Departmental Representative.

.5 Submit electronic copies of Contractor's laboratory testing results to Departmental Representative within one (1) day of receipt.

1.3 Testing Responsibilities and Payment

.1 Departmental Representative will appoint and pay for the services of an analytical testing laboratory required for the following:

.1 Confirmatory testing as described in this Section.

.2 Testing associated with the characterization of barrel contents as required in the 2009 INAC Abandoned Military Sites Remediation Protocol (AMSRP).

.3 Material compaction and gradation testing.

.4 Testing associated with the identification and characterization of hazardous waste materials.

.5 Testing required for quality assurance.

.2 Contractor will appoint and pay for testing and quality control of Contractor's own work including the following:

.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.

.2 Inspection and testing completed exclusively for Contractor's convenience.

.3 Testing of potable water as described in these Specifications and the Canadian Drinking Water Guideline (CDWG).

.4 Testing for the classification of hazardous contaminated soil for licensed disposal facility acceptance requirements.

.5 Testing of hazardous waste materials and soil in accordance with all appropriate regulations for packaging, transport and off-site transport.

.6 Testing of non-hazardous waste materials and soil for licensed disposal facility acceptance requirements.

.7 Testing of solvent rinsate used during cleaning of barrels and fuel storage tanks.

.8 Testing to determine the disposal requirements of oil-absorbent material used as a filter for liquid wastes resulting from equipment decontamination, fuel tank/pipeline cleaning and barrel processing operations.

.9 Testing of Wastewater as defined in Section 01 35 15 - Special Project Procedures for Contaminated Sites.

.10 Testing of sewage effluent as indicated in Section 01 54 00 - Camp Facilities or as directed by Departmental Representative.

.11 Testing of Hydrocarbon Contaminated Soil as described in section 02 55 13 – Contaminated Soil and 02 61 00 – Hydrocarbon Soil Remediation.

.12 Testing of wash water resulting from all cleaning activities, including barrel washing and equipment decontamination.

.13 Testing of explosive vapour concentrations associated with degassing of tanks.

.14 Tests specified to be carried out by Contractor under the supervision of Departmental Representative.

.15 All tests required by Contractor to monitor conformance and quality control of Contractor's work.

.16 Inspection and testing required by the conditions of permits issued for the Work.

.3 Where tests or inspections by the designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as requested by Departmental Representative to verify acceptability of corrected Work.

1.4 Contractor's Responsibilities

.1 Provide labour and facilities to:

.1 Provide assistance and access to Work to be inspected and tested by Departmental Representative.

.2 Enable Contractors testing requirements.

.3 Make good Work disturbed by inspection and testing.

.2 Notify Departmental Representative sufficiently in advance of operations to allow for assignment of personnel and scheduling of test.

.3 Costs for uncovering and making good Work that is covered before required inspection or testing is completed and reviewed by Departmental Representative shall be borne by the Contractor.

.4 Maintain interior temperature of coolers at approximately 4 degrees Celsius (°C) during transport, using ice or ice packs.

.5 Assume all responsibility for samples compromised during transport including all costs for re-sampling, shipping, analysis and any resulting delays.

1.5 Confirmatory Testing

.1 Confirmatory sampling will be carried out on contaminated soil and landfill excavation areas by the Departmental Representative as follows:

.1 The actual location, frequency and method of testing will be determined by Departmental Representative.

.2 Soil sampling will be carried out by Departmental Representative within the perimeter of each contaminated soil excavation and at depth within the completed excavation area, immediately upon completion of excavation.

.3 Soil sampling will be carried out by the Departmental Representative for landfill excavation stockpiles.

.2 If required, classification testing will be carried out at waste material processing areas to classify and delineate contaminated soil and other materials.

.3 It is anticipated that test results will be available within approximately fourteen (14) calendar days from the date that samples are transported from the site for laboratory analysis. Deliver Departmental Representative's samples to Departmental Representative's designated testing laboratory in Edmonton within two (2) days from site departure.

.4 Be responsible for all costs associated with the packaging, handling and transport of Departmental Representative's samples from the site to Departmental Representative's designated testing laboratory in Edmonton. It is critically important that Contractor expeditiously delivers samples from the site and transfers them to a commercial air service. Where cargo transfers are required from charter to commercial air service, provide personnel at transfer locations to facilitate timely transfers.

.5 Assume all responsibility for samples damaged during transport including all costs for re-sampling, shipping, analysis and any resulting delays.

1.6 Measurement for Payment

.1 Packaging, handling and off-site transport of Departmental Representative's samples to the Analytical Laboratory depot will be measured for payment by kilogram shipped. Shipping costs for Departmental Representative's samples will be paid under Item 01 29 83-1, Packaging, Handling and Transport of Departmental Representative's Samples to an Analytical Laboratory in Edmonton, in the Basis of Payment Schedule.

.2 Include all costs for Contractor's Testing Requirements, including sampling, packaging, handling, off-site transport and testing of Contractor's samples at an accredited laboratory of choice in Item 01 29 83-2, Contractor's Testing Requirements in the Lump Sum Amount Breakdown Schedule. Contractor's Testing Requirements including sampling, transportation and analysis at an accredited laboratory will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.3 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Definitions

.1 Project Start-Up Teleconference: conference call to be held within ten (10) days following Contract Award and to include the Contractor, Departmental Representative and Indigenous and Northern Affairs Canada (INAC).

.2 Pre-Construction Meeting: meeting to be held prior to Contractor Mobilization at location of Contractor's choice and to include the Contractor, Departmental Representative and INAC.

.3 Pre-Mobilization Site Visit: Contractor's visit to the site with Departmental Representative and INAC to check field conditions and obtain actual site information required to execute the Work prior to site mobilization.

.4 Inter-Season Meeting(s): meeting to be held between construction seasons at location of Contractor's choice and to include the Contractor, Departmental Representative and INAC.

.5 Post-Construction Meeting: meeting to be held within ninety (90) days after completion of construction to discuss and resolve administrative procedures and responsibilities. The meeting is to be held at location of Contractor's choice and is to include the Contractor, Departmental Representative and INAC.

.6 Weekly Construction Meeting: meeting to be held on-site at weekly intervals during the course of the work and to include the Contractor, major Sub-Contractors and Departmental Representative.

.7 Daily Safety Meeting: meeting to be held on-site daily during the construction season and to include Contractor, all staff, on-site Departmental Representative and Departmental Representative's authorized personnel.

.8 Weekly Safety Meeting: meeting to be held on site on a weekly basis during the construction season and to include Contractor, all staff, on-site Departmental Representative and Departmental Representative's authorized personnel.

.9 Joint Occupational Health and Safety Committee Meeting: meeting as required by Authorities Having Jurisdiction (AHJ).

.10 Monthly Meeting: meeting to be held on-site at approximately monthly intervals during the construction season and to include the Contractor, Departmental Representatives and INAC.

.11 Community Meetings: meetings to be held with the community in Gjoa Haven, Nunavut. The meetings are to be conducted in English with simultaneous translation into the local Inuit dialect. Community meetings will be led by the Contractor with Departmental Representative and INAC typically in attendance. Additional attendees include local leaders, officials and authorities. The meetings shall be open to the public and advertised in an appropriate manner, including:

.1 Posters which will be hung in the Town Office, Community Hall and the Co-op Store at least one week in advance of each meeting.

.2 Radio announcements which will air starting at least seven (7) days prior to each meeting.

1.2 Submittals

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit Community Meeting minutes to the Departmental Representative and INAC within ten (10) days of the meeting date.

.3 Submit copy of weekly safety meeting minutes to the Departmental Representative within three (3) days of the meeting.

1.3 Administrative

.1 Responsibilities of Departmental Representative:

.1 Schedule and administer project meetings throughout the progress of the Work.

.2 Prepare agenda for meetings unless otherwise specified.

.3 Distribute written notice of each meeting five (5) days in advance of meeting date.

.4 Preside at meetings unless otherwise specified.

.5 Record the meeting minutes unless otherwise specified. Include significant proceedings and decisions. Identify actions by parties.

.6 Reproduce and distribute copies of minutes within three (3) days after meetings and transmit to meeting participants, affected parties not in attendance and Departmental Representative, unless otherwise specified.

.2 Responsibilities of Contractor:

.1 Provide physical space and make arrangements for meetings.

.2 Representative of Contractor, Sub-Contractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.4 Project Start-up Teleconference Meeting

.1 Within ten (10) days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities. The meeting will be a teleconference between all parties in attendance.

.2 Departmental Representative, Contractor, INAC, major Sub-Contractors, field representatives and supervisors will be in attendance.

.3 Establish time and contact information for the meeting and notify parties concerned minimum five (5) days before meeting.

.4 Departmental Representative will chair the meeting and take minutes. Meeting will be informal and agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Preliminary Schedule of Work.

.3 Preliminary Schedule of submission of Work Plan**,** Site Specific Health and Safety Plan (SSHSP), Cost Breakdown and other submissions.

.4 Preliminary requirements for temporary facilities, site security, camp facilities, equipment and proposed method of mobilization and demobilization to minimize disturbances to the environment.

.5 Review of known hazards.

.6 Set-up of Pre-Construction meeting.

1.5 Pre-Construction Meeting

.1 As per Start-up Teleconference Meeting, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Pre-Construction Meeting to be held at a location of Contractor's choice prior to Contractor Mobilization to site.

.3 Departmental Representative, Contractor, INAC, major Sub-Contractors, field representatives and supervisors will be in attendance.

.4 Establish time and location of meeting and notify parties concerned minimum ten (10) days before meeting.

.5 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.6 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

.3 Schedule of submissions in accordance with Section 01 33 00 - Submittal Procedures including but not limited to:

.1 Site Specific Health and Safety Plan (SSHSP).

.1 Emergency Response Plan.

.2 Spill Contingency Plan.

.3 Wildlife Management Plan.

.2 Waste Management Plan.

.3 Insurance and transcripts.

.4 Equipment to be used by Contractor.

.5 Proposed camp facilities in accordance with Section 01 54 00 - Camp Facilities.

.6 Location of equipment and proposed methods for mobilization and demobilization.

.7 Shop Drawings.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00 - Construction Facilities.

.5 Delivery schedule of specified equipment.

.6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, administrative requirements.

.7 Departmental Representative provided products, if any.

.8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.

.9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.

.10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.

.11 Monthly progress claims, administrative procedures, photographs, hold backs.

.12 Appointment of inspection and testing agencies or firms.

.13 Regulatory Issues.

.14 Aboriginal involvement and reporting.

.15 Project Photograph requirements.

.16 Regulatory Review of all permits required to complete Work.

1.6 Inter-Season Meeting

.1 Request a meeting of parties in contract to discuss the previous and upcoming construction season and resolve issues arising from same.

.2 Inter-Season Meeting to be held at a location of Contractor's choice prior to Contractor Mobilization to site.

.3 Departmental Representative, Contractor, INAC, major Sub-Contractors, field inspectors and supervisors will be in attendance.

.4 Establish time and location of meeting and notify parties concerned minimum ten (10) days before meeting.

.5 Departmental Representative will preside.

.6 Agenda may include:

.1 Summary of the previous season's site activities.

.2 Comparison of progress achieved with the Project Schedule.

.3 Schedules and action Contractor plans to take to get back on Schedule, if required.

.4 Confirmation of quantities.

.5 Health, safety and security issues.

.6 Summary of interactions with AHJ.

.7 Work plan for the following season, if any.

.8 Camp requirements.

.7 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance within seven (7) days after meeting.

1.7 Post-Construction Meeting

.1 Within ninety (90) days after completion of construction, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities. The meeting will be a meeting between all parties at a location of the Contractor's choosing. The Contractor will provide a venue for the meeting.

.2 Departmental Representative, Contractor, INAC, major Sub-Contractors, field representatives and supervisors will be in attendance.

.3 Establish time and contact information for the meeting and notify parties concerned minimum five (5) days before meeting.

.4 Departmental Representative will chair the meeting and take minutes. Meeting will be informal and agenda to include, but is not limited to:

.1 Outstanding contractual issues.

.2 Holdback release.

.3 Aboriginal Opportunity Considerations (AOC) Content.

.4 Lessons learned.

.5 Outstanding submittals.

.6 Outstanding reporting requirements.

1.8 Construction Meetings

.1 During course of on-site Work and weeks prior to Project completion, Departmental Representative will schedule weekly progress meetings, to be held on-site.

.2 Contractor, major Sub-contractors involved in Work, and Departmental Representative are to be in attendance.

.3 Departmental Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance shortly after meeting.

.4 Agenda to include:

.1 Review and approval of minutes of previous meeting.

.2 Regulatory Review.

.3 Review of Work progress since previous meeting.

.4 Field observations, problems, or conflicts.

.5 Problems which impede construction schedule.

.6 Review of off-site fabrication delivery schedules.

.7 Project schedule review, identifying activities that are behind schedule and providing measures to regain slippage.

.8 Corrective measures and procedures to regain projected schedule.

.9 Revisions to construction Schedule.

.10 Progress schedule during succeeding Work period.

.11 Review submittal schedules: expedite as required.

.12 Maintenance of quality standards.

.13 Review proposed changes for effect on construction schedule and on completion date.

.14 Health, Safety and Security issues.

.15 Correspondence from AHJ or expected visits from AHJ.

.16 Camp requirements.

.17 Other business.

.5 Provide written explanations on activities which are overrunning estimated time. If any such activities are on the critical path, indicate what corrective action will be taken to bring them back on Schedule.

1.9 Safety Meetings

.1 Daily Safety Meeting: meeting to be held on-site daily during the construction season and to include Contractor, all staff, on-site Departmental Representative and Departmental Representative's authorized personnel. The Daily Safety Meeting may be split into task or crew specific meetings as required. Record attendance and discussion topic(s) for daily safety meeting(s) and make available to Departmental Representative as required.

.2 Weekly Safety Meeting: Contractor to preside over weekly meeting for all site personnel during the construction season. Minutes are to be recorded and attendance taken. Post minutes and attendance list on-site and provide copy to Departmental Representative within three (3) days of the meeting.

.3 Joint Occupational Health and Safety Committee Meeting: hold meeting according to attendance and frequency requirements of AHJs.

1.10 Monthly Progress Meetings

.1 Departmental Representative will schedule Monthly Progress Meetings to be held on-site.

.2 Departmental Representative, Contractor, INAC, major Sub-Contractors, field inspectors and supervisors will be in attendance.

.3 Departmental Representative will notify parties five (5) days prior to meetings.

.4 Representative will record minutes of meetings and circulate to attending parties and affected parties not in attendance shortly after meeting.

.5 Agenda may include:

.1 Summary of the previous month's site activities.

.2 Comparison of progress achieved with the project schedule.

.3 Schedules and action Contractor plans to take to get back on schedule, if required.

.4 Confirmation of quantities.

.5 Health, safety and security issues.

.6 Summary of interactions with AHJ.

.7 Work plan for the following month.

.8 Camp requirements.

.9 Other business.

1.11 Community Meetings

.1 Three (3) Community Meetings will be held in Gjoa Haven, Nunavut as follows:

.1 Prior to mobilization to site.

.2 After mobilization to site and prior to the first construction season.

.3 Upon completion of the project.

.2 Arrange meetings with Departmental Representative, local leaders, officials, authorities and public in Gjoa Haven, Nunavut.

.3 Be prepared to discuss local hiring practices and any other items of operations which may impact upon the local communities.

.4 Provide a sign in sheet for attendees.

.5 Complete presentations via computer and projector using "Power Point" software or using an approved alternate presentation format. Provide wording in English and simultaneous translation to the local Inuit dialect during the presentation. Submit presentations to Departmental Representative for review a minimum of fourteen (14) days prior to each community meeting.

.6 Meeting proceedings are to be distributed to Departmental Representative and INAC and shall include minutes, questions asked and answers provided and a list of attendees.

.7 Provide and pay for the following associated with these meetings:

.1 Meeting facility rental.

.2 Coffee, tea, pastries, cookies, etc.

.3 Costs associated with translation.

1.12 Measurement for Payment

.1 Include all costs for completing the Pre-Construction Meeting(s), including provision of meeting facilities at a location of Contractor's choice and travel and accommodation costs for Contractor's personnel, in Item 01 31 19-1, Pre-Construction Meeting(s) at location of Contractor's choice in the Lump Sum Amount Breakdown Schedule. Costs for the Pre-Construction Meeting(s) will be paid under LSA-1, Lump Sum amount, in the Basis of Payment Schedule.

.2 Include all costs for the Inter-Season Meeting(s), including provision of meeting facilities at a location of Contractor's choice and travel and accommodations for Contractor's personnel, in Item 01 31 19-2, Inter-Season Meeting at Location of Contractor's Choice in the Lump Sum Amount Breakdown Schedule. Inter-Season Meeting(s) costs will be paid under LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.3 Include all costs for the Post Construction Meeting, including arrangement of meeting facilities, travel and accommodation costs for the Contractor's personnel, in Item 01 31 19-3, Post-Construction Meeting at Location of Contractor's Choice. Post Construction Meeting costs will be paid under LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.4 All costs associated with return transportation for Monthly Meetings of Departmental Representative's personnel from the Contractor's Charter Base to CAM-C will not be considered for payment under this section, but will be included for payment as specified in Section 01 54 00 - Camp Facilities.

.5 Include all costs for the Community Meetings in Gjoa Haven, Nunavut, including transportation of three (3) Departmental Representative(s) and/or Authorized Personnel from the Contractor's Charter Base to the Community Meeting Location, in Item 01 31 19-4, Community Meetings – Gjoa Haven, Nunavut in the Lump Sum Amount Breakdown Schedule. Community Meeting costs will be paid under LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.6 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Definitions

.1 Activity: element of Work completed during course of Project. Activity normally has expected duration, expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar (GANTT) Chart: graphic display of Schedule-related information. In a typical bar chart, activities or other Project elements are listed down the left side of the chart, dates are shown across the top, and activity durations are shown as date-placed horizontal bars. Generally Bar Charts should be derived from commercially available computerized Project management systems.

.3 Baseline: original accepted plan (for Project, Work package, or activity), plus or minus approved scope or accepted schedule changes.

.4 Construction Work Week: Monday to Sunday, inclusive, will provide seven (7) days Work week and define Schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other Project element. Usually expressed as days or work weeks.

.6 Milestone: significant event in Project, usually completion of major deliverable.

.7 Project Schedule: planned dates for completing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout Project life cycle.

1.2 Requirements

.1 Develop a practical schedule. Monitor and update the schedule so that it remains within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Prepare the schedule using critical path analysis techniques, showing resource loading. Identify tasks that lie on the critical path. Show float where possible.

.4 Limit activity durations to maximum of approximately ten (10) working days to allow for progress reporting.

1.3 Submittals

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit the Bar (GANTT) Chart to Departmental Representative within seven (7) working days of the contract award date.

.3 Submit Contract Work Breakdown Structure (CWBS) to the Departmental Representative thirty (30) days following contract award.

.4 Submit Updated Schedule and CWBS to the Departmental Representative quarterly, or as directed, to reflect changes and items completed to date.

.5 Submit Cumulative and Daily Manpower Reports for each company employed under this Contract, including Sub-Contractors, to the Departmental Representative monthly.

1.4 Project Schedule

.1 Develop detailed Project Schedule.

.2 Project Schedule must include, at minimum, milestone and activity types as follows:

.1 Award.

.2 Planning document submittals, Shop Drawings, samples.

.3 Permits.

.4 Mobilization.

.5 Setup camp facilities.

.6 Structure demolition or regrading.

.7 Collection and disposal of non-hazardous materials.

.8 Collection and disposal of hazardous materials.

.9 Excavation and containerization of contaminated soils.

.10 Regrading of existing buried debris areas.

.11 Buried debris and landfill excavation.

.12 Treatment of Petroleum Hydrocarbon contaminated soil.

.13 Access improvements.

.14 Development and restoration of borrow sources.

.15 Granular Fill production.

.16 Camp Shutdown.

.17 Interim Certificate of Completion.

.18 Demobilization.

.19 Closeout Submittals.

.20 Final Completion of all site Works.

.21 Final Disposal of all site waste and contaminated soil including submission of waste manifests and disposal certificates.

.22 Final Certificate of Completion.

.3 Submit preliminary construction progress Schedule in accordance with Section 01 33 00 - Submittal Procedures to Departmental Representative coordinated with Departmental Representative's Project Schedule.

.4 After review, revise and resubmit Schedule to comply with revised Project Schedule.

.5 During progress of Work revise and resubmit Schedule as directed by Departmental Representative.

1.5 Project Schedule Reporting

.1 Update and submit Project Schedule quarterly reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule submittal narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

1.6 Project Meetings

.1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather-related delays with their mitigative measures will be discussed at regular meeting and the Contractor will provide a plan to mitigate weather related risks.

1.7 Cost and Quality Controls

.1 Provide a Contract Work Breakdown Structure (CWBS) based on Contractor's Cost Breakdown and any modifications requested by Departmental Representative as follows:

.1 CWBS to be an organization of the Work to be completed, services to be provided and data to be submitted by Contractor, as well as payments to be made to Contractor under the terms of the Contract.

.2 The CWBS to clearly define the Work elements of each item of the CWBS.

.3 The CWBS to include a breakdown of the following:

.1 Lump sum pay items included under Item LSA-1, Lump Sum amount in the Lump Sum Amount Breakdown Schedule.

.2 Pay items included under Item BOPC -1, Balance of Project Costs in the Lump sum Amount Breakdown Schedule.

.3 All unit price, lump sum, and provisional cost sum allowance pay items included in the Basis of Payment Schedule.

.4 Prepare the CWBS in computerized spreadsheet format compatible with the most recent release of Microsoft Excel software. Provide CWBS in hard copy format.

.2 Equipment and Material Control:

.1 Record data on status of construction material and equipment and report upon Departmental Representative's request.

.3 Manpower Performance Measures:

.1 Record and report manpower listing for each company employed under this Contract, including Sub-Contractors, detailing daily man-hours (aboriginal and non-aboriginal) during the current month and cumulative total to date. Submit to the Departmental Representative monthly.

.2 Provide statistical reporting.

.3 Provide statistics related to lost time accidents hours upon Departmental Representative's request.

.4 Monthly Performance Measures Templates are provided in Appendix E.

1.8 Measurement for Payment

.1 Work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Definition

.1 Shop Drawings: drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

1.2 Administrative

.1 Submit to Departmental Representative submittals listed for review. Submittal list is bound into specification section and is for information only. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal is not to proceed until review is complete by Departmental Representative.

.3 Provide all submittals in electronic format unless indicated otherwise.

.4 Submit Shop Drawings and product data, in SI Metric units.

.5 Where items or information is not produced in SI Metric units, converted values are acceptable.

.6 Submit requests for payment for review and for transmittal to Departmental Representative.

.7 Submit requests for interpretation of Contract Documents and obtain instructions through the Departmental Representative.

.8 Submit and process substitutions through Departmental Representative.

.9 Submit and process task authorizations and change orders through Departmental Representative.

.10 Deliver closeout submittals for review to Departmental Representative.

.11 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to a specific Project will be returned without being examined and will be considered rejected.

.12 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.13 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative’s review of submittals.

.14 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative’s review.

.15 Keep one reviewed copy of each submission on-site.

1.3 Shop Drawings Submission

.1 Submit, fourteen (14) days prior to mobilization, preliminary shop drawings, product data and samples for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Departmental Representative.

.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.3 Submit Shop Drawings bearing stamp and signature of qualified professional Engineer registered or licensed in Nunavut/Northwest Territories, Canada.

.4 Allow fourteen (14) days for Departmental Representative's review of each submission.

.5 Adjustments made on Shop Drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative and receive written approval from the Departmental Representative prior to proceeding with Work.

.6 Make changes in Shop Drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of any revisions other than those requested.

.7 Verify in shop drawings:

.1 Field measurements.

.2 Field construction criteria.

.3 Catalogue numbers and similar data.

.8 Accompany submissions with transmittal letter, in duplicate, containing:

.1 Date.

.2 Project title and number.

.3 Contractor's name and address.

.4 Identification and quantity of each shop drawing, product data and sample.

.5 Other pertinent data.

.9 Submissions to include:

.1 Date and revision dates.

.2 Project title and number.

.3 Name and address of:

.1 Sub-Contractor.

.2 Supplier.

.3 Manufacturer.

.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.

.2 Layout, showing dimensions, including identified field dimensions, and clearances.

.3 Setting or erection details.

.4 Capacities.

.5 Performance characteristics.

.6 Standards.

.7 Operating weight.

.8 Single line and schematic diagrams.

.9 Relationship to adjacent Work.

.10 After Departmental Representative's review, distribute copies.

.11 Submit three (3) prints and an electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.12 Delete information not applicable to Project.

.13 Supplement standard information to provide details applicable to Project.

.14 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, two (2) copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be completed before fabrication and installation of Work may proceed.

.15 The review of Shop Drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.

.1 This review does not mean that Departmental Representative approves detail design inherent in Shop Drawings, responsibility for which remains with Contractor submitting same, and such review does not relieve Contractor of responsibility for errors or omissions in Shop Drawings or of responsibility for meeting all requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of all sub-trades.

1.4 Photographs

.1 Provide digital photos in “Joint Photographic Experts Group” (.jpg) format for Progress Photographs and Final Photographs.

.2 Digital photographs to have a minimum of 2,592 x 1,944 pixel (5 Megapixel) resolution.

.3 Progress and Final Photographs to be submitted on a compact disc (CD). Provide one (1) copy of the Progress Photographs, and two (2) copies of the Final Photographs.

.4 Identification: The name and number of the Project on each CD and CD case. Each photograph to be captioned with the digital photo file name positioned so as to not interfere with the view of the main activity or feature presented on the photograph. Also provide a description of each photograph in photographic log format. Photographic log to be included with each computer disk, CD, and binder. Description to include:

.1 Digital photograph file name.

.2 Name and description of feature.

.3 Position and view direction.

.4 Date of exposure.

.5 Before and after photograph of location.

.5 Quantity: Provide sufficient number of photographs to adequately describe the Work activities carried out during the reporting period. A minimum of two photographs taken from two viewpoints are to be provided for each clean up/construction activity. Viewpoint locations for final digital photographs to be determined by Departmental Representative.

.6 Provide "Before" and “After" photos of site showing key areas before remediation and after remediation. Provide “After” photos from the same Photographic Viewpoint as the “Before” photos, Record the location of the Photographic Viewpoints with a handheld GPS and plot these locations on the record drawing mark-up. Consult with Departmental Representative to verify Photographic Viewpoints.

.7 Submit progress photographs monthly with last weekly report or as directed by Departmental Representative.

.8 Submit final photographs prior to final progress payment request.

1.5 Measurement for Payment

.1 Include all costs for the Project Photographs in Item 01 33 00 - 1, Project Photographs in the Lump Sum Amount Breakdown Schedule. Project Photograph costs will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.2 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

TABLE 01 33 00-1
CONTRACTOR SUBMITTAL SCHEDULE

Specification Section	Description	Date
01 11 00	Worker Orientation Seminar Course Material	Thirty (30) days prior to the seminar
01 29 83	ISO 17025 Laboratory Certifications	Sixty (60) days prior to start of construction
01 29 83	Contractor's sampling methodology, laboratory location, personnel and protocols	Sixty (60) days prior to start of construction
01 29 83	Contractor's laboratory testing results	Within one (1) day of receipt
01 31 19	Community Meeting Presentations	Fourteen (14) days prior to community meeting
01 31 19	Weekly Safety Meeting Minutes	Within three (3) days of the meeting
01 31 19	Community Meeting Minutes	Within ten (10) days of the meeting
01 32 18	Bar (GANTT) Chart	Seven (7) days after contract award
01 32 18	Contract Work Breakdown Structure (CWBS)	Thirty (30) days following contract award date
01 32 18	Updated Schedule and CWBS	Quarterly or as directed
01 32 18	Cumulative and Daily Manpower Reports	Monthly
01 33 00	Preliminary Shop Drawings, Product Data, Samples	Fourteen (14) days prior to mobilization
01 33 00	Progress Photographs	Monthly with last weekly report or as directed
01 33 00	Final Photographs	Prior to final progress payment request
01 35 15	Wastewater Treatment Facility Design, Operation and Maintenance Details	Sixty (60) days after contract award
01 35 15	Wastewater Compliance Testing Results	As received
01 35 32	Site Specific Health and Safety Plan	Draft thirty (30) days after contract award. Final forty-five (45) days prior to crew mobilization. Updated plan thirty (30) days prior to the start of each construction season.
01 35 32	Site inventory of health, safety, medical and first aid equipment and supplies	Within ten (10) days of crew mobilization to site each season
01 35 32	Proof of PPE fit testing for personnel	Prior to task
01 35 32	Accidents Reports	Immediate verbal report, written report within 24 hrs
01 35 32	On-site Contingency and Emergency Response Plan	With Site Specific Health and Safety Plan
01 35 32	Spill Contingency Plan	With Site Specific Health and Safety Plan
01 35 32	Fuel Management Plan	With Site Specific Health and Safety Plan
01 35 32	Fire Safety Program	With Site Specific Health and Safety Plan
01 35 32	Wildlife Management Plan	With Site Specific Health and Safety Plan
01 35 32	Terms of Use for Firearms	With Site Specific Health and Safety Plan
01 35 32	Qualification and Training Plans for Wildlife Monitors	With Site Specific Health and Safety Plan
01 35 32	Details and Procedures for the Operation and Maintenance of an AED	With Site Specific Health and Safety Plan
01 35 32	Safety Training Certifications	With Site Specific Health and Safety Plan
01 35 32	Respiratory Protection Plan	With Site Specific Health and Safety Plan
01 35 43	Historical, Archaeological and, Cultural and Biological Resources Plan	Sixty (60) days Prior to On-site Remediation Activities
01 35 43	Wildlife Protection Plan	Sixty (60) days Prior to On-site Remediation Activities
01 35 43	Copies of Environmental Agency Submittals/Approvals	As Required
01 35 43	Work Methodology Plan for In Stream or Near Water Works	Forty-five (45) days prior to commencing the activity

TABLE 01 33 00-1
CONTRACTOR SUBMITTAL SCHEDULE

Specification Section	Description	Date
01 35 43	Barge Landing Plan	Forty-five (45) days prior to mobilization
01 35 43	Erosion Sediment and Drainage Control Plan	Forty-five (45) days prior to on-site remediation activities
01 35 43	Inventory of Environmental Protection Supplies	Forty-five (45) days prior to mobilization
01 41 00	SDS - Safety Data Sheets	Upon delivery of materials to site
01 45 00	Inspection and Test Reports	As Received
01 52 00	Field Drawings	When required by departmental representative
01 52 00	Waste Management Plan	Forty-five (45) days prior to mobilization
01 52 00	Temporary Storage Area Inventory	Each month during the construction season
01 53 00	Mobilization Demobilization Plan	Forty-five (45) days after contract award
01 53 00	Construction Equipment List	Thirty (30) days prior to mobilization
01 54 00	Plan of Construction Camp Layout and Siting	Forty-five (45) days prior to mobilization
01 54 00	Proof of Camp Licenses, Permits, Authorizations	Within Thirty (30) days of camp start-up
01 54 00	Camp Facilities Third Party Inspection Report	Thirty (30) days prior to mobilization
01 54 00	Information on Bottled Water, or Water Source and Quality Tests	Prior to commencing camp operation and every four (4) weeks during camp operation
01 54 00	Sketch of Proposed Sample Processing Facility / Laboratory	With plan of construction camp layout and siting
01 54 00	Set of Camp Rules	Prior to commencing camp operation
01 54 00	Camp Incinerator Details	Forty-five (45) days prior to mobilization
01 71 01	Documentation Identifying the Qualifications and Experience of Surveyor, Survey Equipment and Survey Methodology	Fourteen (14) days prior to mobilization
01 71 01	Documentation of Survey Accuracy	Upon request of Departmental Representative
01 71 01	Certificate of Completed Survey Work	Seven (7) days prior to requested final inspection
01 71 01	Survey Data for Work	With Progress Claim or upon request of Departmental Representative
01 71 01	Drawings	Upon request of Departmental Representative
01 77 00	Completion Certificate	Seven (7) days prior to requested final inspection
01 78 00	Record Drawings	Forty-five (45) days after project completion
01 78 00	Permit Reporting	Thirty (30) days after the completion of each construction season
01 78 00	Close Out Reporting	March 31 following project completion
02 41 16	Waste Transport Manifests, Chain of Custody Documentation, Transport Documentation and Destruction and/or Disposal Certificates for Non-Hazardous Wastes	Prior to payment
02 41 16	Waste Container Inventories and Weigh Scale Records	Prior to shipment off-site
02 41 16	LEL Results of VOC Testing	Upon request of Departmental Representative
02 41 23	Details of Non-Hazardous Waste Containers and/or Packaging Methods	Forty-five (45) days prior to mobilization
02 55 13	Details of Contaminated Soil Containers	Forty-five (45) days prior to mobilization
02 55 13	Inventory of each Soil Container	Upon request and prior to shipment off-site
02 61 00	Type B PHC Contaminated Soil Treatment Plan	Ninety (90) days Prior to the Construction
02 61 00	Type B PHC Contaminated Soil Treatment Operation Report	Monthly

TABLE 01 33 00-1
CONTRACTOR SUBMITTAL SCHEDULE

Specification Section	Description	Date
02 61 00	Interim Soil Remediation Report	Thirty (30) days After Completion of each Construction Season
02 61 33	Disposal Facility License and Acceptance Documentation	With Waste Management Plan
02 61 33	Hazardous Material Qualifications and Training Records	Prior to commencement of work
02 61 33	Details of Hazardous Waste Containers	With Waste Management Plan
02 61 33	Details of Hazardous Material Processing Area	Prior to commencement of remediation activities
02 61 33	Disposal Facility License and Acceptance Documentation	With Waste Management Plan
02 61 33	Photographic Record of all Hazardous Waste Containers	Upon completion of work
02 61 33	Inventory of Hazardous Materials Containers and Contents	Upon request and at the end of each construction season
02 61 33	Waste Transport Manifests, Chain of Custody Documentation and Transport Documentation	Prior to shipment off-site
02 61 33	Destruction and Disposal Certificates for Non-Hazardous and Hazardous Wastes	Prior to Payment
02 61 33	Details of Proposed Barrel Processing Methodology	Forty-five (45) days prior to mobilization
02 61 33	Details of Incineration Methodology	Thirty (30) days prior to mobilization
02 61 33	Hazardous Waste Disposal Tracking Form	Prior to shipment off-site
02 82 00	Notice of Project Form	Thirty (30) days after contract award
02 82 00	Proof of Contractor's Asbestos Liability Insurance	Thirty (30) days after contract award
02 82 00	Permits for Transportation and Disposal of ACM and proof of Disposal	Upon project completion
02 82 00	Proof of Asbestos Training for Employees	Prior to commencing asbestos abatement work
02 82 00	Proof of Approved Two Day Asbestos Training for Supervisors	Prior to commencing asbestos abatement work
02 82 00	WSCC and Transcription of Insurance	Prior to commencing asbestos abatement work
02 82 00	Documentation of Asbestos Test Results, Flammability Data, and MSDS Sheet	Prior to commencing asbestos abatement work
31 22 15	Site Access Upgrade Plan	Prior to mobilization

END OF SECTION

PART 1 - GENERAL

1.1 Definitions

.1 Camp Wastewater: Wash water, rinse water, water from operation of camp facilities, and/or any other liquid effluent stream created or encountered during camp activities.

.2 Process Wastewater: Water from decontamination activities, water from dewatering work areas, potentially contaminated groundwater, contact water and/or any other liquid effluent stream created or encountered during Work activities.

.3 Processed Wastewater: Wastewater processed through the on-site Wastewater Treatment Facilities.

.4 Treated Wastewater: Processed wastewater which has been tested and shown to be in compliance with applicable discharge criteria and requirements of this Section and Section 01 35 43 - Environmental Procedures.

.5 Contact Water: Water that has been in physical contact with known Contaminated Soil, either in defined soil excavations or excavated soil in treatment areas or stockpiles.

1.2 Regulatory Requirements

.1 Comply with federal, provincial, territorial, and local anti-pollution laws, ordinances, codes, and regulations when disposing of waste materials, debris, and rubbish.

1.3 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit design, operation and maintenance details of wastewater treatment facilities conforming to requirements of Authorities Having Jurisdiction (AHJ) sixty (60) days after contract award date. Wastewater treatment facility designs will be stamped by a professional engineer registered or licensed to practice in Nunavut.

.3 Submit Wastewater Compliance Testing Results to the Departmental Representative as they are received.

1.4 Wastewater Treatment Facilities Design Requirements

.1 Contain wastewater from the following sources separately:

.1 Work Activities; including, but not limited to, wastewater streams from dewatering work areas, decontamination, process water, Contact Water, and wash/rinse water.

.2 Camp Operations; including, but not limited to, greywater, kitchen sumps and traps and blackwater.

.2 Wastewater Treatment Facilities:

.1 Design wastewater treatment facilities capable of treating Contact Water generated from dewatering excavations, process water, and Work areas to meet the discharge criteria of the Water License, which are the following:

Parameter	Maximum Allowable Concentration
Oil and Grease	5000 µg/L
pH	6 to 9
Arsenic (total)	100 µg/L
Cadmium (dissolved)	10 µg/L
Chromium (total)	100 µg/L
Cobalt (dissolved)	50 µg/L
Copper (dissolved)	200 µg/L
Lead (dissolved)	50 µg/L
Mercury (total)	0.6 µg/L
Nickel (dissolved)	200 µg/L
Zinc (total)	500 µg/L
PCBs	1,000 µg/L
Benzene	370 µg/L
Toluene	2 µg/L
Ethylbenzene	90 µg/L

.2 The Contractor shall expect that Wastewater requiring treatment will be generated during site clean-up activities. Historically, parameters most often exceeding the maximum allowable levels include, but are not limited to, oil and grease, pH, zinc, chromium, phenols and cadmium.

.3 Design Wastewater Treatment Facilities capable of treating water generated from camp operations to meet the criteria of the Water License, which are the following:

Parameter	Maximum Allowable Concentration
pH	6 to 9
Oil and Grease	none visible
Total Suspended Solids	180 mg/L
BOD	120 mg/L
Faecal Coliforms	10,000 CFU/dL

.4 Provide piping to transfer liquid/solid mixtures generated by dewatering operations which require transport to the wastewater treatment facility.

.5 Wastewater treatment systems must be capable of receiving liquid/solid mixtures to not cause delay to dewatering operations.

.6 In the event of a discrepancy between the above listed wastewater requirements and those provided in the Water License, the requirements in the Water License will govern.

1.5 Wastewater Treatment Facilities Discharge Requirements

.1 Provide adequate containment facilities for processed wastewater, prior to discharge, to complete testing and analytical requirements. Salvage of tanks designated for removal on-site is permitted, provided that the tanks are empty and clean prior to use. Wastewater storage ponds meeting all requirements of AHJ are permitted.

.2 Water discharge on-site must be in compliance with applicable permits, authorizations and approvals. Make adjustments to Water Treatment Facilities or provide alternative equipment, at no additional cost, such that processed wastewater meets applicable permit requirements and limitations for discharge.

.3 Wastewater discharges from site must be in compliance with applicable permit requirements.

.1 Camp Wastewater is to be released onto the ground at a location, reviewed and accepted by the Departmental Representative, that is a minimum of 30 metres (m) from natural drainage courses and 100 m from fish bearing waters and conform to the discharge requirements set out by the AHJ.

.2 If unable to meet the discharge criteria, provide additional storage and/or treatment necessary to meet criteria prior to discharge.

.3 No direct discharge is allowed to wetland or surface waters.

.4 Contractor must obtain approval from the AHJ prior to discharging treated wastewater.

.4 Dispose of any processed wastewater not meeting the applicable permit requirements and limitations for discharge in accordance with Section 02 61 33 - Hazardous Waste Material, at the Contractor's expense including, but not limited to, transporting and disposing of processed wastewater to approved disposal facilities.

1.6 Wastewater Storage Facilities

.1 Provide, operate, and maintain wastewater storage facilities to store wastewater.

.2 Provide pumps and piping to convey collected wastewater to designated wastewater storage facilities.

.3 Provide storage tanks with minimum total live capacity such that effluent quality can be analyzed and approved prior to discharge.

.4 Install wastewater storage facilities in locations as per the reviewed Camp Layout and Siting Plan.

.5 Support tank(s) on (temporary) above ground foundation(s).

.6 Connect pumps, piping, valves, miscellaneous items, and necessary utilities as required for operation of facilities; and protect tanks, valves, pumps, piping, and miscellaneous items from freezing.

.7 Do not operate wastewater storage facilities until inspected and approved by Departmental Representative.

.8 Notify Departmental Representative three (3) days minimum in advance of when wastewater storage facility is anticipated to be full.

.1 Do not discharge additional liquids to filled facility following sampling.

.2 Departmental Representative will determine appropriate disposal location of wastewater based on sample analysis.

.9 Treat on site or transport and dispose of wastewater at Contractor’s off-site disposal facilities.

.10 Be responsible for transporting and disposing of wastewater to Contractor’s off-site disposal facilities.

.11 Be responsible for additional testing required by the Contractor’s off-site disposal facilities.

1.7 Equipment Decontamination

.1 Decontaminate equipment, including buckets, tracks and undercarriage, after working in potential and known contaminated work areas and prior to subsequent work or travel on clean areas.

.2 At minimum, complete the following steps during equipment decontamination:

.1 Mechanically remove loose waste solids, dirt, grit, and debris by manual methods without using steam or high-pressure water to minimize water usage and potential for contaminated rinsate generated. Clean soil lumps and particles prior to mobilizing excavating and other contaminated soil processing equipment.

.2 Should decontamination not be achieved using above, use high-pressure, low-volume, hot water or steam supplemented by detergents or solvents as appropriate and accepted by Departmental Representative. Complete an assessment as directed by Departmental Representative, to determine effectiveness of decontamination.

.3 Collect and dispose of the removed material in existing contaminated soil areas.

.3 Contain any rinsate created during the removal process as wastewater. Contain soil removed from equipment with waste material.

.4 Complete final decontamination of equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from site.

.5 Furnish and equip personnel engaged in equipment decontamination with protective equipment including suitable disposable clothing, respiratory protection, and face shields.

.6 Each piece of equipment may be inspected by Departmental Representative or designate after decontamination and prior to removal from site and/or travel on clean areas. Departmental Representative will have right to require additional decontamination to be completed, if deemed necessary.

.7 Take appropriate measures necessary to minimize drift of mist and spray during decontamination, including provision of wind splash screens, as required.

.8 Take special precautions to mitigate the tracking of contaminated soil over the site area.

1.8 Water Control

.1 Maintain excavations free of water.

.2 Protect site from ponding or running water. Grade site to drain.

.3 Prevent surface water runoff from leaving Work areas.

.4 Do not discharge treated water, or surface water runoff, or groundwater which may have come in contact with potentially contaminated material, beyond the site boundaries.

.5 Prevent precipitation from infiltrating or from directly running off stockpiled waste materials. Cover stockpiled waste materials with an impermeable liner during periods of Work stoppage and periods of heavy precipitation and as directed by the Departmental Representative.

.6 Direct surface waters that have not contacted potentially contaminated materials to existing surface drainage systems.

.7 Dispose of water in manner not injurious to public health or safety, to property, or to any part of Work completed or under construction.

.8 Provide, operate, and maintain necessary equipment appropriately sized to keep excavations, staging pads, and other Work areas free from water.

.9 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for emergencies, including power outage, and competent workers for operation of pumping equipment.

1.9 Dewatering

.1 Dewater various parts of Work including, without limitation, excavations, structures, foundations, and Work areas, as required to complete work.

.2 Contractor must employ construction methods, plant procedures, and precautions such that Work, including excavations, are stable, free from disturbance, and dry.

.3 Contractor must provide sufficient and appropriate labour, plant, and equipment necessary to keep Work free of water including standby equipment necessary to provide continuous operation of dewatering system.

.4 Take necessary precautions to prevent uplift of any structure or pipeline and to protect excavations from flooding and damage due to surface runoff.

.5 Test and analyze water generated from dewatering activities and treat to meet required discharge or disposal criteria.

1.10 Progress Cleaning

.1 Maintain cleanliness of Work and surrounding site to comply with federal, provincial, territorial, and local fire and safety laws, ordinances, codes, and regulations.

.2 Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.

1.11 Final Decontamination

.1 Complete final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially contaminated materials prior to removal from site.

.2 Complete decontamination as specified to the satisfaction of Departmental Representative. Departmental Representative will direct Contractor to complete additional decontamination if required.

1.12 Removal and Disposal

.1 Remove surplus materials and temporary facilities from site.

.2 Dispose of non-contaminated waste materials, litter, debris, and rubbish off site.

.3 Do not burn rubbish and waste materials on site unless a burn exemption is provided in accordance with the land use permit and approved by the AHJ.

.4 Do not bury rubbish and waste materials on site.

.5 Do not discharge wastes into streams or waterways.

.6 Dispose of the following materials at appropriate off-site facilities identified by Contractor and approved by Departmental Representative: debris including excess construction material, non-contaminated litter and rubbish; disposable personal protective equipment (PPE) worn during final cleaning; wastewater removed from wastewater storage tank, wastewater generated from final decontamination operations including wastewater storage tank cleaning; and lumber from decontamination pads.

1.13 Testing

.1 Carry out and pay for all testing required to confirm that Wastewater complies with Wastewater Treatment and Discharge Criteria outlined in this Section. Submit records of this testing to Department Representative as received.

.2 Carry out and pay for all testing required for the classification of waste and licensed disposal facilities acceptance requirements outlined in this Section and Section 01 29 83 – Payment Procedures for Testing Laboratory Services.

1.14 Measurement for Payment

.1 Work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Piping

.1 Suitable material type, of sufficient diameter and structural thickness for purpose intended; satisfactorily tested for leaks with potable water in presence of Departmental Representative before handling wastewater.

PART 3 - EXECUTION

3.1 Installation, Commissioning, Operation and Decommissioning of Wastewater Treatment Facilities

.1 Installation.

.1 Provide labour, materials, and equipment and complete Work required for setup and construction of Wastewater Treatment Facilities.

.2 Install component systems in accordance with installation procedures.

.3 Following installation of system, implement initial operation test in accordance with procedures developed by Contractor and submitted to Departmental Representative for review.

.4 Install piping in accordance with manufacturer's instructions and test for leakage using potable water prior to commencing treatment operations.

.2 Operation.

.1 Obtain and analyze influent and effluent samples required to operate the system.

.2 Make system modifications required for effluent to satisfy effluent criteria based on analytical results.

.3 Operate Wastewater Treatment Facilities by experienced, qualified personnel in accordance with manufacturer's instructions and procedures submitted by Contractor and accepted by Departmental Representative.

.4 Operate the Wastewater Treatment Facilities such that storage tanks and storage ponds are either empty at the end of the construction season or have allowances for expansion of water due to freezing.

.3 Decommissioning/Dismantling.

.1 Decontaminate and remove salvageable components of Wastewater Treatment Facilities including water treatment system, pumps, piping, and electrical equipment.

.2 Dispose of non-salvageable equipment and materials at approved off-site disposal facilities. Decontaminate salvageable equipment within facility area as required prior to removal from site.

END OF SECTION

PART 1 – GENERAL

1.1 Definitions

.1 Separated Work Group: a work crew of any number of personnel working at a location where immediate medical attention from site medical personnel may not be possible due to environmental, mechanical or other factors.

.2 Global Hazard Assessment: a yearly review of site hazards encountered during the construction season.

1.2 Site Specific Health and Safety Requirements

.1 Maintain and complete all health and safety, fire safety, and environmental compliance activities in accordance with applicable sections and Authorities Having Jurisdiction (AHJ).

.2 Schedule a compliance meeting on an as required basis, as directed by Departmental Representative. Compliance meetings may be held in conjunction with regular meetings.

.3 The intent of the compliance meeting is to review reporting and inspection requirements to meet the intent of the Safety Act, the Water License, the Land Use Permit, regulatory, and other requirements as may be required.

.4 Compliance meetings to be held at the Work site.

.5 Departmental Representative will record minutes, chair the meeting and distribute minutes to parties of record prior to the next Scheduled meeting.

.6 Attendees:

.1 Contractor: Manager and/or Supervisor(s), representatives of major Sub-Contractors, and others as necessary.

.2 Departmental Representative and representatives of Independent Inspection Agencies.

.3 Indigenous and Northern Affairs Canada (INAC) representative(s).

.7 Agenda to include:

.1 Review and approval of minutes of previous meeting.

.2 Review of items of significance that could affect Work.

.3 Review of site inspections: Inspect the site on a monthly basis, or more or less often, as determined by the Contractor's Site Specific Health and Safety Plan (SSHSP) or as dictated by the AHJ.

.4 Identify and record field observations, problems, and conflicts that must be noted in reports required by the AHJ.

.5 Identify corrective measures and procedures to regain approval from AHJ.

.6 Identification of requirements for maintenance of quality standards needed for compliance with applicable Codes and Legislation.

.7 Review of site safety and security issues.

.8 Review of environmental and regulatory compliance.

.9 Other topics for discussion as appropriate to current status of the Work.

1.3 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit the Draft SSHSP no later than thirty (30) days after contract award to the Departmental Representative for review. Any items, which are identified as missing, will be added and the plan revised, so as to incorporate the additional items. Submit one (1) electronic copy of the final SSHSP forty-five (45) days prior to crew mobilization. The revised SSHSP will be submitted to the AHJ for review and recommendations to address all elements required by the Safety Act, Occupational Safety and Health Administration (OSHA) Regulations, other AHJ and Contract Specifications.

.3 Update the SSHSP at the beginning of each construction season, and submit to the Departmental Representative no later than thirty (30) days before the start of each construction season. The update is to include a global hazard assessment.

.4 The SSHSP is to include, but is not limited to the following sections:

.1 A Statement of Contractor's Safety Policy.

.2 Name and telephone number of Contractor's corporate Safety Officer and on-site Safety Representative.

.3 Safety Responsibilities of all on-site personnel.

.4 Anti-Harassment Policy.

.5 Anti-Violence Policy.

.6 Safe Work Practices and/or Job Procedures.

.7 Requirements for safety meetings and documentation.

.8 Safety Inspection Plan.

.9 Camp Rules and their enforcement.

.10 Site traffic rules and speed limits.

.11 First Aid Locations.

.12 Results of safety and health risk or hazard analysis for camp and construction activities.

.13 Procedures for, but not limited to:

.1 General worker health and safety.
.2 Cold weather survival.
.3 Heat stress.
.4 Working at heights.
.5 Working near or adjacent to water hazards (within 3 metres).
.6 Encountering suspected hazardous materials.
.7 Confined spaces.
.8 Emergency site communications.
.9 Remote Work.

.14 Buddy system and procedures for working alone.

.15 Workplace Hazardous Materials Information System (WHMIS) and Safety Data Sheet (SDS) records.

.16 Personal Protective Equipment (PPE) Program, including Contaminated Sites Working and Decontamination Procedures.

.17 Personnel hygiene.

.18 Respiratory Protection Program.

.19 Procedures for emergency site communications.

.20 On-site Contingency and Emergency Response Plan.

.21 Spill Contingency Plan.

.22 Fuel Management Plan

.23 Fire Safety Program.

.24 Wildlife Management Plan.

.25 Procedures for encountering suspected hazardous materials.

.26 Blasting Cap or unexploded ordnance (UXO) awareness and handling.

.27 Lockout/Tagout procedures for equipment that could become energized.

.28 Confined Spaces.

.29 Aircraft Safety.

.30 Marine Safety.

.31 Radiological Safety.

.5 The On-site Contingency and Emergency Response Plan is to address standard operating procedures to be implemented during emergency situations. Plans including procedures are to meet Safety Requirements below.

.1 Prepare and coordinate a Contingency and Emergency Response Plan with contributions from appropriate authorities including the Government of Nunavut Safety Act, Hospitals, RCMP, Ministry of Transportation, and Ministry of Health. Plan will identify off-site Emergency Response Coordinator through whom all information and coordination will flow in the event of an incident.

.2 Submit Contractor's On-site Contingency and Emergency Response Plan to AHJ. Respond to requests for modifications or additions as necessary.

.3 Notify the hospital identified in the On-site Contingency and Emergency Response Plan of the nature of work being conducted and the approximate timing of the project.

.6 The Fuel Management Plan is to include information related to storage, on-site transport, containment, handling and decommissioning.

.7 Complete an inventory of Contractor's health, safety, medical and first aid equipment and supplies on-site to assess compliance with AHJ requirements. Submit the inventory to Departmental Representative within ten (10) days of mobilization each season. Include a schedule for upgrading deficiencies to meet requirements of AHJ.

.8 The PPE Program will include, but is not limited to, the following.

.1 Donning and doffing procedures.

.2 PPE Selection based upon site hazards and work activities.

.3 PPE use and limitations of equipment.

.4 Work mission duration, PPE maintenance and storage.

.5 PPE decontamination and disposal.

.6 PPE inspection procedures prior to, during, and after use.

.7 Evaluation of effectiveness of PPE program and limitations during temperature extremes, and other appropriate medical considerations.

.8 Medical surveillance requirements for personnel assigned to work at site.

.9 Frequency and types of air monitoring, personnel monitoring, and environmental sampling techniques and instrumentation to be used, including methods of maintenance and calibration of monitoring and sampling equipment.

.10 Contaminated site working and decontamination procedures for both personnel and equipment.

.11 Written respiratory protection program for project activities.

.12 Proof of respirator fit testing.

.9 Submit relevant safety training certifications to the Departmental Representative with SSHSP including, but not limited to, First Aid and CPR certifications and WHMIS training certifications.

1.4 Construction Safety Measures

.1 Designate a resident Health and Safety Officer to oversee Contractor's SSHSP with the authority to enforce policies and procedures set out in the SSHSP. Health and Safety Officer to have a minimum of five (5) years' acceptable experience in administering construction health and safety programs.

.2 Observe and enforce construction safety measures required by the latest revisions of: Canada Labour Code, National Building Code of Canada, National Fire Code of Canada, Workers' Safety and Compensation Commission (WSCC), the applicable Occupational Health and Safety Regulations, and Territorial and local statutes and authorities.

.3 Arrange regular safety meetings as per Section 01 31 19 - Project Meetings.

.4 Maintain at the site, five (5) safety hats with liners, five (5) safety hi-visibility vests, a supply of ear plugs, gloves, and safety glasses for use by Departmental Representative and visitors.

.5 Maintain a supply of Tyvek or equivalent suits of various sizes as required for Contractor's staff, Departmental Representative and up to three (3) visitors for the duration of the Work.

.6 Comply with all applicable health and safety policies and procedures from AHJ.

.7 Departmental Representative and Departmental Representative's Authorized Personnel have the authority to stop Work on the contract if, in his/her opinion, the Work is being completed in an unsafe manner as required by the applicable safety legislation. Assign responsibility and obligation to the Contractor's Health and Safety Officer where required to stop or start work.

.8 Verify that emergency procedures, including appropriate First aid facilities and First Aid personnel, are in place at the Work Site. First aid facilities and First Aid personnel must be in compliance with the Nunavut Safety Act.

.9 Verify that procedures meet the WSCC requirements.

.10 PPE Program and Contaminated Sites Working and Decontamination procedures to be consistent with requirements OSHA's 29 CFR 1910.120 HAZWOPER and territorial environmental regulations for:

.1 Activities, where employees are likely to be exposed to 50% of Threshold Limit Values (TLV) listed by American Conference of Governmental Hygienists (ACGIH), TLVs and Biological Exposure Indices (BEI) based on documentation of Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEI) 2004 and amendments thereto.

.11 Hazardous Material Discovery

.1 Immediately stop Work and notify Departmental Representative for further instructions with respect to abatement procedures required for unknown hazardous waste materials encountered during course of Work.

1.5 Filing of Notice

.1 File Notice of Work with Territorial AHJ prior to commencement of Work.

1.6 Regulatory Requirements

.1 Comply with specified standards, regulations and orders of AHJ to operate safely at sites containing hazardous or toxic materials and other hazards (such as wildlife encounters, falls, etc.).

.2 All equipment brought to the site must meet Nunavut Health and Safety Regulations.

1.7 Responsibility

.1 Be responsible for safety of persons and property on-site and for protection of public off-site and environment to extent that they may be affected by the site and conduct of Work.

.2 The health and safety of personnel and the public takes precedence.

.3 Control access to the site. Persons with business at the site and who are not Contractor's employees must be briefed on site specific health and safety issues and be provided with a copy of the SSHSP.

.4 Contractor may refuse access to the site to any person not complying with site specific health and safety standards.

.5 Comply with and enforce compliance by employees with safety requirements of contract documents, applicable federal, territorial and local statutes, regulations and ordinances, Worker Orientation Seminar, and with the SSHSP:

.1 Complete appropriate safety training for all personnel working on the site.

.2 Complete workplace safety inspections for all Work activities regularly and in accordance with all applicable acts and regulations.

.3 Maintain a log of first aid and safety supplies, and notify appropriate personnel for restocking after each incident, and periodical restocking to replace out dated or consumable (headache medicines, bandages) products.

1.8 Hazardous Material Communication Requirements

1 Comply with Work Site Hazardous Materials Information System Regulations of the AHJ.

2 Provide Departmental Representative with Safety Data Sheets (SDS) and documentation on any "hazardous" chemical that Contractor or Contractor Representatives plan to bring onto site; bound in one place and stored in accordance with the SSHSP.

1.9 Unforeseen Hazards

.1 Should any unforeseen or peculiar safety related factor, hazard, or condition become evident, stop Work, assess, take steps to mitigate if necessary at that time and immediately advise Departmental Representative verbally and in writing.

.2 Monitor potential low oxygen and Lower Explosive Limits (LEL) areas with oxygen/LEL monitor if workers are working in and around area. These areas include but are not limited to trenches, excavations, confined spaces and areas near machinery exhaust.

1.10 Safety and Hygiene

.1 Provide training for all persons entering the site in accordance with specified personnel training requirements, maintain log of who was trained by having the trainee sign the training log, what training was provided and by whom the training was conducted.

.2 Personal Protective Equipment (PPE):

.1 Furnish site personnel with appropriate PPE as required by legislation.

.2 Verify that safety equipment and protective clothing is kept clean and well maintained.

.3 All clothing and personal protective equipment used on site shall remain on site, to be either decontaminated or disposed of. No Work clothing is to leave Work site without having been properly decontaminated.

.4 Outline and designate PPE for each site and Work activity in accordance with AHJ.

.3 Develop written PPE care and use procedures to be included in the PPE Program under the SSHSP and verify that procedures are strictly followed by site personnel including, but not limited to, the following:

.1 Provisions for prescription eyeglasses with side shields worn as safety glasses and do not permit contact lenses on site within Work zones.

.2 Provisions for steel toed safety shoes or boots covered by rubber overshoes when entering or working in potentially contaminated Work areas.

.3 Dispose of or decontaminate PPE worn on-site at end of each workday.

.4 Decontaminate reusable PPE before reissuing.

.5 Provisions for decontamination arising from entry or exit into contaminated areas.

.4 Develop a written Respiratory Protection program to be included in the SSHSP and strictly enforce compliance with the program by site personnel; include the following procedures as minimum:

.1 Provide site personnel with extensive training in usage and limitations of, and qualitative fit testing for, air purifying and supplied air respirators in accordance with specified regulations.

.2 Monitor, evaluate, and provide respiratory protection for site personnel.

.3 Verify that levels of protection as listed have been chosen to be consistent with site specific potential airborne hazards associated with major contaminants identified on site.

.4 Immediately notify Departmental Representative when level of respiratory protection required increases.

.5 Verify that appropriate respiratory protection during Work activities is available and readily accessible; all personnel entering potentially contaminated Work areas will be supplied with and use appropriate respiratory protection.

.6 Assess ability for site personnel to wear respiratory protection.

.7 Verify that site personnel have passed respirator fit test prior to entering potentially contaminated areas.

.8 Verify that facial hair does not interfere with proper respirator fit.

.9 Submit proof of fit testing for site personnel to Departmental Representative. Update submission when new personnel are added to Work or when new Work activities occur.

.5 Implement a heat stress and cold stress monitoring program as applicable and include in SSHSP.

.6 Personnel Hygiene and Personnel Decontamination Procedures must provide minimum as follows:

.1 Suitable containers for storage and disposal of used disposable PPE.

.2 Potable water and suitable sanitation facility.

.3 Access to hot water shower facilities.

.4 Provisions for proper disposal of contaminated PPE.

1.11 Site Communication

.1 Post emergency numbers near site telephones. Update emergency numbers as required.

.2 Train personnel in the use of "buddy" system.

.3 Provide alarm system to notify employees of site emergency situations or to stop Work activities if necessary. Identify emergency stations and Muster Points. Test alarm system regularly and train personnel to use alarm system as required.

.4 All equipment must have operational two-way radio communication while in operation.

1.12 Fuel Management

.1 All vehicle and equipment refuelling must be completed by appropriately trained personnel using the appropriate personal protective equipment in a manner which meets or exceeds regulatory requirements and in accordance to the accepted Fuel Management Plan including using drip pans.

.2 Records of fuel usage by activity must be maintained.

.3 All fuel transports including mobile refuelling trucks and fuel transport to stationary equipment such as generators or pumps or distributed storage areas, must occur in approved (CSA) containers with the notification and consent of site safety personnel.

1.13 Vehicle and Equipment Usage

.1 Seatbelts must be worn at all times when vehicle or equipment is in operation.

.2 Speed limits must be set and obeyed.

.3 If road conditions are unsafe or marginally unsafe, maintain roads to acceptable standards. Do not risk property damage or injury.

.4 Vehicles are not to be idled for longer than 10 minutes (warm up) unless explicitly used as a place of refuge during animal encounters or for personnel working outdoors during winter operations. Exceptions are to be made in consultation with Departmental Representative.

.5 Complete vehicle maintenance and lubrication of equipment in a manner that avoids spillage of fuels, oils, grease and coolants. When refuelling equipment, use leak free containers and reinforced rip and puncture proof hoses and nozzles. Remain in attendance for duration of refuelling operation, and properly seal all storage container outlets after use.

.6 Collect and dispose of used oil, grease and coolants from Contractor’s vehicle maintenance activities as hazardous waste as detailed in Section 02 61 33 - Hazardous Waste Material.

.7 Place drip pans under stationary equipment with potential leaks.

.8 All equipment brought to the site must have rotating beacons and vehicles shall have beacons, buggy whips, and fire extinguishers.

.9 Helmets must be worn at all times when operating All-Terrain Vehicles (ATVs).

1.14 Flammable Liquids

.1 The handling, storage and use of flammable liquids will be governed by the current National Fire Code of Canada.

.2 Flammable liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding 45 litres provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval. Storage of quantities of flammable liquids exceeding 45 litres for Work purposes, requires permission of the permitting authority.

.3 Do not transfer flammable liquids in the vicinity of open flames or any type of heat-producing devices.

.4 Do not use flammable liquids having a flash point below 38 degrees Celsius (°C) such as naphtha or gasoline as solvents or cleaning agents.

.5 Store flammable waste liquids, for disposal, in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum and Departmental Representative is to be notified when disposal is required.

.6 Dispose of all flammable liquids in accordance with all applicable environmental regulations and with the requirements of Section 02 61 33 - Hazardous Waste Material.

1.15 Storage and Handling of Fuel

.1 Locate fuel storage areas as approved by AHJ and as specified in the Fuel Management Plan. Location to be reviewed by Departmental Representative. Provide secondary containment as required by AHJ.

.2 Inspect fuel storage and dispensing facilities daily. Make available fire fighting and spill response equipment for immediate access at each fuel storage location.

.3 Store all barrels containing fuel and /or hazardous materials in an elevated position, either on their side with bungs facing 9 and 3 o'clock position, or on pallets, upright, and banded.

.4 All barrels must be individually identified. Label will be to industry standards and will provide all information necessary for health and safety and environmental purposes. Make available, to all personnel, Material Safety Data Sheets for all materials maintained at site or along right-of-ways.

.5 All barrels/fuel containers to be stored in accordance with the Land Use Permit and labelled with INAC’s name and Contractor's name, as required by the Land Use Permit.

.6 All fuel storage tanks require registration, including of assignment of a registration number, with Environment Canada (EC) Federal Identification Registry for Storage Tank Systems (FIRSTS).

.7 Treat all waste petroleum products, including used oil filters, as hazardous materials.

.8 Complete regular inspections of all machinery hydraulic, fuel and cooling systems. Repair leaks immediately.

.9 Pre-assemble and maintain emergency spill equipment, including at least two fuel pumps, empty 200 litre barrels and absorbent material sufficient to clean up a 1000 litre spill at all fuel storage sites. Maintain spill mats or pans under mobile fuelling containers and a spill kit at the refuelling area.

.10 Remove all full and empty barrels, fuel storage facilities and associated materials and equipment from site at conclusion of Work.

.11 All fuel drums delivered to site, regardless of ownership, will be returned to supplier by Contractor for reuse or cleaned, crushed and disposed in accordance to Section 02 61 33 - Hazardous Waste Material. Fuel drums, if transported, will comply with Section 02 61 33 - Hazardous Waste Material and applicable regulations.

1.16 Spill Contingency Plan

.1 Submit to Departmental Representative for approval, detailed Spill Contingency Plan with the SSHSP. Update and submit revised Plan prior to each construction season. Identify response capabilities by detailing response times, and types and volumes of spills to which Contractor can respond. Following information is required as a minimum:

.1 A description of pre-emergency planning.

.2 Personnel roles, lines of authority and communication, emergency phone numbers.

.3 Emergency alerting and response procedures.

.4 Evacuation routes and procedures, safe distances and places of refuge.

.5 Directions/methods of getting to nearest medical facility.

.6 Emergency decontamination procedures.

.7 Emergency medical treatment and First-Aid.

.8 Emergency equipment and materials: Include and provide, at minimum, booms (sorbent and containment), sorbents for cleanup, fire extinguishers for A-B-C fires, overpacks for contaminated soils, pumps, hand shovels, picks and containment barriers, such as plastic sheeting.

.9 Emergency protective equipment: Including, at minimum, clothing, protective suits, respirators, etc. in accordance with National Institute for Occupational Safety and Health (NIOSH) guidelines.

.10 Procedures for reporting incidents.

.11 Spill response and containment plans for all materials that could potentially be spilled.

.12 Site specific spill contingency plans for all locations where refined petroleum products will be stored and used for refuelling including, but not limited to:

.1 An inventory of response and clean-up equipment.

.2 A site map with the location of storage facilities and the location of emergency equipment with spill response and clean-up equipment.

.3 A cover page that clearly identifies the NT-NU 24-hour Spill Report Line and the name, job title and 24-hour telephone number for person(s) responsible for activating the Spill Contingency Plan.

1.17 Medical

.1 Provide and maintain first aid and medical care and facilities for all workers as required by the Statutes of the Nunavut Safety Act.

.2 Maintain first aid supplies and sick quarters separate from general living quarters.

.3 Provide the appropriate first aid kit, based on the number of workers, in accordance with the Nunavut Safety Act.

.4 Establish an emergency response plan, acceptable to the AHJ, for the removal of any injured person to medical facilities or a doctor's care in accordance with applicable legislative and regulatory requirements. In the event that the Emergency Medical Technician (EMT) departs site with the patient, replace the EMT as soon as possible.

.5 Provide proof of First Aid credentials to Departmental Representative prior to the start of each construction season. Provide the appropriate number of First Aid attendants on-site in accordance with the Nunavut Safety Act and a minimum of one (1) person trained in Wilderness First Aid for each separated work group.

.6 Emergency and First Aid Equipment:

.1 Locate and maintain emergency and first aid equipment in appropriate location on site including first aid kit to accommodate number of site personnel at each camp as well as Separated Work Groups during site operations; portable emergency eye wash; fire protection equipment as required by legislation.

.2 Locate sufficient self contained breathing apparatus units; blankets and towels; stretcher; and one (1) hand held emergency siren in all confined access locations.

.3 Locate and maintain an Automated External Defibrillator (AED) in an appropriate location at project area. Submit details and procedures related to the operation and maintenance of the Automated External Defibrillator unit following the “Best Practice Model for implementation of an External Automated Defibrillator Program” with the SSHSP.

.4 Provide a full time EMT - Emergency Medical Technician for each project area, c/w 1000 hours of classroom and practical training, six (6) weeks of practical experience with required number of emergency response calls. The EMT will be territorially certified by a required exam and refresher exams every two (2) years. An EMT is a highly trained medical professional who responds to medical and trauma emergencies in the pre-hospital setting ("in-field") for the purpose of stabilizing a patient's condition before and during transportation to an appropriate medical facility.

1.18 Incidents and Accident Reports

.1 Immediately report, verbally, followed by a written report within 24 hours, to Departmental Representative, all incidents and accidents of any sort arising out of or in connection with the performance of the Work, giving full details and statements of witnesses. If death or serious injuries or damages are caused, report the accident promptly to Departmental Representative by telephone or facsimile in addition to any report required under federal and territorial laws and regulations.

.2 If a claim is made by anyone against the Contractor or Sub-Contractor on account of any accident, promptly report the facts in writing to Departmental Representative, giving full details of the claim.

1.19 Security

.1 Enforce the Camp Rules as provided under Section 01 54 00 - Camp Facilities.

.2 Limit site access only to persons employed on the Project. Unauthorized persons will be permitted on site only with the approval of Departmental Representative or Contractor.

1.20 Wildlife Management

.1 Develop a Wildlife Management Plan, as part of the SSHSP, that includes bear and large mammal safety and as a minimum meets the following requirements:

.1 Firearms must be stored and used in accordance with all AHJ. Terms of Use for firearms must be submitted to Departmental Representative for review.

.2 All wildlife encounters and sightings must be reported to Departmental Representative as part of the weekly report.

.3 All persons on site must be made aware of wildlife attractants and proper procedures to be followed in the event of wildlife encounter.

.4 A minimum of one (1) person must be designated as a Wildlife Monitor for each Separated Work Group and trained in firearms and wildlife deterrent use. Qualifications and training plans for Wildlife Monitors must be submitted to Departmental Representative as part of the Site Specific Safety Plan.

.5 Wildlife deterrent electric wire fence and alarm system installed around the main camp facilities must be tested regularly and the results reported to the Departmental Representative as part of the weekly report.

1.21 Wildlife Monitors

.1 Provide for the duration of the construction seasons, full-time wildlife monitors acceptable to Departmental Representative. Provide sufficient number of wildlife monitors with firearms and ammunition to protect the safety of all workers in all areas, day and night, including Departmental Representative and Departmental Representative's Authorized Personnel during site operations.

.2 Assign a wildlife monitor to accompany Departmental Representative and Departmental Representative's Authorized Personnel during all inspections and soil/material sampling activities that take place away from the construction camp area.

.3 All Wildlife Monitors are required to have a valid Firearm Certificate as per AHJ. Copies of the firearms certificates to be included with the SSHSP.

.4 Assume full responsibility for reporting incidents associated with wildlife encounters.

.5 Supply one ATV per wildlife monitor to facilitate his/her duties. Wildlife monitors must be fully trained in the safe use of the ATV equipment.

.6 Provide the wildlife monitors with mobile communication radios with charging units for on-site communication between the wildlife monitors, Contractor base radio, and Departmental Representative and Departmental Representative's Authorized Personnel. If radios do not provide sufficient range for continuous communication, Contractor must provide satellite phones or repeater stations and/or booster stations as required such that all workers are in live contact or have the ability to immediately contact base operations/monitoring at all times.

.7 Qualifications and training plans for wildlife monitors must be submitted to Departmental Representative as part of the SSHSP.

.8 Where possible, use non-lethal ammunition to deter wildlife prior to the use of lethal ammunition.

1.22 Fire Safety

.1 Provide all fire prevention, fire protection and fire fighting services at the Project site. Implement a fire safety program that includes fire prevention, fire protection and fire fighting requirements. Submit details of the fire safety program in writing to Departmental Representative for review with the SSHSP. Such review does not relieve Contractor from any obligations or responsibilities required by the Contract.

.2 All personnel on-site including Sub-Contractors and other temporary personnel are to be briefed on fire safety requirements and are familiar with the fire prevention, fire protection and fire fighting program.

.3 The fire safety program to meet or exceed the most recent editions of the following codes and standards:

.1 Nunavut Safety Act.

.2 National Fire Code of Canada.

.4 Personnel designated for fire fighting services must be provided with training for any special hazards that may be present. These personnel must also be provided with protective equipment as required by the Canada Labour Code.

1.23 Reporting Fires

.1 A person discovering a fire and all fire related incidents is to report immediately, by fastest available means, to Departmental Representative and site superintendent.

.2 A person discovering a fire will if possible, remain in the vicinity to direct fire fighting personnel.

1.24 Fire Extinguishers

.1 Provide and maintain fire extinguishers in sufficient quantity to protect, in an emergency, the Work in progress and the physical plant on-site.

1.25 Smoking Precautions

.1 Abide by applicable AHJ smoking regulations or the requirements of this Section, whichever are more stringent.

.2 Do not permit smoking in hazardous areas. Exercise care in the use of smoking materials in non-restricted areas.

.3 Provide and place signs prohibiting smoking in areas where smoking is not permitted.

.4 Signs prohibiting smoking are to be in English and the local dialect and are to have black lettering not less than 50 millimetres (mm) high, with a 12 mm wide stroke on a yellow background. In lieu of lettering, symbols of not less than 150 mm by 150 mm may be used.

.5 Smoking is prohibited within the camp buildings.

.6 Smoking is prohibited within 7.5 metres (m) of fuel storage and dispensing facilities.

.7 Provide and place signs indicating that smoking within 7.5 m of fuel storage and dispensing facilities is not permitted, and that the vehicle ignition must be turned off while the vehicle is being refuelled. Provide at least one weather-resistant sign at each fuel dispensing location. The signs are to have a minimum dimension of 200 mm and letters not less than 25 mm high. In lieu of lettering, signs may have international "No Smoking - Ignition Off" symbols not less than 100 mm in diameter. Install signs in a location visible to all drivers approaching the dispensing location, and at the dispensing unit.

1.26 Rubbish and Waste Materials

.1 Rubbish and waste materials are to be kept to a minimum.

.2 Storage:

.1 Extreme care is required where it is necessary to store oily waste in Work areas to complete work with maximum possible cleanliness and safety.

.2 Greasy or oily rags or materials subject to spontaneous combustion are to be disposed of as hazardous material in accordance with Section 02 61 33 - Hazardous Waste Material.

1.27 Hazardous Substances

.1 If the work entails the use of any toxic or hazardous materials or chemicals, or otherwise creates a hazard to life, safety or health, work is to be in accordance with the National Fire Code of Canada, Occupational Health and Safety Legislation, and WHMIS.

.2 Departmental Representative is to be advised, and a "Hot Work" permit issued by Contractor's designated representative in all cases involving welding, burning or the use of blow torches and salamanders, in buildings or facilities. Special precautions are necessary to safeguard life and property from damage by fire or explosives.

.3 Wherever work is being carried out in dangerous or hazardous areas involving the use of heat, fire watchers equipped with sufficient fire extinguishers, are to be provided. The determination of dangerous or hazardous areas along with the level of precaution necessary for Fire Watch is to be at the discretion of Contractor. Notify Departmental Representative prior to that determination.

.4 Provide proper ventilation and eliminate all sources of ignition where flammable liquids, such as lacquers or urethanes are used.

.5 Do not store flammable substances within 30 m of the Temporary Storage Area.

1.28 Questions and/or Clarifications

.1 Direct any questions or clarification to the Departmental Representative.

1.29 Unique Hazards

.1 Workers must receive training specific to the PPE requirements for working with site-specific unique hazards including, but not limited to, safe handling, disposal and emergency procedures for such hazards as:

.1 Physical hazards of dilapidated structures and uneven terrain.

.2 Physical hazards of working at heights.

.3 Fuels and lubricants.

.4 Metal contaminated soil.

.5 Polychlorinated biphenyl (PCB) contaminated soil.

.6 Hazardous demolition and debris wastes (PCBs, batteries, asbestos).

.7 Chemical reagents used on site in Wastewater Treatment Plant(s).

1.30 Measurement for Payment

.1 Include all costs for the preparation and completion of the SSHSP in Item 01 35 32-1, Site Specific Health and Safety Plan, in the Lump Sum Amount Breakdown Schedule. SSHSP costs will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. The lump sum price for the SSHSP will be paid after a satisfactory SSHSP has been submitted to the Departmental Representative.

.2 Wildlife Monitors, including ATVs, will be measured for payment by the number of days that the services are provided and will be paid under Item 01 35 32-2, Wildlife Monitors including ATVs, in the Basis of Payment Schedule.

.3 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Definitions

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2 Regulatory Overview

.1 Comply with all applicable environmental laws, regulations and requirements of Federal, Territorial and other regional authorities, and acquire and comply with such permits, approvals and authorizations as may be required.

.2 Comply with and be subject to all permits and approvals obtained from Departmental Representative to conduct the Work.

.3 Pay specific attention to the Land Use Permits, Water License and Quarry Permits.

.4 Pay specific attention to the Migratory Birds Convention Act, as amended in 1994.

1.3 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit the Historical, Archaeological and Cultural Resources Plan to the Departmental Representative sixty (60) days prior to initiation of on-site remediation activities.

.3 Submit the Wildlife Protection Plan to the Departmental Representative sixty (60) days prior to initiation of on-site remediation activities.

.4 Submit a Work Methodology Plan for In Stream or Near Water Works to Departmental Representative for review forty-five (45) days prior to commencing the activity.

.5 Submit a Barge Landing Plan to Departmental Representative for review forty-five (45) days prior to mobilization.

.6 Submit an Erosion, Sediment and Drainage Control Plan to Departmental Representative for review forty-five (45) days prior to initiation of on-site remediation activities.

.7 Submit a detailed inventory of environmental protection supplies forty-five (45) days prior to mobilization.

.8 Submit one (1) complete copy of all submittals and agency approvals to Departmental Representative as required.

1.4 Historical or Archaeological Sites

.1 Historical or archaeological sites and items of historical or scientific interest such as cairns, tent rings, commemorative plaques, inscribed tablets, and similar objects found on-site or in structures to be demolished will remain the property of the appropriate Authorities Having Jurisdiction (AHJ).

.2 Prior to commencing remediation activities at the site, review the following with Departmental Representative:

Extent of the archaeological sensitive areas including gravesites.

Scope of work to be completed within archaeologically sensitive areas including the Station Area, the Beach Area and higher beach ridges.

Methods to be used by Contractor to mark and protect the areas from construction/remediation activities.

Methods to be used by the Contractor to complete work within archaeologically sensitive areas where required.

.3 Give immediate notice to Departmental Representative if evidence of archaeological finds are encountered during construction/remediation activities, and await Departmental Representative's written instructions before proceeding with Work in this area.

.4 Protect archaeological finds and similar objects found during course of Work.

1.5 Historical Archaeological Control

.1 Provide Historical, Archaeological and Cultural Resources Plan that defines procedures for identifying and protecting historical, archaeological, cultural and biological resources known to be on Project site, and/or identifies procedures to be followed if resources not previously identified are discovered during construction.

.2 Plan to include methods to provide protection for known or discovered resources and identify lines of communication between Contractor personnel and Departmental Representative.

.3 Plan to include equipment and methods to be implemented for completion of Work as required in archaeological sensitive areas, and in particular the Beach Area.

1.6 Wildlife Protection Plan

.1 Submit a Wildlife Protection Plan that defines procedures for the protection of wildlife known to frequent the Project and surrounding areas. Wildlife Protection Plan shall include, but not be limited to, the following:

.1 Avoidance of active animal dens.

.2 Avoidance of active nests.

.3 Identification and removal of birds' nests on all facilities identified for demolition prior to the restriction window for migratory birds.

.4 Potential access restrictions and/or disturbance minimizing of migration activities.

.5 Minimizing disturbances caused by aircrafts.

1.7 Site Maintenance

.1 Keep the site free from the accumulation of waste materials and debris as specified in this section.

.2 Upon completion of the work, clean away and dispose of all surplus material, supplies, rubbish and temporary works leaving the site neat and tidy to the requirements of Departmental Representative and the Land Use Permit.

1.8 Fires

.1 Fires and burning of rubbish on site permitted only when approved by the Departmental Representative and a burning exemption is obtained for the Land Use Permit.

.2 Obtain all required permits from AHJ.

.3 Where fires or burning permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved. Restore, clean and return to new condition stained or damaged Work.

.4 Provide supervision, attendance and fire protection measures as required by AHJ and these Specifications.

.5 Provide an ash collection system capable of containing ash until it is sampled. A water-tight metal tray with sides of at least 300 millimetres (mm) high is acceptable. A tray from materials on-site is acceptable. Provide means to protect the ash from wind and water until it is sampled.

.6 A leachate extraction test is to be carried out by Departmental Representative on the solid residual material resulting from the burning process. The leachate toxicity of the material will be determined in accordance with Canada Environmental Protection Act (CEPA) Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations (EIHWHRMR). Dispose of materials found to be non-hazardous at the Contractor's Non-Hazardous Waste Disposal Facility. Dispose of materials found not to be leachate toxic, but exceeding Tier II contaminated soil criteria as described in Section 02 55 13 – Contaminated Soil. Package leachate toxic material in accordance EIHWHRMR, as required.

1.9 Disposal of Wastes

.1 Do not bury rubbish and waste materials on site.

.2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways.

1.10 Fuel Storage

.1 Comply with Canadian Environmental Protection Act (CEPA) Storage Tank Systems for Petroleum Products Regulations, CCME Codes of Practice and any regulations obtained from Territorial and other regional authorities, for setting up and operating temporary fuel tanks.

.2 All fuel storage tanks require registration, including of assignment of a registration number, with Environment Canada (EC) Federal Identification Registry for Storage Tank Systems (FIRSTS).

1.11 Site Clearing and Plant Protection

.1 Protect vegetation, including plants on site and adjacent properties, where indicated.

.2 Minimize stripping of topsoil and vegetation.

1.12 Erosion and Sediment Control

.1 Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas, from stockpiles, staging areas, and other Work areas. Prevent erosion and sedimentation.

.2 Minimize amount of bare soil exposed at one time. Stabilize disturbed soils as quickly as practical. Strip vegetation, re-grade, or otherwise develop in such a way as to minimize erosion. Remove accumulated sediment resulting from construction activity from adjoining surfaces, drainage systems, and water courses, and repair damage caused by soil erosion and sedimentation as directed by Departmental Representative.

.3 Provide and maintain temporary measures which may include, but are not limited to, silt fences, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, sedimentation basins, vegetative cover, dikes, and any other construction required to prevent erosion and migration of silt, mud, sediment, and other debris off site or to other areas of site where damage might result, or that might otherwise be required by Laws and Regulations. Make sediment control measures available during construction. Place silt fences in ditches to prevent sediments from escaping from ditch terminations.

.4 Plan construction procedures to avoid damage to Work or equipment encroachment onto water bodies or drainage ditch banks. In the event of damage, promptly take action to mitigate effects. Restore affected bank or water body to pre-existing condition.

.5 Do not disturb existing embankments or embankment protection.

.6 Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

.7 If soil and debris from site accumulate in low areas, ditches, or other areas where, in Departmental Representative's determination, it is undesirable, remove accumulation and restore area to original condition.

.1 Do not pump water containing suspended materials into waterways or drainage systems.

.2 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.13 Erosion, Sediment and Drainage Control Plan

.1 The Erosion, Sediment and Drainage Control Plan shall specifically address the protection of water bodies, water courses, fisheries and the following:

.1 Details of grading Work to prevent surface drainage into or out of Work areas.

.2 Details of erosion control works and materials to be used for specific Work activities, including the deployment of silt fencing, floating silt curtains and containment booms during construction and excavation activities.

.3 Work Schedule including the sequence and duration of all related Work activities, with consideration of timing windows specified by Department of Fisheries and Oceans (DFO) for in-water works.

.4 The treatment of site runoff to prevent siltation of watercourses.

.5 Dewatering procedures for excavated materials including silt removal procedures prior to discharge.

.6 Stabilizing procedures during excavation.

.7 Fish salvage efforts where applicable.

.8 Maintenance and monitoring of erosion control works.

.9 Reporting as required by AHJs.

.2 All approved discharge from dewatering activities to be released onto the ground at a location that is a minimum of 30 metres (m) from natural drainage courses and 100 m from fish bearing waters.

.3 Have on hand sufficient pumping equipment, machinery, and tankage in good working condition for ordinary emergencies, including power outage, and competent workers for operation of pumping equipment.

1.14 Work Adjacent to Waterways

.1 Do not operate construction equipment in waterways.

.2 Do not use waterway beds for borrow material.

.3 Do not dump excavated fill, waste material or debris in waterways.

.4 Do not use shoreline grounds (at least 30 m from edge) as staging or storage area, equipment/vehicle maintenance or overnight parking, storage of fuel or for stockpiling of granular fill and other deleterious material storage.

.5 Design and construct temporary crossings to minimize erosion to waterways.

.6 Do not skid logs or construction materials across waterways.

.7 Do not refuel equipment (except for boats) within 30 m of water bodies or on ice.

.8 If stream or drainage course crossing is required, use methodologies in accordance with DFO requirements, and with consideration of DFO timing windows.

.9 Install fish exclusion nets or flow diversion to prevent fish from migrating to the work site.

.10 Effective sediment and erosion control measures to be installed prior to starting work to prevent entry of sediment into watercourses. Such measures to be inspected regularly and repaired if damaged by construction, precipitation or snowmelt.

1.15 Work Methodology for In-Stream or Near Water Works

.1 Submit a Work Methodology Plan for work to be undertaken in or near water bodies to Departmental Representative for review forty-five (45) days prior to commencing the activity.

.2 The Work Methodology Plan is to include the following:

Sketch of work area, including placement of erosion control works.

Reference to DFO Operational Statements and/or Best Management Practices as applicable.

Timing of Work.

Specific details of erosion control works, materials to be used, and deployment and removal methods.

Work Schedule including the sequence and duration of all related Work activities.

Fish salvage efforts as required.

Maintenance, monitoring, and final removal of erosion control works.

Reporting as required by AHJs.

1.16 Barge Landing Plan

.1 The Barge Landing Plan is to address the following:

1. Inspection of landing site prior to barge arrival.
2. Timing windows for barge landing, loading and unloading.
3. Mitigation plan for obstructions or other factors impacting barge landing, such as boulders.
4. Procedures for off-loading, such as stabilization of the barge, potential fill placement or levelling of the shore and/or placement of beach plating.
5. Procedures and equipment necessary for preventing disturbance to the inter-tidal zone.
6. Spill response procedures and equipment.

1.17 Dust and Particulate Control

.1 Execute Work using methods to minimize raising dust from decontamination operations. Implement and maintain dust and particulate control measures as determined necessary by applicable regulations and standards during Work and in accordance with AHJ.

.2 Provide positive means to prevent airborne dust from dispersing into atmosphere. The use of oil for dust control is prohibited.

.3 Prevent dust from spreading to beyond the immediate work area.

.4 Departmental Representative or designate may stop work at any time when Contractor's control of dusts and particulates is inadequate for worker exposure relative to indoor conditions during demolition activities, or when air quality monitoring indicates that release of fugitive dusts and particulates into the work area equals or exceeds specified levels.

.5 If Contractor's dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, stop work. Contractor must discuss procedures that Contractor proposes to resolve problem. Make all necessary changes to operations prior to resuming work that may cause release of dusts or particulates.

.1 Prevent sandblasting and other extraneous materials from contaminating air beyond application area, by providing temporary enclosures.

.2 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

.3 Provide dust control for temporary roads.

1.18 Environmental Protection Supplies

.1 Comply with federal and territorial fisheries and environmental protection legislation, including preventing the loss or destruction of fish habitat, and minimizing the impact of sedimentation, siltation or otherwise causing a degradation in water quality.

.2 Provide erosion, sediment and drainage control supplies necessary to complete all requirements of the Work in compliance with federal and territorial fisheries and environmental protection legislation.

.3 Erosion, sediment and drainage control supplies are to include, but are not limited to the following:

.1 Minimum of 30 m of polypropylene silt fence (typical height of 0.9 m) and the necessary stakes for installation. These materials are to be used as necessary to prevent sediment transport into water bodies. Product acceptance will be based on compliance with the minimum/maximum average values found in Part 2 of this Section.

.2 Minimum of 60 lineal metres, and as required, of 200 mm diameter hydrophobic, sorbent booms. These materials are to be used as necessary to prevent the migration of hydrocarbons.

.4 Supply, transport, install and maintain erosion, sediment and drainage controls necessary to complete all work in accordance with the requirements of Departmental Representative.

.5 Unused Erosion, Sediment and Drainage Control supplies are to remain the property of the Contractor upon completion of the Contract.

.6 At the completion of construction, dispose of used silt fence as non-Hazardous Waste. Dispose of used absorbent boom in accordance with Section 02 61 33 - Hazardous Waste Material.

1.19 Notification

.1 Departmental Representative will notify Contractor in writing of observed non-compliance with Federal, Provincial or Municipal environmental laws or regulations, permits, etc.

.2 After receipt of such notice, Contractor will inform Departmental Representative of proposed corrective action and take such action upon receiving approval from Departmental Representative.

.3 Departmental Representative will issue stop order of Work until satisfactory corrective action has been taken.

.4 No time extensions granted, or equitable adjustments allowed, to Contractor for such suspensions.

1.20 Measurement for Payment

.1 Include all costs for the supply of environmental protection supplies in Item 01 35 43-1, Environmental Protection Supplies in the Lump Sum Amount Breakdown Schedule. Cost for Environmental Protection Supplies will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.2 Except as indicated above, work under this section will not be measured Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Polypropylene Silt Fence

.1 Silt Fence: An assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile to be uniform in texture and appearance, having no defects, flaws, or tears that would affect its physical properties; and contain sufficient ultraviolet ray inhibitor and stabilizers to provide minimum 2-year service life from outdoor exposure.

.1	Minimum Grab Tensile Strength (ASTM D4632):	520 N.
.2	Maximum Elongation (ASTM D4632):	15%.
.3	Minimum Puncture Strength (ASTM D4833):	250 N.
.4	Maximum Apparent Opening Size (ASTM D4751):	500 µm.

.2 Net Backing: Industrial polypropylene mesh joined to geotextile at both top and bottom with double stitching of heavy-duty cord, with minimum width of 750 mm.

.3 Posts: Sharpened wood, approximately 50 mm square, protruding below bottom of geotextile to allow minimum 450 mm embedment; post spacing 2.4 m maximum. Securely fasten each post to geotextile and net backing using suitable staples.

2.2 Hydrophobic Sorbent Boom

.1 200 mm dia. polypropylene material.

.2 The Minimum litres (L) absorbed per 3 m length is 50 L.

PART 3 - EXECUTION

3.1 Erosion and Sedimentation Control

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff to adjacent properties, according to requirements of AHJ.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during Work.

.3 Implement erosion control methods as directed by Departmental Representative.

3.2 Installation:

.1 Construct temporary erosion control items as required. Review actual alignment and/or location of various items with Departmental Representative prior to installation.

.2 Do not construct silt traps or fencing in flowing streams or in swales without approval from the AHJ.

.3 Check erosion and sediment control measures daily.

.4 Whenever sedimentation is caused by stripping vegetation, re-grading, or other development, remove it from adjoining surfaces, drainage systems, and watercourses, and repair damage as quickly as possible.

.5 Maintain and/or repair damaged erosion control measures promptly.

.6 Unless indicated or directed by Departmental Representative, remove temporary erosion and sediment control devices upon completion of Work. Spread accumulated sediments to form a suitable surface for seeding or dispose of, and shape area to permit natural drainage to satisfaction of Departmental Representative. Materials once removed become property of Contractor.

END OF SECTION

PART 1 – GENERAL

1.1 References and Codes

.1 Complete Work in accordance with all approvals, permits and licenses acquired for this Project, including those from the Nunavut Water Board, Indigenous and Northern Affairs Canada (INAC), Fisheries and Oceans Canada (DFO) and National Building Code of Canada (NBC) including all amendments and other codes of federal, provincial or local application. If there is a conflict or discrepancy, the more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents.

.3 Authorities Having Jurisdiction (AHJs).

.3 Complete Work in accordance with the Specifications and meet or exceed all codes, standards and regulations applicable to the Work and issued under the authority of the Government of Canada and the Government of Nunavut. Advise Departmental Representative of any discrepancies in the codes, standards and regulations applicable to the Work.

1.2 References and Codes - Federal

.1 Meet or exceed the most current issue of governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the Government of Canada including, but not limited to the following:

.1 Canada Labour Code Part II-Occupational Health and Safety (R.S. 1985, c.L-2).

.2 Canada Occupational Health and Safety Regulations (SOR/86-304).

.3 Canadian Environmental Protection Act, PCB Regulations (SOR/2008-273).

.4 Controlled Products Regulations (SOR/88-66) a.SOR/2001-254.

.5 Export and Import of Import of Hazardous Waste and Hazardous Recyclable Material Regulations (EIHWHRMR) (SOR/2005-149).

.6 Inter-Provincial Movement of Hazardous Waste Regulations (SOR/2002-301).

.7 National Fire Code of Canada, 1995 a. 2002.

.8 Ozone Depleting Substances Regulations, 1998 (SOR/99-7).

.9 Transportation of Dangerous Goods Act, 1992 (S.C. 1992, c.34) a.1999, c.31.

.10 Transportation of Dangerous Goods Regulations (SOR/2001-286) a.SOR/2011-60.

.11 Territorial Land Use Regulations (C.R.C., c.1524) a.98-430.

.12 Storage Tank System for Petroleum Products & Allied Petroleum Products Regulations (SOR / 2008-197).

.13 Migratory Birds Convention Act.

.14 Nunavut Land Claim Agreement (Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, 1993).

.15 Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (Canadian Council of Ministers of the Environment; CCME, 1999).

.16 Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME, 1999).

.17 Contaminated Sites Management Policy (INAC, 2002).

.18 Northern Affairs Contaminated Sites Management Policy (INAC, 2002).

.19 A Federal Approach to Contaminated Sites (Contaminated Sites Management Working Group; CSMWG, 2002).

.20 Risk Management Guidance Document (INAC, 2006).

.21 Contaminated Sites Cost Estimating Guide (INAC, 2006).

.22 Treasury Board Policy on Management of Real Property (TB, 2007).

.23 Risk Management Tool & Reporting Tool User Guide (INAC, 2007).

.24 Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil (CCME, 2008).

.25 Environment, Health & Safety Management System Manual (INAC, 2008).

.26 Environment, Health & Safety Standard Operating Procedures Manual (INAC, 2008).

.27 Environment, Health & Safety Control Framework, Northern Contaminated Sites Program (INAC, 2008).

.28 Environment, Health & Safety Audit Program Guide (INAC, 2008).

.29 Construction Project Safety Management Guide, 5th Edition (Public Works and Government Services Canada; PWGSC, 2008).

.30 Abandoned Military Site Remediation Protocol (INAC, 2009).

.31 Guidelines for Canadian Drinking Water Quality, April 2007.

.32 Guidelines for Effluent Quality and Wastewater Treatment at Federal Establishments, April 1976.

.33 Environment Canada Technical Document for Batch Waste Incineration, EC, 2010.

1.3 References and Codes - Nunavut

.1 Meet or exceed the governing codes, standards and guidelines, and regulations applicable to Work and issued under the authority of the Government of Nunavut and the Northwest Territories including, but not limited as follows:

.1 Environmental Protection Act (Nunavut) (R.S.N.W.T. 1988, c. E-7) a. 1998, c.21, c.24.

.2 Labour Standards Act (Nunavut) (R.S.N.W.T. 1988, c.L-1) amended S.N.W.T 2003, c.15, in force January 2004.

.3 Public Health Act, R.S.N.W.T. 1988, c.P-12.

.4 Spill Contingency Planning and Reporting Regulations R-068-93.

.5 Fire Prevention Act, R.S.N.W.T. 1988, c.F-6.

.6 Transportation of Dangerous Goods Act (1990 S.N.W.T. 1990, c.36).

.7 Environmental Guideline for Used Oil and Waste Fuel (Nunavut), June 2012.

.8 Work Site Hazardous Materials Information System Regulations (R.R.N.W.T. 1990, c.S-2).

.9 Nunavut Waters and Surface Rights Tribunal Act (2002).

.10 Nunavut Environmental Guideline for Waste Asbestos (2002), Revised January 2011.

.11 Environmental Guideline for Waste Batteries (Nunavut), January 2002, Revised January 2011.

.12 Environmental Guideline for Waste Lead and Lead Paint (Nunavut), November 2001, Revised March 2011.

.13 Environmental Guideline for Waste Solvents (Nunavut), January 2002, Revised January 2011.

.14 Environmental Guideline for Contaminated Site Remediation, Revised March 2009 (Nunavut).

.15 Environmental Guideline for Ambient Air Quality, December 2002, Revised October 2011, (NWT).

.16 Environmental Guideline for Dust Suppression, January 2002 (Nunavut).

.17 Environmental Guideline for the General Management of Hazardous Waste, Revised October 2010 (Nunavut).

.18 Guideline for Ozone Depleting Substances, January 2002 (Nunavut).

.19 Spill Contingency Planning and Reporting Regulations (R-068-93), July 1993 (Nunavut).

.20 Contingency Planning and Spill Reporting in Nunavut. A Guide to New Regulations.

1.4 Permits and Licenses

.1 The following permits and licenses will be provided to the Contractor when received by INAC:

.1 Water Use License, issued by Nunavut Water Board in accordance with the Nunavut Waters Act.

.2 Land Use Permit, issued by Indigenous and Northern Affairs Canada - Land Administration Division.

.3 Quarry Permit, issued by Indigenous and Northern Affairs Canada.

.2 Any deviations from the current remediation plan may require permit amendments or field authorizations. Notify the Departmental Representative of any proposed deviations so INAC can contact the appropriate agency to obtain approval for the deviation. Approval may take ninety (90) days or more from the time of submission.

1.5 Hazardous Material Discovery

.1 Asbestos: Demolition of spray or trowel-applied asbestos is hazardous to health. Should material resembling spray or trowel-applied asbestos be encountered in course of demolition Work, immediately stop Work and notify Departmental Representative. Refer to Section 02 82 00.01 - Asbestos Abatement - Minimum Precautions and Section 02 82 00.02 - Asbestos Abatement - Intermediate Precautions.

.2 Stop Work immediately and notify Departmental Representative upon discovery of following materials during course of Work:

.1 Designated substances such as polychlorinated biphenyls (PCBs), asbestos, and mercury.

.2 Unknown and/or potentially hazardous substances.

.3 Items that may have archaeological, cultural or scientific significance.

.3 Work at site may involve contact with:

.1 Metal impacted soil.

.2 PHC (total petroleum hydrocarbons) impacted soils.

.3 PCB impacted soils.

.4 Hazardous liquids and petroleum based sludges.

.5 Demolition debris with lead based and PCB amended paints.

.6 Asbestos Containing Materials (ACMs).

1.6 WHMIS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada and Health and Welfare Canada.

1.7 Submittals

.1 All submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit copies of Safety Data Sheet (SDS) to Departmental Representative upon delivery of materials to site.

1.8 Extended Work Hours

.1 If applicable, apply and obtain a permit for Extended Hours from the Labour Standards Compliance Office, Nunavut Department of Justice. Submit a copy to the Departmental Representative upon request.

1.9 Measurement for Payment

.1 Work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Inspection

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative, instructions, or law, of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative is to pay cost of examination and replacement.

1.2 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit copies of inspection and test reports to Departmental Representative as received.

1.3 Independent Inspection Agencies

.1 Independent Inspection/Testing Agencies will be engaged by the Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services is to be borne by Departmental Representative.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to complete Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and re-inspection.

1.4 Access to Work

.1 Allow inspection/testing agencies access to Work, off-site manufacturing and fabrication plants.

.2 Provide reasonable facilities for such access.

1.5 Procedures

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on-site. Provide sufficient space to store and cure test samples.

1.6 Rejected Work

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's Work damaged by such removals or replacements promptly.

.3 If in the opinion of the Departmental Representative it is not expedient to correct defective Work or Work not completed in accordance with Contract Documents, Departmental Representative may deduct from Contract Price the difference in value between Work completed and that called for by Contract Documents, amount of which will be determined by the Departmental Representative.

1.7 Reports

.1 Provide copies to Sub-contractor of work being inspected or tested and manufacturer or fabricator of material being inspected or tested.

1.8 Measurement for Payment

.1 Work under this section will not be measured Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Installation and Removal

.1 Provide temporary utilities to facilitate all construction and camp activities.

.2 Remove from site all such Work after use.

.3 Provide all temporary utilities consisting of the design, supply, construction, maintenance, operation and removal of the utilities and services required to support the remediation of the site. Temporary utilities to satisfy requirements of Federal, Territorial and local Authorities Having Jurisdiction (AHJ), and comply with the requirements of Section 01 35 43 - Environmental Procedures.

1.2 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.3 Existing Services

.1 The location of equipment and utility services specified or indicated on the Drawings is to be considered as approximate.

.2 Before commencing Work, establish location and extent of services in area of Work, and notify Departmental Representative of findings.

.3 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

1.4 Water Supply

.1 Provide continuous supply of potable water for construction use.

.2 Provide means to conserve water on-site, as suitable water sources may be seasonal. Consider using tanks to store water during high flow events.

.3 Abide by terms of Water Licence regarding water usage.

.4 Adhere to discharge requirements as described in Section 01 35 15 – Special Project Procedures for Contaminated Sites.

1.5 Temporary Power and Light

.1 Provide, operate, and maintain an electrical power supply system, in accordance with governing regulations, to service Contractor's site power requirements.

.2 Install temporary facilities as necessary for power distribution, such as power cable and pole lines, subject to Departmental Representative's approval.

.3 Provide lighting and power at site for use during Work by Contractor, Sub-Contractors, and Departmental Representative's support personnel including outdoor lighting for night shift as applicable.

1.6 Temporary Heating and Ventilation

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

.3 Provide temporary heat and ventilation in enclosed areas as required to:

.1 Facilitate progress of Work.

.2 Provide adequate ventilation to meet health regulations for safe working environment.

.3 Protect Work and products against dampness and cold.

.4 Prevent moisture condensation on surfaces.

.5 Provide ambient temperatures and humidity levels for storage and installation of materials.

.4 Provide ventilation for temporary facilities as follows:

.1 Provide Carbon Monoxide detectors for occupied areas.

.2 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.3 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.4 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.5 Ventilate storage spaces containing hazardous or volatile materials.

.6 Ventilate temporary sanitary facilities.

.7 Continue operation of ventilation and exhaust system for time after cessation of Work process to assure removal of harmful elements.

.5 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

.6 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.7 Temporary Communication Facilities

.1 Provide and pay for temporary telephone, fax, and data hook up lines and equipment necessary for Contractor use and use of Departmental Representative.

1.8 Fire Protection

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

1.9 Drainage

.1 Refer to Section 01 35 43 - Environmental Procedures.

1.10 Signs and Notices

.1 Safety and Instruction Signs and Notices:

.1 Signs and notices for safety and instruction to be in English, and the local Inuit dialect.

.2 Maintenance and Disposal of Site Signs:

.1 Maintain approved signs and notices in good condition for duration of Project, and dispose of off-site on completion of Project, or earlier if directed by Departmental Representative.

1.11 Measurement for Payment

.1 Work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Description of Work

.1 Source, supply, construct, erect, operate, maintain and decommission Site Construction

1.2 Definitions

.1 Construction Facilities: Temporary structures, services or equipment erected and used on-site to support Contractor's operations for completion of Work.

.2 Temporary Storage Area: A designated area used for the consolidation and storage of containerized Hazardous Waste Materials, containerized contaminated soils and containerized Non-Hazardous Debris.

.3 Hazardous Material Processing Area: A designated area, accepted by the Departmental Representative, for the consolidation, processing and containerization of hazardous waste materials, including barrel contents.

1.3 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit to the Departmental Representative Field Drawings to indicate relative position of various services and equipment when required by Departmental Representative.

.3 Submit a Waste Management Plan to the Departmental Representative for review forty-five (45) days prior to mobilization. Update the submission following arrival on site, as required.

.4 Submit to the Departmental Representative a detailed inventory of the Temporary Storage Area indicating the location and contents of each container each month during the construction season.

1.4 Installation and Removal

.1 Provide construction facilities in order to execute Work expeditiously.

.2 Remove from site all such Work after use.

.3 Provide all temporary facilities consisting of the design, supply, construction, maintenance, operation and removal of the facilities and services required to support the remediation of the site. Provide temporary facilities as specified at the work site, and any other location where temporary facilities are essential to the Work. Temporary facilities are to satisfy requirements of Federal, Territorial and local authorities having jurisdiction, and comply with the requirements of Section 01 35 43 - Environmental Procedures.

1.5 Location of Equipment and Fixtures

.1 Location of equipment indicated or specified are to be considered as approximate.

.2 Inform Departmental Representative of impending installation and obtain his/her approval for actual location if deviating from specified location.

1.6 Access and Dust Control

.1 Provide and maintain adequate access, including snow removal, to all working areas of the site, camp, utilities and offices during all periods of work by Contractor, subcontractors and other contractors completing work for Departmental Representative.

.2 Remove snow, as may be required, to gain access to site, as required, to meet the project schedule.

.3 Minimize dust creating activities, as specified in Section 01 35 43 – Environmental Procedures.

1.7 Vehicles

.1 Supply one crew cab four-wheel drive pickup truck for use by the Departmental Representative and the Departmental Representative's Authorized Personnel for the duration of the Project.

.2 Vehicle to be in new condition, having been driven for not more than 30,000 kilometres (km).

.3 Equip vehicle with heater, defroster, right and left hand mirrors, windshield washers, permanent type anti-freeze, spare wheel, jack, wheel wrench, snow tires on drive wheels and spare, directional signals with two-way flasher, full width front seat and license in accordance with Territorial regulations.

.4 Provide one (1), two-passenger side-by-side seating four-wheel drive all-terrain vehicles (ATVs) for use by Departmental Representative for the duration of the work activity. The ATVs must meet the following criteria, at minimum:

.1 675 cc gasoline or equivalent diesel engine.

.2 Roll-over protection system.

.3 Hard enclosure with glass windshield and windshield wipers.

.4 Pick-up style rear box suitable for carrying samples and equipment.

.5 Buggy whips and rotating beacon.

.6 Tire repair kit and air pump.

.5 The use of these vehicles will not be shared with Contractor.

.6 Vehicles provided for purposes of this contract are accepted at risk of supplier whether in possession of supplier or Departmental Representative.

.7 Deliver vehicles to location of camp at Project Area.

.8 Store vehicles in accordance with manufacturer's recommendations.

.9 Maintain all vehicles in good running order for duration of Project. If vehicles are out of commission for any period of time, provide other replacement vehicles.

.10 Repair and maintain vehicles expeditiously.

.11 Provide and pay for all fuel and lubricants required to operate the vehicles for the duration of the Project.

.12 Provide applicable insurance for damage to vehicles and ATVs under use by Departmental Representative or Departmental Representative's Authorized Personnel, or absorb costs for damage to same.

1.8 Equipment, Tool and Material Storage

.1 Provide lockable weatherproof sheds for storage of tools, equipment and materials, and maintain, in a clean and orderly condition.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with Work activities.

1.9 Sanitary Facilities

.1 Provide sanitary facilities for Work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.10 Construction Signage

.1 Maintain approved signs and notices in good condition for duration of Project, and dispose of off site on completion of Project or earlier if directed by Departmental Representative.

1.11 Drainage

.1 Refer to Section 01 35 43 - Environmental Procedures and to specific sections in Divisions 2 and 31 of these Specifications for site drainage and pumping requirements.

1.12 Scaffolding

.1 Provide and maintain scaffolding, ramps, ladders, swing staging, platforms, and temporary stairs as necessary for the completion of the work.

.2 Construct and maintain scaffolding in a rigid, secure and safe manner.

.3 Erect scaffolding independent of walls. Remove promptly when no longer required.

.4 Design and construct scaffolding in accordance with CSA S269.2-M87. Provide details and procedures for ensuring all scaffolding equipment, materials, and construction practices meet all applicable regulations and site specific requirements.

.5 Conform to safety requirements of Section 01 35 32, Site Specific Health and Safety Plan.

1.13 Removal or Shut-Down of Facilities

.1 Schedule and obtain approval from Departmental Representative to remove temporary facilities from site.

.2 When project is closed down at end of construction season, keep facilities operational until close down is approved by Departmental Representative.

1.14 Measurement for Payment

.1 Work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 – EXECUTION

3.1 Waste Management Plan

.1 Provide a detailed Waste Management Plan which outlines the methodology for removing and containerizing Hazardous Waste Materials and the methodology for Non-Hazardous Waste segregation, size reduction and processing. The Waste Management Plan is to include but not be limited to the following:

.1 Details on the methods of handling and collection of Hazardous Material.

.2 The type of container(s) and quantities to be used for Hazardous and Non-Hazardous Material Containerization as per the requirements of the specifications.

.3 Size reduction and packaging methods to maximize Hazardous and Non-Hazardous Waste Container space.

.4 The type of packaging and/or containers to be used for off-site transport of Non-Hazardous Waste.

.5 Details of the Temporary Storage Area as per the requirements of this Section. Details of the Temporary Storage Area are to include layout and construction details, procedures to prevent contamination of underlying or adjacent soils, a figure showing the location of the Temporary Storage Area and the proposed area for the various types of materials.

.6 Details of the Hazardous Material Processing Area as per the requirements of Section 02 61 33 – Hazardous Waste Material. Details of the Hazardous Material Processing Area are to include layout and construction details, procedures to prevent contamination of underlying or adjacent soils, a figure showing the location of the Hazardous Material Processing Area and the proposed areas for the various types of Hazardous Material.

.7 The details regarding the Contractor's Designated Hazardous Waste Disposal Facility, as per Section 02 61 33 – Hazardous Waste Material.

.8 The details regarding the Contractor's Designated Non-Hazardous Waste Disposal Facility, as per Section 02 61 33 – Hazardous Waste Material.

3.2 Temporary Storage Areas

.1 Develop Temporary Storage Areas for the storage of containerized Hazardous Waste Materials, containerized contaminated soil and packaged Non-Hazardous Debris.

.2 Provide details of the Temporary Storage Areas in the Waste Management Plan.

.3 Prepare the Temporary Storage Area to comply with the following:

.1 Provide easy access to the off-site transport equipment.

.2 Allow the containers to be level and distribute the weight of the containers evenly to the supporting surface.

.3 The area is to be free of standing water.

.4 Surface water run-on to the area must be minimized. The area must not be subject to flooding, excessive snow drifting, and/or seasonal saturation.

.5 Sufficiently compact the area so as to prevent the containers from settling into the soil. Supply, place and compact additional granular fill as required.

.6 Size the Temporary Storage Area sufficiently so that it will accommodate all waste.

.4 Confirm the location of the Temporary Storage Areas with Departmental Representative at least one (1) week prior to commencing operations to allow for baseline sampling by Departmental Representative.

.5 The Temporary Storage Areas are to be located as follows:

.1 More than 30 metres (m) away from any water body or drainage course.

.2 On stable ground not subject to flooding or seasonal saturation.

.3 In an area not routinely accessed or essential to Contractor's workforce or site personnel.

.4 More than 30 m away from flammable materials.

.6 Within the Temporary Storage Areas, segregate the various types of containerized materials, as specified in Section 02 61 33 – Hazardous Materials, as follows:

.1 Containerized Polychlorinated Biphenyl (PCB) Material.

.2 Containerized Contaminated Soil.

.3 Containerized Hazardous Material.

.4 Containerized Barrel Contents.

.5 Non-hazardous Materials.

.7 Within the Temporary Storage Areas, provide access barriers and a single access point for the PCB Storage Area. Erect signage. Signage is to be visible from all sides of the area. The English version of the sign is to read:

CAUTION

PCB STORAGE AREA

TRESPASSING IS PROHIBITED

.8 Signage must be posted in English and the local dialect. All lettering is to conform to CAN3-Z321-77, or latest edition thereof. All lettering is to be black, not less than 100 millimetres (mm) high, with a 25 mm wide stroke, on a white background.

.9 Keep PCB storage containers locked or equivalently secured to prevent unauthorized access to stored materials.

.1 Permit only authorized personnel to enter the PCB storage area.

.2 Make PCB storage containers accessible to authorized inspectors as required by Departmental Representative.

.10 Place rows of storage containers at a minimum of one (1) metre offset so that Container and labels remain visible.

.11 Store sufficient sorbent materials or an approved spill kit near the Temporary Storage Areas for an emergency clean-up.

.12 For storage of Hazardous Waste Material, no stacking of containers will be allowed.

.13 Departmental Representative is to carry out baseline soil sampling and analyses of the Temporary Storage Area prior to commencing placement of materials at these areas, and confirmatory sampling following the decommission of the areas.

.14 The Contractor is responsible for any contamination resulting from the improper storage and handling of contaminated or hazardous materials over the duration of site remediation activities. In the event of such contamination, the Contractor is to submit to Departmental Representative a plan for site remediation in accordance with all Federal and Territorial Regulations to be enacted upon immediately following approval by Departmental Representative. All clean-up costs, including but not limited to excavation and disposal, will be the responsibility of the Contractor.

END OF SECTION

PART 1 – GENERAL

1.1 General

.1 Provide all labour, equipment and materials, and performance of all Work necessary for mobilization to, and demobilization from, the CAM-C site. This will include all Departmental Representative provided supplies, equipment and material.

.2 Mobilization to include transportation to site of Contractor's labour, equipment, materials, and assembling, erecting, and preparing site in readiness to start Work, all in accordance with Contractor's Schedule.

.3 Demobilization to include dismantling and removal from site of all Contractor's equipment, camp facilities and materials, contaminated soil and waste resulting from cleanup of site and transportation of labour from site.

.4 Decontaminate and clean all equipment used on the Project prior to demobilization according to Section 01 35 15 – Special Project Procedures for Contaminated Sites.

.5 Do not mobilize to the site without written authorization from the Departmental Representative.

.6 All mobilization and demobilization methods to comply with the requirements of all applicable codes, standards, guidelines and Indigenous and Northern Affairs Canada (INAC) permits, approvals and/or authorizations.

1.2 Mobilization and Demobilization Plan and Equipment List

.1 Provide a Mobilization and Demobilization Plan which shall include, but not be limited to, the following items:

.1 Proposed mode(s), route, and timing.

.2 In-transit storage or staging areas.

.3 Equipment, labour and other requirements.

.4 Equipment and materials to be brought to site to complete the remediation of the project, as indicated in these specifications.

.2 Compile a complete Construction Equipment List comprised of manufacturer name, model number, year, and hours for construction equipment that is being mobilized to site and submit to Departmental Representative.

1.3 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit to Departmental Representative one (1) electronic copy of the Mobilization and Demobilization Plan, forty-five (45) days after contract award.

.3 Submit to Departmental Representative one (1) electronic copy of the Construction Equipment List thirty (30) days prior to mobilization.

1.4 Measurement for Payment

.1 Include all costs for Mobilization of all labour, equipment and materials, including the submission of the Mobilization and Demobilization Plan, labour, equipment, materials, meals, accommodation, flights and any other costs necessary to undertake work required, in Item 01 53 00-1, Mobilization in the Lump Sum Amount Breakdown Schedule. Mobilization costs will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.2 Include all costs for Demobilization of all equipment, labour and materials in Item 01 53 00-2 – Demobilization in the Lump Sum Amount Breakdown Schedule. Costs for Demobilization will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. The lump sum price for Demobilization is to include all labour, equipment, materials, meals, accommodation, flights and any other costs necessary to undertake the work required. Payment for Demobilization will be made after satisfactory cleanup of the site, shutdown, takedown, packaging, and cleanup of camp facilities, removal from the site of all equipment, materials, site demolition debris materials and contaminated soils as indicated.

.3 Costs for the off-site transportation of demolition waste and contaminated soils will not be included for payment under this section, but will be paid for as indicated in Section 02 41 16 – Structure Demolition and Section 02 55 13 – Contaminated Soil.

.4 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 General

.1 Provide and operate complete camp facilities services, including provision, preparation and serving of food, for construction personnel, Departmental Representative and his/her authorized personnel, and other specified site visitors.

.2 The location of the construction camp must be accepted by Departmental Representative. Submit layout of camp forty-five (45) days prior to mobilization. Submission is to include full details demonstrating compliance with all codes and standards.

.3 Provision of camp facilities services consisting of, but not limited to:

.1 Design, supply, installation, and operation and maintenance of camp facilities including:

.1 All associated facilities.

.2 Utilities and services required for camp facilities such as heating, lighting, fuel, potable and domestic water systems.

.3 Sewage collection, treatment and disposal systems.

.4 Waste, refuse, and garbage collection and disposal system, including provision of dedicated camp garbage incinerator.

.5 Camp facilities fire prevention.

.6 Alarm and fire fighting system.

.7 Camp and site facilities safety and security service.

.8 Meals and catering service.

.9 Shower/wash facilities.

.10 Sleeping and washroom facilities.

.11 Bedding and bedding laundry services.

.12 Janitorial services.

.13 Personnel laundry facilities.

.14 Recreational facilities.

.15 First Aid facilities and service.

.16 Snow removal services for camp operations.

.17 Camp re-supply and staff rotation.

.4 Provide and pay for all potable and domestic water systems; sewage collection, treatment, and disposal systems; refuse and garbage collection and disposal systems; power, heating and lighting systems associated with the operation of the construction camp.

.5 Obtain and pay for, as part of provision of construction camp services, any and all licences, permits, and authorizations required to comply fully with all laws, ordinances and regulations of the Federal, Territorial and local authorities in connection with the performance of work of this Section.

.6 Provide construction camp services for own workforce, Departmental Representative, and Departmental Representative's authorized personnel as follows:

.1 Resident Departmental Representative: one (1) for duration of CAM-C work.

.2 Environmental Inspector: one (1) for duration of the CAM-C work.

.3 Geotechnical Inspector: one (1) for the duration of the CAM-C work.

.4 Allow for an additional four (4) personnel at any one time to accommodate the Departmental Representative's Authorized Personnel, Indigenous and Northern Affairs Canada (INAC) personnel, Public Works and Government Services Canada (PWGSC) personnel, visitors, and shift change overlap.

.5 Separate sleeping quarters are to be provided for cook(s), cook's helpers and for female staff.

.7 Camp Facilities shall not be older than 20 years. Contractor must complete the following:

.1 Arrange to have the proposed camp facilities inspected by a third-party building inspector prior to mobilization.

.2 Submit inspection report to the Departmental Representative thirty (30) days prior to mobilization. The inspection report is to include planned corrective action for identified deficiencies.

.3 Address any recommendations arising from building inspector's report before camp facilities are paid.

.8 Provide and maintain a digital communication system for the site consisting of full duplex and secure voice, real time fax and high speed internet. Provide three (3) separate phone lines for the Departmental Representative. Communication system must accommodate virtual private network (VPN) connections. The communication system is to be based on monthly charges with unlimited internet access. Provide wireless 802.11 B/G network access points such that the entire camp area has wireless network access.

.9 Maintain one (1) handheld satellite telephone on-site for emergency purposes or when the main communication system is non-functional. Use of the handheld satellite telephone for primary site communications for extended periods is not acceptable.

.10 Shared use areas, kitchen dining areas and sleeping quarters shall be maintained as smoke-free areas. Provide a smoking area at Contractor's discretion, in accordance with Federal, Territorial and local regulations and guidelines.

.11 Be responsible for security and surveillance of the camp and site facilities at all times including during winter months and when camp is not occupied. Provide security, site surveillance or other means to protect the camp and site facilities from vandalism and tampering,

1.2 Requirements of Regulatory Agencies

.1 Construction camp, including its facilities, utilities, services, location and operation is subject to the approval of Departmental Representative and is to be designed, established and operated in accordance with applicable Federal, Territorial and local codes, regulations and requirements governing construction camp facilities.

.2 Camp facilities location to be established at a location which does not interfere with operations undertaken on site. Camp facilities and service area locations are subject to Departmental Representative's approval.

.3 Obtain applicable licences, permits and authorizations associated with establishing camp. Submit proof of same to Departmental Representative within thirty (30) days of camp start-up. Pay for all costs for the inspection of camp and electrical facilities by Authorities Having Jurisdiction (AHJ) officials.

.4 Comply with all requirements of the Water Use License, Land Use Permit and all other licenses, permits and authorizations.

.5 Operate the camp in accordance with Camp Rules, as specified in this Section, and the provisions of Section 01 35 32 – Site Specific Health and Safety.

1.3 Environmental Requirements

.1 Comply with requirements of Environmental Regulatory Agencies and the provisions of Section 01 35 43 - Environmental Procedures.

.2 Display all applicable regulatory permits at the camp site.

.3 Sampling and laboratory testing of water samples was completed in 2013 from the potential Freshwater supply sources at CAM-C. The results of the limited analytical data are included in the following table. Additional testing must be carried out to confirm potable water quality from these or any other on-site source.

.4 Provide and pay for sampling and analyses of any construction camp water supply, as indicated in Section 01 29 83 - Payment Procedures for Testing Laboratory Services, to prove that the water quality satisfies the Health Canada Guidelines for Canadian Drinking Water Quality. The sampling and analysis is to be provided at the water supply source and at the distribution source prior to consumption.

.5 Provide commercially sealed bottled water that meets Health Canada Guidelines for Canadian Drinking Water Quality until it is demonstrated, by a minimum of two consecutive sets of analytical test results, that the local source meets the Health Canada Guidelines for Canadian Drinking Water Quality. In the absence of analytical test results, local sources must not be used, and the supply of bottled water must be maintained. Submit information on bottled water, including the source and water quality test results to the Departmental Representative prior to opening the camp. If a local source is used, submit water quality test results every four (4) weeks during camp operation to the Departmental Representative.

.6 Provide and pay for equipment, supplies and materials required to treat the water in accordance with the Health Canada Guidelines for Canadian Drinking Water Quality.

.7 The Contractor will carry out quality control sampling and testing of the camp water source at minimum every four weeks, as long as the camp is operational.

.8 Comply with sewage treatment, disposal and closure requirements as outlined in Section 01 35 15 - Special Project Procedures for Contaminated Sites.

FRESHWATER - LABORATORY ANALYTICAL RESULTS[1] CAM-C: Matheson Point			
		Health Canada Drinking Water Guidelines (August 2012)[1]	**Test Results 2013**
Parameter	**Units**	**Max. Acceptable Concentration**	**Freshwater Lake (W-001)** [2]
pH	-	6.5-8.5*	7.86
Aluminium	mg/L	0.1*	0.32
Antimony	mg/L	0.006	0.00089
Arsenic	mg/L	0.01	0.0023
Barium	mg/L	1	0.078
Boron	mg/L	5	0.14
Cadmium	mg/L	0.005	0.000037
Chromium	mg/L	0.05	<0.0010
Copper	mg/L	1*	0.0033
Iron	mg/L	0.3*	0.78
Lead	mg/L	0.01	0.00040
Manganese	mg/L	0.05*	0.13
Selenium	mg/L	0.01	0.0014
Sodium	mg/L	200*	72
Uranium	mg/L	0.02	0.00053
Zinc	mg/L	5*	0.021
Chloride	mg/L	250*	87
Fluoride	mg/L	1.5	0.071
Sulphate	mg/L	500*	13
TDS	mg/L	500*	240
Nitrate	mg/L	45 as nitrate, 10 as nitrate-N	<0.0030
Benzene	mg/L	0.005	-[3]
Toluene	mg/L	0.024	-[3]
Ethylbenzene	mg/L	0.0024	-[3]
Xylenes	mg/L	0.3	-[3]
Total Coliforms	MPN/100ml	None detectable per 100 ml	-[3]
E. Coli	MPN/ 100ml	None detectable per 100 ml	-[3]

Health Canada (2012) Guidelines for Canadian Drinking Water Quality – Summary Table. Water, Air and Climate Change Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

1 Health Canada (2012) Guidelines for Canadian Drinking Water Quality – Summary Table. Water, Air and Climate Change Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

2 All analytical results provided by AECOM – Phase III Environmental Site Assessment CAM-C, Matheson Point, NU Intermediate DEW Line Site (November, 2013)

3 Laboratory testing was not completed in 2013.

* Aesthetic or operational guideline, not toxicity based.

1.4 Camp Facilities Installation and Removal

.1 Establish accepted temporary buildings, shops, offices and facilities as required.

.2 Place all camp facilities so as not to interfere with any construction or other site activities.

.3 Carry out all Work necessary to protect environment, such as constructed pads (if required), prior to actual installation of camp facilities.

.4 Locate camp generators a minimum distance of 30 metres (m) away from any sleeping facility, camp kitchen or an area with constant human presence.

.5 Winterize and secure camp, equipment, and vehicles at the end the construction season.

.6 Upon completion of Work, remove camp facilities, clean up, and leave site in condition satisfactory to Departmental Representative.

1.5 Cleaning of Sewage Tanks and Lines

.1 Prior to demolition of wastewater lines, rinse lines with wash water. Sample, analyse, treat, and dispose, as required, wastewater in accordance with Section 01 35 15 – Special Project Procedures for Contaminated Sites and Section 01 35 43 – Environmental Procedures

.2 Treat sludge as hazardous materials specified under Section 02 61 33 – Hazardous Waste Material and treat accordingly.

1.6 Site Location

1. Locate camp facilities at a site that provides for the safety and welfare of its residents for the duration of the Work. Contractor is responsible for the camp facilities location.

2. Locate camp facilities within Project Area, as indicated.

3. Locate incinerator or burn areas downwind of camp facilities.

4. Locate camp facilities on gravel pad. Pad must be constructed using aggregate sources from the borrow areas.

5. Locate camp facilities in an area that has been previously disturbed, but outside of any remedial work areas, if possible. If camp is located on rock, provide sufficient material to maintain a trafficable surface.

6. Locate the medic's centre in the camp facilities. Co-locate the medic's centre with an office, or other facility where other workers are present.

7. Locate the communications centre in the camp facilities.

8. Locate any temporary shelter to be used as a workshop near the Work.

9. Construct an access road to the selected location, as needed or as directed by Departmental Representative.

1.7 Construction Camp

.1 Carry out all work necessary to protect the environment prior to actual installation of the camp facilities.

.2 Place all camp facilities so as not to interfere with any construction or other site activities. Obtain Departmental Representative’s approval for location of construction camp. Locate camp within Project Area unless otherwise accepted in writing by Departmental Representative.

.3 Provide and maintain camp in good operating condition and provide adequate and suitable furnishings.

.4 Consider the possibility of wildlife encounters when determining the layout of the camp. Refer to bear or wildlife safety literature when selecting the camp layout, facility spacing, and location of the kitchen, food storage, washroom and sleeping facilities.

.5 Install a working wildlife deterrent electric wire fence and alarm system around the main camp facilities. A working wildlife deterrent is to be provided and a replacement will be made available within 24 hours should the primary system fail. Test the alarm system as specified in Section 01 35 32 – Site Specific Health and Safety for Contaminated Sites.

.6 Incinerate all kitchen waste in order to avoid attracting wildlife.

.7 Demobilize and remove the construction camp from the site at the completion of the Contract. Grade as necessary to match surrounding terrain and to provide positive drainage as directed by Departmental Representative.

1.8 Maintenance

.1 Maintain camp, power generators, fuel storage facilities, water system, garbage disposal containers, heating and cooling units, appliances and furniture in neat, clean and good operating condition, and make repairs as necessary.

.2 Heat camp facilities to maintain environmental controlled conditions between 20 and 22 degrees Celsius (°C) continuously.

.3 Clean camp common areas daily. Clean and sanitize toilets, urinals, wash basins, showers, washing machine, and washing tubs daily.

.4 Keep common areas free of insects, pests and wildlife through garbage control, proper screens, pesticides and other non-smoke producing methods.

.5 Provide adequate insect, pest and wildlife control for all buildings and camp facilities.

.6 In the event of temporarily vacating camp, clean up and leave camp facilities in a safe, tidy and secure condition.

1.9 Departmental Representative's Sleeping Quarters

.1 Sleeping quarters for Departmental Representative and Departmental Representative's Authorized Personnel are to be within the camp complex, but segregated from those for Contractor's staff.

.2 For Departmental Representative's Authorized Personnel, provide a, minimum of 4.6 square metres (m^2) of floor space for each occupant, with one dimension not to be less than 2 metres.

.3 It is anticipated that Departmental Representative's Authorized Personnel will include both male and female personnel. Design and operate the construction camp with due consideration of the separate and private requirements for this work force.

.4 Provide, for use by Resident Departmental Representative, single sleeping quarters with a minimum floor area of 6 square metres (m^2).

.5 Sleeping quarters for other Departmental Representative's Authorized Personnel, as indicated in this Section, to provide for maximum double occupancy with a minimum floor area of 9.2 square metres (m^2). Design camp facilities such that specialist inspectors generally are accommodated in single occupancy rooms. Double occupancy of specialist inspectors' accommodations will be considered by Departmental Representative for short periods of time only, and at Departmental Representative's discretion.

.6 Provide a minimum of 11 cubic metres (m^3) of air space for each occupant.

.7 Provide storage lockers and/or shelving to store personal items. Provide at least one (1) power outlet per occupant. Provide one (1) reading light above each bed.

.8 Provide key locks and keys for Departmental Representative and Departmental Representative's Authorized Personnel sleeping quarters upon their use of these facilities.

1.10 Departmental Representative's Site Office

.1 Provide office accommodation and furniture on-site for Departmental Representative. The use of this facility will not be shared with Contractor. Shared office and sleeping quarters for the Departmental Representative is not acceptable.

.2 Provide electrical lighting system, giving a minimum of 200 lux, using surface mounted, shielded commercial fixtures with 10% upward lighting component.

.3 Departmental Representative's office is to have a minimum floor space of 20 square metres (m^2) unless less space is accepted in writing by Departmental Representative, and furnished with the following:

.1 On (1) double-pedestal desk with a top surface not less than 150 centimetres (cm) by 75 cm.

.2 One (1) desk chair.

.3 Two (2) chairs, stacking type.

.4 One (1) waste paper basket.

.5 Four (4) duplex receptacles, 120 V, 60 Hz equipped with surge protection.

.6 Two (2) UPS (Uninterruptible Power Supply) bars.

.7 One (1) plan table.

.8 One (1) Ethernet port and one phone/facsimile port.

.4 Provide and maintain at Departmental Representative's office one Multiple Function Centre (MFC) with capabilities for printing, copying, and scanning. This unit is to be for Departmental Representative's exclusive use and is to be Windows compatible with Parallel, USB and Ethernet interfaces. Provide the MFC with all required consumable supplies such that it provides continuous operation. The MFC is required to also meet the following specifications:

.1 Print Function: Black and White and Colour with a minimum of 32 MB of memory.

.2 Copy Function: Black and White and Colour with capabilities for Automatic Document Feed (ADF) and Reduction / Enlargement.

.3 Scan Function: Black and White and Colour scan capabilities with a minimum optical scan resolution of 600 x 2400 dots per inch (dpi) and capabilities to scan to e-mail, image, OCR and file.

.5 Provide, for the use by Departmental Representative and Departmental Representative's Authorized Personnel, three (3) mobile communication radios, complete with charging units. The radios are to allow for on-site communication between Departmental Representative, Departmental Representative's Authorized Personnel and Contractor. The radios are to have a minimum range of 5 kilometres (km).

.6 Provide one (1) each of telephone and Ethernet connection port at Departmental Representative's office.

.7 It is critically important that the communication equipment provided by Contractor for Departmental Representative's use is reliable and of the highest quality. Immediately repair or replace faulty equipment. The equipment is to be operational from the day the work commences.

1.11 Field Laboratories

.1 Supply and pay for two (2) separate field laboratories, complete with furniture, for the use by the Departmental Representative's Authorized Personnel. The two (2) laboratories will include an environmental analytical laboratory and a geotechnical laboratory. The two (2) laboratories may be combined in one (1) module unit.

.2 Locate the field laboratories in the camp complex and make ready for use three (3) days prior to the first day Work commences for which testing is required, and remain available for the duration for which testing is required.

.3 The analytical lab will have a minimum floor area of 20 square metres (m^2) complete with one (1) satellite telephone, heating system, lighting system, a minimum of three (3) 110 volt, 60 cycle electric outlets, water and sewer system, sink, work benches, two (2) garbage cans, refrigerator, freezer, shelving and clothes rack, one (1) desk, two (2) 0.75 metres x 1.50 metres tables, two (2) chairs, and adequate windows. Provide a minimum of 30 square metres of shelf area.

.4 The geotechnical lab will have a minimum floor area of 20 square metres (m^2) complete with a heating system, lighting system, a minimum of four (4) 110 and one (1) 220 volt, 60 cycle electric outlets, water and sewer system, sink, work benches, garbage cans, shelving, one (1) desk, one (1) 0.75 metres x 1.50 metres table, two (2) chairs, one (1) four-drawer filing cabinet and adequate windows. Provide a minimum of 10 square metres (m^2) of shelf area.

.5 Provide and maintain one (1) phone line and internet connection in each laboratory.

.6 Equip the analytical laboratory with a standard refrigerator with a total minimum capacity of 0.48 m^3 (17 cubic feet) and a chest freezer with a total minimum capacity of 0.m^3 (10 cubic feet). The refrigerators and freezer will remain the property of the Contractor upon completion of the project.

.7 Equip the geotechnical lab with the following granular material testing equipment:

.1 One (1) forced convection bench top laboratory oven with digital controls, stainless steel interior and suitable for effective drying of soil samples.

.2 One (1) 1.5" sample splitter.

.3 One (1) 6" Proctor Mould for the Standard Proctor Test: ASTM 698.

.4 One (1) Standard Proctor Hammer.

.5 One (1) Motorized Sieve Shaker compatible with 8" sieves.

.6 One (1) Set of 8" Sieves to include the following opening sizes in millimetres: 100, 75, 50, 25, 20, 16, 12.5, 10, 5, 2.5, 1.25, 0.630, 0.425, 0.150, 0.08.

.7 One (1) wash sieve (0.075 mm opening) with reinforced screen.

.8 Two (2) soft sieve brushes.

.9 Pans and Tares:

- Each 13" x 9" x 2" metal.
- Each 26" x 18" x 3.5" metal.
- Each 9.3" x 5.3" x 2.7" metal.
- Each 3 qt. round metal mixing bowl.
- 100 aluminium pie plates - 200 mm min. diameter (for use in oven).

.10 One (1) precision grade electronic scale with accuracy and readability to 0.1 grams and a minimum capacity of 20 kilograms.

.11 One (1) pair of oven mitts.

.8 Clean both laboratories at least two times per week, and maintain all electric lights, heating, water and sewer systems in good working condition during the period the laboratory is required. Maintain facility in acceptable condition.

.9 Provide power to each of the laboratories on a twenty-four (24) hour/day basis while the cleanup activities, requiring laboratory services, are in operation. Equip all power supplies with adequate surge protection. Damage to equipment resulting from power surges will be repaired or replaced at no cost to the Departmental Representative or his/her Authorized Personnel.

.10 Submit to the Departmental Representative for review a sketch of the proposed laboratories with the construction camp layout and siting plan as specified in this section.

.11 Provide Departmental Representative with key-locks for the field laboratories prior to commencement of activities requiring laboratory services being in operation.

1.12 Kitchen/Dining Complex

.1 The functional design of the kitchen is to include all equipment necessary for food storage, preparation, cooking and the serving of three meals daily to meet camp population requirements.

.2 Provide dishwashing and garbage handling equipment consistent with the required function of the kitchen.

.3 Provide seating capacity of the dining area to meet the maximum camp population requirements.

.4 Store all non-perishable food supplies in adequate containers kept in an orderly manner and under sanitary conditions, in a vermin-proof enclosure.

.5 Store all perishable food supplies in properly refrigerated indoor areas within the construction camp to preclude the attraction of wildlife. The refrigerated area is for the sole use of the kitchen.

1.13 Ablution and Latrine Facilities

.1 Provide ablution and latrine facilities as per AHJ and codes requirements and as per camp occupancy requirements as follows:

.1 Toilets as required.

.2 Urinals as required.

.3 Wash basin of stainless steel, porcelain, with one mirror over each basin as required.

.4 Individual shower units with non-slip flooring together with adjacent dressing cubicles as required.

.2 Maintain separate ablution and latrine facilities for female/male populations.

.3 Maintain separate ablution and latrine facilities for Departmental Representative and Departmental Representative's Authorized Personnel. Maintain separate facilities for Departmental Representative's male and female staff.

.4 Clean ablution and latrine facilities daily. Supply adequate amounts of hand soap, paper towels and toilet tissue in washrooms.

1.14 Fire Protection Equipment

.1 Install and maintain fire protection equipment as specified in Section 01 35 32 - Site Specific Health and Safety for Contaminated Sites.

1.15 Linen, Bedding and Laundry

.1 Supply three (3) blankets, two (2) sheets, one (1) bath towel, one (1) face cloth, two (2) pillows and two (2) pillow cases, for each person living in camp facilities.

.2 Change two (2) sheets and two (2) pillow cases once per week or whenever a change of occupant occurs.

.3 Launder sheets and pillow covers regularly to provide weekly supply of clean linen.

.4 Provide clean blankets to all camp occupants.

.5 Cooking staff is to wear suitable kitchen attire. Launder kitchen attire daily.

1.16 Food Schedule

.1 Provide food of the highest quality giving a balanced diet and served under acceptable standards of cleanliness by experienced personnel. Eggs and dairy products are to be Grade “A”. Canned fruit and vegetables to be choice or fancy.

.2 Beef to be Canada Grade “A”, pork to be Grade “I”, turkey, chicken or other fowl to be “utility” or better.

.3 Provide choices of traditional food.

.4 As a minimum, provide three meals a day. Provide casual meals or fourth meals if irregular shifts are worked or irregular travel by personnel is required. Consult with Departmental Representative to set meal times for casual or fourth meals.

.5 Main courses to be served at meals are classified as follows:

.1 First Line: Beef steak, roast beef, roast pork, veal cutlets, baked ham, ham steak, chicken, turkey, pork chops, roast lamb, roast veal, vegetarian lasagne, pasta with meatless sauce, quiche.

.2 Second Line: Fish, short ribs, spare ribs, stews, meat pies, liver, curried dishes, spaghetti and meatballs, sausages, salisbury steak, swiss steak, ground beef, corned beef, vegetarian chili, omelettes, vegetarian baked beans, vegetarian patties.

.3 Third Line: Hot dogs, vegetarian hot dogs, omelettes, chili con carne, baked beans, chicken and turkey turnovers, dishes using leftover meats, bagels and cream cheese, soup and sandwiches.

.4 Breakfast Line: Eggs, toast, bacon, sausage, ham, hash browns, waffles, porridge, cereal, fruit, yogurt, milk and fruit juice.

.6 Serve breakfast line daily. At supper, serve a hot main course, one first line and a choice between a second and third line. At lunch, serve a hot main course, one second line and one third line. Do not repeat the same selection more than twice weekly. Beef steak is to be served at least once per week. Provide a vegetarian option upon request.

.7 Provide box lunches for all camp occupants who will not be in camp for noon meal.

.8 Contractor will be given twelve hours notice to serve fourth and/or casual meals to work forces of other contractors and Departmental Representative.

.9 Provide “Mug Up” nightly at 21:00 hours, consisting of tea, coffee, hot chocolate, fruit juice and any leftover pastries at cook’s discretion. Make coffee available at coffee breaks.

.10 Make available daily apples and oranges; serve other types of fresh fruit at least once per week.

.11 Provide beverages and snacks at all times. A variety of snacks shall be available, including snacks that are appropriate for diabetics or persons with blood sugar concerns. Snacks may consist of fresh fruit or vegetables, granola bars, cheese and crackers, bannock, or other suitable items.

.12 Fresh salads are to be provided daily.

.13 Provide whole milk each day; powdered milk is not acceptable for drinking but may be used in cooking.

.14 Provide pure juice each day.

.15 Schedule food re-supply flights, as necessary, to maintain variety in the menu and that fresh produce, milk and juice is continually available.

1.17 Service Facilities

.1 Install, hook-up, test and make necessary repairs to sewage, water supply, heating, and electrical services.

.2 Situate power plant in camp area to minimize noise, and prevent exhaust fumes from blowing through camp during prevailing winds.

.3 Ground all buildings and electrical equipment with an approved grounding system.

1.18 Recreation

.1 Provide an area for recreation for all camp occupants.

.2 Area to be of a size suitable for accommodating at least 50% of camp occupants, and to be suitably furnished with loungers, and stacking chairs.

.3 Provide a television and DVD player for use by camp occupants. Alternatively, provide a satellite system.

.4 Provide a minimum of 20 DVD movies and rotate these movies every two weeks or provide a television with satellite link.

.5 Provide an assortment of books (soft cover) and magazines for reading.

1.19 Camp Rules

.1 Prepare a set of Camp Rules and submit to the Departmental Representative, prior to commencing operations, for review.

.2 In order to protect all camp occupants, the following activities are strictly prohibited and could result in dismissal and removal from the site:

.1 Tampering with smoke or fire detectors/alarms, any other safety equipment or electrical outlets/fixtures.

.2 Possession and consumption or use of alcohol or illegal drugs.

.3 Possession or use of unauthorized firearms, ammunition or other lethal weapons.

.4 Fighting, physical violence, stealing, vandalism or destruction of property.

.5 Harassment in any form.

.3 The employee or visitors departure from the site for any of the above reasons will be on the first available scheduled transportation. Should this person wish to leave immediately, the costs will be the responsibility of the employee.

.4 Make all camp residents familiar with all emergency procedures, exits, signals and alarms. Keep accesses to fire equipment clear at all times, and immediately report any damaged fire or safety apparatus to your supervisor.

.5 Keep living areas as clean as possible.

.6 Have warm emergency clothing available at all times during the winter.

.7 Keep clothing or other flammable goods away from heaters.

.8 Employees must store/remove all personal effects and belongings when going off rotation or permanently off site.

.9 Loose clothing, dangling neckwear, bracelets, rings or similar articles will not be worn where there is a risk of coming into contact with moving machinery or electrical energized equipment.

.10 Provide a copy of Camp Rules to all camp occupants prior to or upon arrival in camp.

.11 Enforce the Camp Rules.

1.20 Security

.1 Restrict access to camp. Only persons employed on project are to be allowed normal access. Unauthorized persons will be permitted on site only with approval of Departmental Representative and/or Contractor.

1.21 Access to the Work

.1 Be responsible for the transport of personnel and equipment to the various work areas on the site.

1.22 Waste Disposal

.1 Incinerate non-hazardous combustible wastes at least daily in a suitable container in compliance with all applicable regulations, permits and approvals.

.1 Submit Camp Incinerator details to Departmental Representative forty-five (45) days prior to mobilization.

1.23 Transportation

.1 Provide return air transportation services for Departmental Representative and Departmental Representative's Authorized Personnel from the Contractor's Charter Base to the CAM-C site.

.2 It is anticipated that air transport of Departmental Representative's Authorized Personnel will be scheduled to coincide with the transport of Contractor's workforce to and from the site. Provide air transportation for Departmental Representative's personnel at a minimum frequency of one return trip per week and two additional trips per month scheduled according to Departmental Representative's request.

.3 Departmental Representative will advise Contractor of Departmental Representative's and Departmental Representative's personnel air transportation requirements seven (7) days in advance of trip departure.

1.24 Measurement for Payment

.1 Include all costs for the supply, erection, connection, inspection of camp and electrical facilities by AHJ officials in Item 01 54 00-1, Camp Supply and Start Up in the Lump Sum Amount Breakdown Schedule. Costs for camp supply and start up will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment of Schedule.

.2 The operation and maintenance of all camp facilities and equipment will be measured for payment by the operating week. Operation and Maintenance of Camp Services will be paid under Item 01 54 00-2 as indicated in the Basis of Payment Schedule. Operation and Maintenance of Camp is to include water treatment and sewage treatment, on-site mobile communication equipment, charter flights, as well as the provision of catering, rooms, and laundry and janitorial services for the camp.

.3 Room and board and associated services for Departmental Representative and Authorized Personnel will be measured for payment by the person-day for each day that personnel resides overnight at the camp. Departmental Representative and Authorized Personnel Room and Board will be paid under Item 01 54 00-3 in the Basis of Payment Schedule.

.4 Casual meals for visiting Departmental Representative's Authorized Personnel will be measured for payment by the number of meals served. Casual meals will be paid under Item 01 54 00-4 in the Basis of Payment Schedule.

.5 Air transportation from the Contractor's Charter Base to CAM-C, Matheson Point for Departmental Representative's Authorized Personnel will be measured for payment by the number of person return trips and will be paid under Item 01 54 00-5 in the Basis of Payment Schedule.

.6 Include all costs for the supply and installation of satellite and/or long distance communication links for the Departmental Representative and Departmental Representative Authorized Personnel in Item 01 54 00-6, Departmental Representative's Communication Links in the Lump Sum Amount Breakdown Schedule. Costs for the supply of Departmental Representative's communication links will be paid under Item LSA-1, Lump Sum amount, in the Basis of Payment.

.7 Supply of Departmental Representative's consumable office supplies will be considered incidental to the work and will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Lump Sum Amount Breakdown. Indicate cost of the work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

.8 The provision of security or surveillance for the camp and site facilities, including times when camp is not occupied, will be considered incidental to the work and will not be measured for payment. Include all costs in Item BOPC-1, Balance of Project Costs in the Lump Sum Amount Breakdown. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

.9 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Qualifications of Surveyor

.1 Qualified surveyor with surveying experience and qualifications acceptable to Departmental Representative.

.2 Surveyor cannot be an Employee of Contractor.

1.2 References

.1 Departmental Representative's identification of existing survey control points and property limits.

1.3 Survey Reference Points

.1 Existing base horizontal and vertical control points are designated on Drawings.

.2 Locate, confirm and protect control points prior to starting site Work. Preserve permanent reference points during construction. Condition and accuracy of control points is unknown, Contractor to re-establish local control points where required.

.3 Make no changes or relocations without prior written notice and approval from the Departmental Representative.

.4 Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

.5 Replace control points in accordance with original survey control.

1.4 Survey Requirements

.1 Establish stable temporary survey control points for use in laying out work. Re-establish local control points at the start of each construction season.

.2 Establish lines and levels, locate and lay out, by instrumentation.

.3 Prepare a topographic map of work sites prior to demolition or excavation work to provide a baseline survey for quantity measurements.

.4 Maintain surveys for quantity calculations and for submission to Departmental Representative.

.5 Survey instrument is to be Global Positioning System (GPS) Real Time Kinetic unit.

.6 Maintain accuracy to a minimum of 0.01 meter (m) vertically and 0.1 m horizontally

.7 Submit data in UTM NAD83 Datum.

.8 Provide forty (40) hours of surveyor time to be used at the discretion of the Departmental Representative.

1.5 Survey Markers

.1 Provide all survey markers and other items required to complete Work as specified, including, but not limited to:

.1 Pointed stakes (minimum 1.2 m in length, 12 millimetres; (mm) thick, 38 mm wide).

.2 Pointed hubs (minimum 0.5 m in length, 20 mm thick, 38 mm wide).

.3 Nails (100 mm long), spikes (250 mm long), pins (1 m long), etc.

.4 Fluorescent paint, flagging, etc.

.5 Felt markers, chalk, wax pens, etc.

.2 Maintain supply of survey markers for Departmental Representative's use.

1.6 Records

.1 Maintain a complete, accurate log of control and survey Work as it progresses.

1.7 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit to the Departmental Representative documentation identifying the qualifications and experience of surveyor, survey equipment and survey methodology fourteen (14) days prior to mobilization.

.3 Upon request of Departmental Representative, submit documentation to verify accuracy of field Work.

.4 Submit survey data backup for quantities claimed on Progress Claims or as requested by the Departmental Representative.

.5 Provide survey data in all of the following formats or in equivalent formats, approved by the Departmental Representative prior to data collection:

.1 Point file in Comma Separated Value (.csv) format or Excel (.xls) format

.2 AutoCAD file (.dxf or .dwg) format.

.3 Survey Field Book of field book file (.fbk) format.

.6 Submit raw survey data in electronic form containing, at minimum:

.1 Date of survey data sets.

.2 Location and name of survey data sets (e.g. Landfill Berms – Finished grade, or Beach Area – Original Ground, etc.).

.3 Point numbers, Northing, Easting, elevation, description and break lines, where applicable.

.7 Submit the record survey data file as the latest as-constructed information. Submission of more than one data file as record information for each facility is not acceptable.

.8 At completion of all Work, submit certificate signed by surveyor certifying and noting those elevations and locations of completed Work that conform and do not conform with Contract Documents.

.9 Submit all drawings electronically in accordance with Public Works and Government Services Canada (PWGSC) protocols for AutoCAD drawings.

1.8 Measurement for Payment

.1 Include all costs for the provision of survey information, including surveyor, equipment and other items specified herein in Item 01 71 01-1, Survey in the Lump Sum Amount Breakdown Schedule. Cost for survey requirements will be paid under Item LSA-1, Lump Sum amount, in the Basis of Payment Schedule. The scope of work for the Survey at CAM-C includes all labour, equipment, materials, meals, accommodation, flights and any other costs necessary to undertake the work specified in this section.

.2 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Closeout Procedures

.1 Notify Departmental Representative when Work is considered ready for substantial performance.

.2 Accompany Departmental Representative on preliminary inspection to determine items listed for completion or correction.

.3 Comply with Departmental Representative's instructions for correction of items of Work listed in executed Certificate of Substantial Completion.

.4 Notify Departmental Representative of instructions for completion of items of Work determined in Departmental Representative's final inspection.

1.2 Inspection and Declaration

.1 Contractor and all Sub-Contractors to complete an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.2 Request Departmental Representative's Inspection.

.2 Departmental Representative and Contractor will complete inspection of Work to identify obvious defects or deficiencies. Contractor to correct Work accordingly.

.3 At completion submit written certificate that following have been completed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Work is complete and ready for Final Inspection.

.4 Submit written completion certificate to Departmental Representative seven (7) days prior to the requested final inspection.

.5 When items noted above are completed, request Final Inspection of Work by Departmental Representative and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

1.3 Measurement for Payment

.1 Work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 – GENERAL

1.1 Format

.1 Organize all closeout data electronically in the form of an instructional manual, called Project Record Documents.

.2 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.3 For each separate product and system, with description of product and major component parts of equipment.

.4 Drawings are to be CAD files in dxf or dwg format.

1.2 Project Record Documents Contents

.1 The Project Record Documents include:

.1 Date of submission; names.

.2 Addresses and telephone numbers of Contractor with name of responsible parties.

.3 Schedule of products and systems, indexed to content of volume.

.4 Summary of Health and Safety issues, Environmental issues and performance indicators.

.5 Copies of all permits and documents obtained by the Contractor.

.6 Consolidated results of all testing carried out by the Contractor.

.7 Project Photographs.

.8 Consolidated Weekly Reports.

.9 Information on the state of temporary facilities used in this Contract.

.10 As-built topographic surveys and as-built Drawings.

.11 Any other pertinent information.

.2 For each product or system:

.1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Supplement product data with drawings to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Include As-Built Drawings as specified in this section.

1.3 Final Survey

.1 Submit final site survey certificate in accordance with Section 01 71 00 - Survey Requirements, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.4 As-Builts

.1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Addenda.

.4 Task Authorizations.

.5 Change Orders and other modifications to the Contract.

.6 Reviewed shop drawings and product data.

.7 Field test records.

.8 Inspection certificates.

.9 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.4 Maintain hard copy record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

1.5 Recording Actual Site Conditions

.1 Record information on set of drawings provided by Departmental Representative.

.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information, as required.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings must record actual construction, including:

.1 Field changes of dimension and detail.

.2 Changes made by change orders.

.3 Details not on original Contract Drawings.

.5 References to related shop drawings and modifications, including:

.1 Field changes of dimension and detail.

.2 Changes made by Task Authorization, Change Order or Field Order.

.6 Specifications must record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Task Authorization, Addenda and change orders.

.7 Maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.6 Record Drawings

.1 Departmental Representative will provide to Contractor CAD electronic drawing file (.dwg or compatible) for record drawing purposes.

.2 Maintain Project record drawings and record accurately deviations from Contract documents on one set of prints or in electronic format (.dwg or compatible).

.3 Record changes in red on prints, or on separate layer electronically.

.4 Submit forty-five days (45) after project completion, final CAD electronic drawing (.dwg or compatible) and submit to Departmental Representative. Forward information on completed areas at the end of the construction season.

1.7 Permit Reporting

.1 Thirty (30) days after the completion of each construction season submit the following to the Departmental Representative:

.1 Copies of all documents and permits obtained by the Contractor.

.2 Results of all testing carried out by the Contractor.

.3 Any other pertinent information.

.4 Copies of all shipping documents identifying the shipper, the receiver and all carriers involved in the transport of materials.

.5 Information as required by the Land Use Permit.

.6 Information as required by the Water License.

.7 Information as required by the Quarry Permit.

.8 Information as required by all other applicable regulatory bodies and AHJ.

.9 Copies of all Transportation of Dangerous Goods documentation.

.10 Copies of all Certificates of Destruction and Certificates of Disposal.

.11 Copies of all waste manifests.

.12 Copies of all weigh scale tickets.

.2 Consolidate the above information in one document and submit two (2) hard copies and one (1) digital copy in Portable Document Format (PDF) to the Departmental Representative.

1.8 Measurement for Payment

.1 Include all direct costs for the Project Record Documents in Item 01 78 00-1, Project Record Documents in the Lump Sum Amount Breakdown Schedule. Costs for the Project Record documents will be paid under Item LSA-1, Lump Sum amount, in the Basis of Payment Schedule.

.2 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

END OF SECTION

PART 1 - GENERAL

1.1 Definitions

.1 Demolition: Decommissioning, dismantling or controlled removal and disposal of structures or material in a safe manner.

.2 Polychlorinated Biphenyl (PCB) - Amended Painted (PAP) Material: Material that is coated with PCB - amended paint, has been analyzed and determined to contain PCB concentrations of 50 parts per million (ppm) or more, and is classified as Hazardous under the Canadian Environmental Protection Act (CEPA).

.3 Contractor's Designated Hazardous Waste Disposal Facilities: The Licensed Hazardous Waste Disposal Facilities, designated by Contractor and pre-approved by Departmental Representative, for the disposal of all hazardous waste specified under the provisions of this contract. Contractor must be able to provide documentation from the Designated Hazardous Waste Disposal Facilities indicating full responsibility for all hazardous waste accepted from the CAM-C site.

.4 Contractor's Designated Non-Hazardous Waste Disposal Facilities: The Licensed Non-Hazardous Waste Disposal Facilities designated by the Contractor and pre-approved by the Departmental Representative, for the disposal of all non-hazardous waste specified under the provisions of this contract. Contractor must provide documentation from the Designated Non-Hazardous Waste Disposal Facilities indicating full responsibility for all non-hazardous waste accepted from the CAM-C site.

.5 Untreated Wooden Debris: Wooden debris that is not painted or treated in any way and is suitable for on-site incineration.

.6 Leachable-Lead Painted Material: Material that is coated with lead based paint that has been analyzed and determined to contain leachable lead concentrations of 5 milligrams per litre (mg/L) or more, and is considered hazardous according to the CEPA Regulations Export and Import of Hazardous Waste and Hazardous Recyclables Materials Regulation (EIHWHRMR),

.7 Non-Hazardous Waste: Material which does not meet the definition of Hazardous Waste Materials as defined in Section 02 61 33 - Hazardous Waste Material. Asbestos that has been packaged in accordance with Federal regulations, Transportation of Dangerous Goods (TDG) legislation and CEPA regulations (EIHWHRMR) is to be considered as Non-Hazardous Waste Material.

.8 Temporary Storage Area: A designated area used for the consolidation and storage of containerized Hazardous Waste Materials, containerized contaminated soil and containerized Non-Hazardous Debris as specified in Section 01 52 00 – Construction Facilities.

1.2 Reference Standards

.1 National Building Code of Canada, 2010.

.2 CSA-S350-M1980, Code of Practice of Safety in Demolition of Structures.

.3 SOR/2008-273, PCB Regulations.

.4 Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: NIOSH Publication No. 85-115.

.5 Hazardous Waste Worker Training Manual: Canadian Laborers' International Union of North America Contractors Training Council, 1992.

.6 Complete all Work in accordance with all appropriate Federal and Territorial legislation, and international conventions including:

.1 Canadian Federal Legislation.

.1 Canadian Environmental Protection Act.

.2 Transportation of Dangerous Goods Act.

.3 Motor Vehicle Safety Act.

.4 Labour Code of Canada – Part II.

.2 Territorial Legislation.

.1 Nunavut Safety Act.

.3 Guidelines for the packing of cargo, other than bulk cargo into or onto cargo transport units (CTU's) applicable to transport operations by all surface and water modes of transport.

1.3 Work Description

.1 Demolish, remove, and dispose of all structures and utilities as indicated on the Drawings and/or as indicated in the Demolition Tables in Appendix A (and related ancillary facilities) including the following:

.1 Demolition, packaging/containerization, transportation, and disposal of all Non-Hazardous Waste building components, building contents, storage tanks and utility lines identified for demolition at the Contractor's designated Off-Site Non-Hazardous Disposal Facilities.

.2 Removal, segregation, containerization, transportation and disposal of all Hazardous Waste Material building facility components, including PCB-Amended Painted (PAP) Material and Leachable Lead in accordance with Section 02 61 33 – Hazardous Waste Materials.

.3 Removal, segregation, containerization and disposal of asbestos material in accordance with Specification Sections 02 82 00.01 and 02 82 00.02.

.4 Removal, segregation and containerization of concrete contaminated with PCBs at concentrations in excess of 50 ppm.

.5 Removal of Hazardous Waste Material in accordance with Section 02 61 33 - Hazardous Waste Material.

.6 Removal and disposal of culverts and reshaping of culvert excavations as per Section 31 22 15 – Grading.

.7 Application of appropriate labelling and placards to the containers in the Temporary Storage Area.

.8 Reshaping or regrading of all areas affected by demolition work in accordance with Section 31 22 15 - Grading.

.9 Preparation and maintenance an inventory of hazardous and non-hazardous waste containers and their contents.

.10 Provision of a photographic record of the internal contents of all completed hazardous waste containers prior to closure as detailed in Section 02 61 33 – Hazardous Waste Material.

1.4 Existing Conditions

.1 The information presented on the Drawings and in the Specifications that describe the structures and utilities to be demolished is based upon site conditions described in the *Phase III Environmental Site Assessment, CAM-C, Matheson Point, NU Intermediate DEW Line Site,* prepared by AECOM and dated February 2014.

.2 Take over structures and utilities to be demolished based on their condition on the date that Contractor mobilizes to the site.

.3 The information presented in the Appendices, including photographs and inventory tables, provide brief descriptions for structures and facilities to be demolished. These tables and drawings indicate only the major construction details and building systems, and are not to be construed as exact for final demolition requirements. Be responsible for all work described in this Section, which includes the complete demolition, removal and containerization of all facilities and structures designated for demolition.

.4 The information presented in the Appendices indicates types and estimated quantities of Hazardous Waste Materials that have been previously identified, and must be removed and disposed of in accordance with these Specifications. Should other potentially Hazardous Waste Material, other than that already identified, be encountered in the course of demolition work, stop work immediately, and notify Departmental Representative. Do not proceed until written instructions have been received from Departmental Representative.

.5 Contractor is advised that site structures to be demolished have been in a cold-soaked condition, and as a result, paint flaking/chipping and mould may be extensive. Paint flakes/chips are to be removed as described in this Section.

.6 A listing of the major building components of each facility is presented in Appendix A. All painted surfaces of facilities and structures to be demolished have not been sampled and tested for PCBs, Leachable Lead, or asbestos. Further testing by Departmental Representative at the beginning of the first construction season may identify additional PCB-Amended Painted (PAP) Material, leachable lead paint material, or asbestos.

1.5 Qualifications

.1 Be thoroughly familiar with, and knowledgeable about, existing site conditions, scope of work and requirements of the Specification.

.2 Only Contractor's personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management, and who can satisfy Federal and Territorial requirements, will be permitted to carry out the work of this Section.

.3 Follow at all times guidelines such as those established in Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: National Institute of Occupational Safety and Health (NIOSH) Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian Laborers' International Union of North America (LIUNA) - Contractors Training Council, 1992.

.4 All activities involving the handling of hazardous materials are to be directly supervised by Contractor's personnel who have successfully completed a forty (40) hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program.

.5 Contractor's personnel trained as described above are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.

.6 Provide workers with protection appropriate to the potential type and level of exposure. Establish specific safety protocols prior to commencing clean-up activities.

.7 Provide suitable safety clothing and equipment as required during the course of the work.

.8 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) documentation and recording requirements.

1.6 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit acceptance documentation, waste transport manifests, chain of custody documentation, transport documentation and destruction and/or disposal certificates for non-hazardous and hazardous waste to the Departmental Representative and other regulatory agencies, as required.

.3 Submit waste container inventories and weigh scale records for non-hazardous and hazardous waste to the Departmental Representative.

1.7 Protection

.1 Prevent movement, settlement or damage of adjacent structures, services, roadways, and parking areas to remain. Provide bracing and shoring as required. Make good damage and be liable for injury caused by demolition.

.2 All personnel engaged in demolition activities are to wear and use protective clothing and equipment. Protect the environment from fugitive waste materials resulting from demolition activities.

.3 Prevent damage and minimize stripping of natural terrain, features and vegetation. Make good all damage.

.4 Provide safe passage of persons around area of demolition.

.5 Do not proceed with demolition work when weather conditions constitute a hazard to the workers and site. Prevailing weather conditions and weather forecast are to be considered.

.6 Cover and wet down dry materials, ash and rubbish to prevent blowing dust and debris. Provide dust control for existing and temporary roads.

1.8 Fires

.1 Comply with all regulatory requirements and obtain Burn Permit, if required.

.2 Burning of all painted materials is strictly prohibited.

.3 Where fires or burning are permitted, prevent staining or smoke damage to structures, materials or vegetation which are to be preserved. Restore, clean and return to new condition stained or damaged work.

.4 Provide supervision, attendance and fire protection measures in accordance with Section 01 35 32 - Site Specific Health and Safety Plan.

1.9 Measurement for Payment

.1 Include all costs for the following work items in Items 02 41 16-1 to 02 41 16-6 for each item identified to be demolished as indicated in the accepted Lump Sum Amount Breakdown Schedule. Costs for demolition will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.2 The lump sum price Items 02 41 16-1 to 02 41 16-6 are itemized in the Lump Sum Amount Breakdown Schedule as follows:

.1 Item 02 41 16-1, Demolition, Packaging/Containerization, Transport, and Off-Site Disposal: Felled Communication Tower.

.2 Item 02 41 16-2, Demolition, Packaging/Containerization, Transport, and Off-Site Disposal: Culverts.

.3 Item 02 41 16-3, Demolition, Packaging/Containerization, Transport, and Off-Site Disposal: POL Line, Utility Lines, Pipe.

.4 Item 02 41 16-4, Demolition: Warehouse Foundation.

.5 Item 02 41 16-5, Demolition and Disposal at a Designated Area: Pumphouse Foundation and POL Foundations.

.6 Item 02 41 16-6, Demolition and Disposal at a Designated Area: Beach POL Foundation and Concrete Piles.

.3 Work indicated under each lump sum item includes, but is not limited to:

.1 Removal, segregation, and packaging of asbestos materials.

.2 Demolition, removal, segregation, and containerization of PCB-Amended Painted Materials (PAP), including provisions for containment of paint chips. Containerization of Hazardous Waste is to meet all the requirements of the TDG Act and Regulation, CEPA regulations including Interprovincial Movement of Hazardous Waste Regulations (IMHWR) and EIHWHRMR and all other applicable regulations.

.3 Demolition, removal, segregation, and containerization of Leachable-Lead Painted Materials, including provisions for containment of paint chips. Containerization of Hazardous Waste is to meet all the requirements of the TDG Act, CEPA regulations (IMHWR and EIHWHRMR) and all other applicable regulations.

.4 Removal and containerization of all other hazardous waste items, including, but not limited to, fluorescent lamp ballasts, mercury thermostats, switches and batteries.

.5 Cleaning of fuel tanks, POL lines and piping, including disposal of rinsate.

.6 The demolition, removal and containerization, including supply of containers, of fuel tanks, POL lines and piping to be demolished, including line supports, marker posts and barrels.

.7 Demolition, removal, segregation, packaging, transport, and disposal at the Contractor's Designated Non-Hazardous Waste Disposal Facilities of non-hazardous demolition debris.

.8 On-site transport of all demolition materials.

.9 Site grading, including the supply and placement of granular material, of areas disturbed by demolition operations, including culvert removal.

.4 Include all costs for the Supply of Packaging Materials/Containers for the securing of non-hazardous waste for transport over land and water in Item 02 41 16-7, Supply of Non-Hazardous Waste Packaging in the Lump Sum Amount Breakdown Schedule. Costs for the supply of packaging materials/containers will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. The packaging materials/containers supplied are to be suitable for non-hazardous waste derived from Structure Demolition as described in this Section, Debris Removal as described in Section 02 41 23 and Buried Debris Excavation as described in 31 23 11.

.5 The supply of Hazardous Waste Containers for containerization of hazardous waste derived from Structure Demolition as described in this Section and Debris Removal as described in Section 02 41 23 will not be included for payment under this section, but is to be provided as indicated in Section 02 61 33 - Hazardous Waste Material.

.6 The off-site disposal of all containerized Hazardous Waste Material to the Contractor's Designated Hazardous Waste Disposal Facilities will not be included for payment under this section, but is to be provided as indicated in Section 02 61 33 - Hazardous Waste Material.

.7 Construction of Temporary Storage Areas will not be included for payment under this section, but is to be provided as indicated in Section 01 52 00 – Construction Facilities.

.8 Regrading of concrete foundation pads will not be included for payment under this section, but will be paid for as indicated in Section 31 22 15 – Grading.

.9 Handling and containerization of transformers will not be considered for payment under Section 02 41 16 - Structure Demolition, but will be negotiated with Departmental Representative using the Labour and Materials rates provided in the contract documents.

.10 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Materials

.1 Polyethylene sheeting is to be 6 mil (0.15 mm) minimum thickness for containing PAP material, paint particles, and wrapping of creosote treated timbers.

.2 Waste Material Containers.

.1 Containers for storage and transport of hazardous demolition waste to be in accordance with Section 02 61 33 – Hazardous Waste Material.

.2 Packaging and Containers for storage and transport of non-hazardous demolition waste to be in accordance with Section 02 41 23 – Debris Removal.

PART 3 - EXECUTION

3.1 General Requirements

.1 Before commencing demolition, remove all Hazardous Waste Materials and asbestos-containing products as detailed in Section 02 61 33, Section 02 82 00.01 and, Section 02 82 00.02. Hazardous Waste Material and asbestos removal work must be completed, inspected, and accepted in writing by the Departmental Representative prior to the start of general demolition.

.2 Before commencing demolition of fuel storage tanks and POL lines, remove and dispose of remaining contents and tank sludge, and clean, in accordance with Section 02 61 33 - Hazardous Waste Material.

.3 Pump out existing water tanks and sewage tanks prior to demolition. Clean water tanks, sewage tanks and lines in accordance with Section 02 61 33 - Hazardous Waste Material.

.4 Remove and dispose of demolition debris as specified in this Section.

3.2 Environmental Protection

.1 Complete work in an environmentally acceptable manner. Comply with requirements of Section 01 35 43 - Environmental Procedures, and all other applicable standards and licenses.

3.3 Safety and Personnel Protection

.1 Unless otherwise specified, carry out demolition work in accordance with Section 01 11 00 - Summary of Work and Section 01 35 32 - Site Specific Health and Safety for Contaminated Sites.

.2 Some areas designated for demolition under this contract may involve materials which contain PCBs and leachable lead-based paints, as well as other contaminants which are considered hazardous to human health. PCB containing material with PCBs at concentrations in excess of 50 ppm are considered to be hazardous substances. Storage, handling, and disposal of PCBs are regulated under the Canadian Environmental Protection Act and the Federal Transportation of Dangerous Goods Act. Comply with all applicable regulations.

.3 During the removal of PCB-amended painted materials, follow the Personnel Protection Requirements specified for the removal of asbestos materials as indicated in Section 02 82 00.02 - Asbestos Abatement - Intermediate Precautions.

.4 When working with PCB-containing materials, leachable lead-based paints, asbestos, and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department as suitable for exposure in the work area. Follow NIOSH guidelines in providing protection for on-site personnel including contract employees, subcontractors, Departmental Representative, Departmental Representative's staff, and other authorized personnel.

.5 Fluorescent lamp ballasts are to be handled, and general safety precautions followed, as stated below:

.1 Some ballasts in the buildings to be demolished may contain PCB-filled capacitors.

.2 Appropriate health and safety precautions must be taken as per Contractor's Site Specific Health and Safety Plan (SSHSP) while handling ballasts.

.3 Refer to Environment Canada Publication, "Identification of Fluorescent Lamp Ballasts Containing PCBs".

.6 Transformers are to be handled, and general safety precautions followed, as stated below:

.1 Some transformers in the buildings to be demolished may contain PCBs or PCB residues.

.2 Appropriate health and safety precautions must be taken as per Contractor's SSHSP while handling.

3.4 Preparation

.1 Inspect site and verify with Departmental Representative items designated for demolition.

3.5 Removal of Hazardous PCB-Amended Painted (PAP) Materials and Leachable-Lead Painted Materials

.1 Minimize the amount of PAP Materials and Leachable-Lead Painted Material containerized from the structures to be demolished by disassembling the structures and containerizing only Hazardous PAP Material and Leachable-Lead Painted Material.

.2 Prior to dismantling structures and facilities, remove all loose paint and place in a polyethylene bag. The use of heat to remove loose paint is not permitted. Place bags of loose paint materials in the Hazardous Waste Containers specified in this Section.

.3 During facility dismantling operations, contain paint particles and dust by the use of polyethylene sheets or other measures to seal facilities. Use drop sheets, as required, to collect paint particles that become removed from surfaces during dismantling operations. Establish a control area around these activities to provide protection to personnel from airborne paint particles. Construct control area to prevent the escape of paint chips.

.4 The use of heat (e.g. cutting torches) to cut or dismantle facilities containing paint materials is not permitted unless the paint has been removed from the areas to be cut such that excessive heating of the remaining paint does not occur. Notify Departmental Representative prior to torching activities.

.5 Make note of PAP asbestos material locations and containerize PAP asbestos material separately from general PAP material.

3.6 Containerization of Hazardous PCB-Amended Painted Materials

.1 Complete work required for the containerization of PCB-Amended Painted Materials in accordance with Section 02 61 33 - Hazardous Waste Material.

3.7 Demolition

.1 Collect all paint chips and loose paint from structures prior to demolition. Containerize all paint in accordance with Section 02 61 33 - Hazardous Waste Material.

.2 Where cutting is required, collect all cuttings and sawdust associated with demolition of structures in accordance with Section 02 61 33 - Hazardous Waste Material. Conduct cutting operations such that toxins from paint or other building materials are not released to the atmosphere.

.3 Segregate Hazardous PCB-Amended Painted (PAP) and Leachable Lead Materials and containerize in accordance with this Section and Section 02 61 33 - Hazardous Waste Material. Segregate PAP Asbestos from non-asbestos PAP.

.4 Remove existing equipment, services, finishes and furnishings from buildings.

.5 Disconnect piping before tank removal and empty tanks as specified.

.6 Remove and dispose of all piping above ground as indicated and described in Section 02 61 33 - Hazardous Waste Material.

.7 Purge harmful and flammable vapours from fuel storage tanks in accordance with referenced standards prior to cutting tanks. Upon request, submit the Lower Explosive Limit (LEL) results of Volatile Organic Compound (VOC) testing to Departmental Representative.

.8 Cut structural steel and bulk fuel tanks in accordance with referenced standards.

.9 Collect and dispose of fibreglass insulation material and place in polyethylene bags for disposal as non-hazardous waste.

.10 Segment waste in such shapes and sizes as to minimize voids when material is containerized.

.11 Vent non-ventilated gas cylinders in a remote and safe area acceptable to Departmental Representative. Stockpile empty and ventilated gas cylinders as Non-Hazardous Waste. Do not explode or vent cylinders known or suspected to contain any ozone depleting substance including chlorodifluoromethane (freon) or halon. Containerize these materials in accordance with TDGA packaging standards.

.12 Garage, felled tower foundations, and beacon concrete structure foundations are not to be demolished. Regrade structures as specified in the Drawings and in accordance with Section 31 22 15 – Grading.

.13 Remove completely or cut off all creosote-treated timber foundations at 300 millimetres (mm) below ground level. Cut off all other timber foundations at ground level.

.14 Demolish and place Beach POL tank foundations and concrete pads at the base of excavation TP13-24 and cover with 500 mm thickness of Type 3 granular fill.

.15 Demolish the pumphouse foundation and place at the base of the contaminated soil area excavation TP13-13 contaminated soil excavation. Cover the foundation with 500 mm thickness of Type 3 granular fill.

.16 Collapse the warehouse foundation to the ground within the existing foundation footprint. Crush, compact and place the foundation so that the surface is uniform. Track pack to eliminate void space. Cover with 750 mm thickness of Type 2 granular fill. Grade to a uniform, finished surface. Complete adjacent contaminated soil excavations prior to commencing placement of granular fill. Demolish and place foundation as necessary to access contaminated soil excavations.

.17 Completely wrap the removed creosote-treated timbers in polyethylene sheeting as specified in this Section. Bind the polyethylene sheeting with tape or other materials as required. It is not necessary to wrap each timber individually.

.18 At end of each day's work, leave Work in safe condition so that no part is in danger of toppling or falling. Protect interiors of parts not to be demolished from exterior elements at all times.

.19 Demolish to minimize production of dust. Keep dusty materials wetted with water only.

.20 Demolish masonry and concrete in small sections. Remove and lower structural framing and other heavy or large objects in a safe manner.

.21 Except where otherwise indicated on drawings, regrade all on-grade concrete foundation pads as specified on Drawings and in Section 31 22 15 – Grading.

3.8 Salvage of Demolition Material

.1 The facilities and structures to be demolished may have salvage value. Contractor will continue to be responsible for the disposal of materials for reuse/recycling.

.2 Fuel storage tanks designated for disposal cannot be reused or salvaged, except if accepted by the Departmental Representative for on-site temporary storage of wastewater or effluent.

.3 Sign a Waiver Form provided by the Departmental Representative for any salvaged materials.

3.9 Disposal of Demolition Materials

.1 Dispose of Non-Hazardous, Leachable Lead-painted, asbestos and Hazardous Waste Materials in accordance with this Section, Sections 02 82 00.01 and 02 82 00.02 (Asbestos Abatement) and Section 02 61 33 - Hazardous Waste Material.

3.10 Temporary Storage Area

.1 Establish a Temporary Storage Area for the temporary storage of containerized Hazardous and Non-Hazardous Waste Materials generated during demolition operations on site as described in Section 01 52 00 – Construction Facilities, and the Contractor's accepted Waste Management Plan.

3.11 Site Grading and Restoration

.1 Upon completion of demolition work, remove debris and leave work sites clean to a condition satisfactory to Departmental Representative.

.2 Grade building sites and restore all areas affected by demolition work in accordance with Section 31 22 15 - Grading.

.3 Reshape or backfill with Type 3 Granular Fill, in accordance with Section 31 22 15 – Grading, areas excavated to facilitate demolition requirements. Place Type 3 Granular Fill in holes from which timber piles were removed.

3.12 On-Site Burning of Untreated Wooden Debris

.1 Burn all Untreated Wooden Debris.

.2 Provide an ash collection system capable of containing ash until it is sampled. A water-tight metal tray with sides of at least 300 mm high is acceptable. A tray from materials on-site is

acceptable. Provide means to protect the ash from wind and water until it is sampled.

.3 A leachate extraction test is to be carried out by Departmental Representative on the solid residual material resulting from the burning process. The leachate toxicity of the material will be determined in accordance with CEPA regulations (IMHWR and EIHWHRMR). Residual materials found to be non-hazardous must be packaged and transported to the Contractor's designated off-site Non-Hazardous Waste Disposal Facilities. Dispose of materials found not to be leachate toxic, but exceeding Tier II contaminated soil criteria as described in Section 02 55 13 - Contaminated Soil. Package leachate toxic material in accordance with CEPA regulations (IMHWR and EIHWHRMR), as required, and dispose of as described in this Section and Section 02 61 33 – Hazardous Waste.

.4 Contractor to obtain all required permits from Authorities Having Jurisdiction (AHJ).

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This Section specifies the requirements for the collection, sorting, handling, dismantling, burning, packaging, containerization, transport and disposal of surface and partially buried debris.

.2 An inventory of the Known Debris areas, including estimated crushed volumes is provided in Appendix B.

1.2 Definitions

.1 Known Debris: Visible accumulated, stockpiled or scattered debris on the existing ground surface, including open storage areas, or visible, partially buried debris within 0.5 metres (m) of the existing ground surface, or debris located within the upper 2 m of water and consisting of hazardous and non-hazardous material, and that:

.1 Is identified in Appendices and/or Drawings as to be removed.

.2 Is located approximately within 50 m of the undisturbed edge of any former or existing access road or water course on the site.

.3 Is located within a water body, within 10 m of shore.

.2 Unknown Debris: Scattered debris on the existing ground surface and/or partially buried debris consisting of hazardous and non-hazardous material other than the Known Debris described above.

.3 Untreated Wooden Debris: Wooden debris that is not painted or treated and designated by Departmental Representative as suitable for on-site burning.

.4 Hazardous Waste Materials: Waste materials that are designated as hazardous under Territorial or Federal Legislation or as dangerous goods under the Transportation of Dangerous Goods (TDG) Act or the Canadian Environmental Protection Act (CEPA).

.5 Non-Hazardous Waste Materials: Waste materials that are not designated as hazardous under Territorial or Federal Legislation, including double-bagged asbestos.

.6 Contractor's Designated Hazardous Waste Disposal Facilities: The Licensed Hazardous Waste Disposal Facilities, designated by Contractor and pre-approved by Departmental Representative, for the disposal of all hazardous waste specified under the provisions of this contract. Contractor must be able to provide documentation from the Designated Hazardous Waste Disposal Facilities indicating full responsibility for all hazardous waste accepted from the CAM-C site.

.7 Contractor's Designated Non-Hazardous Waste Disposal Facilities: The Licensed Non-Hazardous Waste Disposal Facilities designated by the Contractor and pre-approved by the Departmental Representative, for the disposal of all non-hazardous waste specified under the provisions of this contract. Contractor must provide documentation from the Designated Non-Hazardous Waste Disposal Facilities indicating full responsibility for all non-hazardous waste accepted from the CAM-C site.

1.3 Submittals

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 In the Waste Management Plan, in accordance with Section 01 52 00 – Construction Facilities, submit details for waste containers and/or packaging materials and methodology including a description of the type, volume and numbers of containers, including the rated maximum weight capacity for each type of container.

1.4 Measurement for Payment

.1 Include all costs for the collection, sorting, stockpiling, dismantling or size reduction, burning, packaging/containerizing, transport and off-site disposal of Known Debris in Item 02 41 23-1, Known Debris Collection, Packaging/Containerization, Transport, and Off-Site Disposal in the Lump Sum Amount Breakdown Schedule. Costs for debris collection, containerization, transport and disposal will be paid under item LSA-1, Lump Sum amount, in the Basis of Payment Schedule.

.2 The scope of work for payment Items 02 41 23-1 in the Basis of Payment Schedule, is to include, but is not limited to:

.1 Collection, sorting, dismantling or size reduction, stockpiling and packaging/containerizing of identified debris areas as shown on the Drawings.

.2 Segregation of hazardous and non-hazardous waste prior to containerization.

.3 Transport and off-site disposal of containerized debris.

.4 On-site transport of barrels or Unknown Hazardous Waste items to the Material Materials Processing Area as described in Section 02 61 33 - Hazardous Waste Materials.

.5 Burning of untreated wooden surface debris including, but not limited to:

.1 Provision of an ash collection system.

.2 Collection, sorting, and on-site transportation of all untreated wood to the burning location.

.6 The supply of packaging materials/containers, appropriate for transport over land and water, for non-hazardous waste derived from Structure Demolition as described in Section 02 41 16 and Debris Removal as described in this Section will not be included for payment under this section, but is to be provided as indicated in Section 02 41 16 - Structure Demolition.

.7 The supply of Hazardous Waste Containers for containerization of hazardous waste derived from Structure Demolition as described in Section 02 41 16 and Debris Removal as described in this Section will not be included for payment under this section, but is to be provided as indicated in Section 02 61 33 - Hazardous Waste Materials.

.8 The disposal of all hazardous waste from Structure Demolition and Debris Removal, at approved Hazardous Waste Facilities will not be included for payment under this section, but is to be provided as indicated in Section 02 61 33 – Hazardous Waste Materials.

.9 All costs for the disposal of Unknown non-hazardous or Unknown hazardous debris will not be included for payment under this section, but will be negotiated with Departmental Representative using the Labour, Equipment and Materials rates provided in the Potential Additional Work (PAW) Schedule.

.10 All costs for the removal and disposal of liquids from within waste vessels to be disposed of will not be included for payment under this section, but will be negotiated with the Departmental Representative using the Labour and Materials rates provided in the Potential Additional Work (PAW) Schedule.

.11 The following work items will be incidental to the work described in this Section, and will not be measured separately:

.1 Reshaping associated with the removal of debris.

.2 Removal and disposal of all soil sample tags and survey stakes on site.

.12 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Waste Material Containers

.1 Containers for hazardous waste materials to be in accordance with Section 02 61 33 - Hazardous Waste Material.

.2 Containers for non-hazardous waste suitable for transport.

PART 3 - EXECUTION

3.1 Protection Procedures

.1 When excavating or removing debris within, or in the vicinity of, a drainage course or a body of water, erect silt fences and/or floating silt curtains to prevent the release of sediment or deleterious materials into the water.

.2 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures.

.3 Protect historic and archaeological features as specified in Section 01 35 43 – Environmental Procedures.

3.2 Removal and Sorting

.1 Examine the area(s) to assess the material type and nature of the debris.

.2 Proceed with the collection and removal of debris if, based on the visual assessment, the debris is determined to be non-hazardous.

.3 Contractor's Hazardous Materials Specialist to continuously monitor the operation to identify potentially hazardous material.

.4 Immediately suspend the operation if suspected Hazardous Waste Material or debris is encountered and allow visual confirmation of the nature of the material or debris to be established.

.5 Collect and sort by hand debris requiring removal located in close proximity to historic or archaeological features. Confirm debris removal requirements with Departmental Representative prior to commencing debris removal work in close proximity to archaeological features.

.6 Store suspected hazardous material in a secured area in secured containers and notify Departmental Representative about the findings. Testing for classification of hazardous products will be carried out and paid for by Departmental Representative

.7 Completely remove partially buried debris within 0.5 m of the surface unless otherwise directed by Departmental Representative.

.8 Advise Departmental Representative of any stained soils encountered during debris removal operations. If authorized by Departmental Representative, excavate stained and contaminated soil areas, identified during debris removal operations, in accordance with the

requirements of Section 02 55 13 - Contaminated Soil. Testing for classification and confirmatory testing will be carried out and paid for by Departmental Representative.

.9 Clean empty barrels in accordance with the requirements of Section 02 61 33 - Hazardous Waste Material. Crush the clean empty barrels in a manner to reduce the total original barrel volume by a minimum of 75%.

3.3 Disposal of Debris

.1 Dispose of hazardous waste materials, including barrels and barrel contents, in accordance with Section 02 61 33 – Hazardous Waste Material.

.2 Dispose of non-hazardous debris in accordance with this Section.

3.4 Site Grading and Restoration

.1 Following collection and removal of debris, reshape area as required or as indicated by the Departmental Representative.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This Section specifies the requirements for the excavation and disposal or treatment of contaminated soils, including the following:

.1 Tier I, Tier II, Type A Petroleum Hydrocarbon (PHC) and Hazardous Contaminated Soils:

.1 Excavation and containerization of the contaminated soil.

.2 Transport to Waste Disposal Facilities of the contaminated soils.

.2 Type B PHC Contaminated Soil:

.1 Excavation and on-site transport of Type B PHC Contaminated Soils to the on-site treatment area.

1.2 Definitions

.1 Contaminated Soil: includes the following contaminated soils which are defined further in this section:

.1 Tier I Contaminated Soil.

.2 Tier II Contaminated Soil.

.3 Type A PHC Contaminated Soil.

.4 Type B PHC Contaminated Soil.

.5 Hazardous Contaminated Soil.

.2 Tier I Contaminated Soil: Soils containing concentrations of any or all of the contaminants listed as follows:

Lead	- >200 parts per million (ppm); <500 ppm.
PCBs	- >1 ppm; <5 ppm.

.3 Tier II Contaminated Soil: Soils containing concentrations of any or all of the contaminants listed as follows:

Arsenic	- > 30 ppm.
Cadmium	- > 5 ppm.
Chromium	- > 250 ppm.
Cobalt	- > 50 ppm.
Copper	- > 100 ppm.
Lead	- > 500 ppm.
Mercury	- > 2 ppm.
Nickel	- > 100 ppm.
Zinc	- > 500 ppm.
PCBs	- > 5 ppm; < 50 ppm.

.4 Type A PHC Contaminated Soil: Soil exceeding the concentration within PHC fractions F3 and F4 as defined in the Indigenous and Northern Affairs Canada (INAC) 2010 Abandoned Military Site Remediation Protocol for PHC in Soil.

Far Shore Criteria (>30 metres; m from a water body).

TPH (F3+F4 Fractions) - 20,000 ppm.

.5 Type B PHC Contaminated Soil: Soil exceeding the concentration within PHC fractions F1, F2 and F3 as defined in the INAC 2010 Abandoned Military Site Remediation Protocol for PHC in Soil.

Near Shore Criteria (<30 metres from a water body).

F1 Fraction - 1,290 ppm.

F2 Fraction - 330 ppm.

Far Shore Criteria (>30 metres from a water body).

TPH (F1+F2+F3 Fractions) - 2,500 ppm (0 to 0.5 m depth).

TPH (F1+F2+F3 Fractions) - 5,000 ppm (greater than 0.5 m depth).

.6 Hazardous Contaminated Soil: Contaminated soil classified as hazardous in accordance with the Canadian Environmental Protection Act (CEPA), including CEPA Polychlorinated Biphenyl (PCB) Contaminated Soil, and Leachable Soil.

.7 CEPA PCB Contaminated Soil: Soil containing concentrations of polychlorinated biphenyls (PCBs) equal to or in excess of 50 milligrams per kilogram (mg/kg). Materials contaminated with PCBs at concentration levels equal to or in excess of 50 mg/kg are legislated as hazardous materials. Storage, handling, and disposal of PCBs are regulated under the CEPA and the Federal Transportation of Dangerous Goods Act. Comply with all applicable regulations.

.8 Leachable Soil: Soil containing contaminants that when subject to the Toxicity Characteristic Leaching Procedure (TCLP) analysis, leach contaminants at concentrations in excess of those specified in CEPA regulations Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulation (EIHWHRMR) and Interprovincial Movement of Hazardous Waste Regulations (IMHWR).

.9 Petroleum Hydrocarbons (PHC): Hydrocarbon products described by laboratory analyses as lubricating oil and grease, fuel oil, diesel and/or gasoline.

.10 Free Product: The presence of a layer of separated phase liquid PHC product.

.11 Clean Soil: Soil that has been sampled, analyzed, and determined to have contaminant concentrations below the Contaminated Soil levels defined above.

1.3 Submittals

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 In the Waste Management Plan, in accordance with Section 01 52 00 - Construction Facilities submit details of the Contaminated Soil Containers to the Departmental Representative.

.3 Submit to Departmental Representative the inventory of the contents of each Contaminated Soil container upon request and prior to transportation off-site.

1.4 Qualifications

.1 Be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the Specification.

.2 Only Contractor's personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and who can satisfy Federal and Territorial requirements will be permitted to carry out the work of this Section.

.3 Follow at all times, guidelines such as those established in Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: National Institute for Occupational Safety and Health (NIOSH) Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian LIUNA - Contractors Training Council, 1992.

.4 All activities involving the handling of hazardous materials, are to be directly supervised by Contractor's personnel who have successfully completed a forty (40) hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program.

.5 Contractor's personnel trained as described in this Section are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.

.6 Provide workers, Department Representative and Department Representative's staff when required with protection appropriate to the potential type and level of exposure. Establish specific safety protocols in the Site Specific Health and Safety Plan.

.7 Provide suitable safety clothing and equipment as required during the course of the work.

.8 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) and IMHWR documentation and recording requirements.

1.5 Site Conditions

.1 Suspend operations whenever climatic conditions are unsatisfactory for excavating or backfilling to conform with this Specification.

.2 After occurrence of heavy rains, do not operate equipment in designated areas until the material has dried sufficiently to prevent excessive rutting.

.3 Contractor is advised that the ground in low-lying areas is often saturated. Dewater saturated ground and ponded areas as required, complying with this Section.

.4 Prior to the commencing excavation work, remove debris, snow, ice and standing water from areas to be excavated and backfilled.

.5 During excavation of contaminated soil, maintain a stable excavation and dewater as required or as directed by the Department Representative.

1.6 Protection

.1 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures.

.2 The release of all water resulting from the dewatering of ponded contaminated soil areas and the decontamination of equipment is to conform to the Wastewater Discharge Criteria outlined in Section 01 35 43 - Environmental Procedures and Section 01 35 15 - Special Project Procedures for Contaminated Sites.

1.7 Personnel Protection

.1 Some areas designated for cleanup under this contract involve soils and hazardous materials which contain inorganic elements, PHCs, and other contaminants which are considered hazardous to human health.

.2 Materials containing PCBs at concentrations equal to or in excess of 50 ppm are considered to be hazardous substances. Storage, handling and disposal of PCBs are regulated under the Canadian Environmental Protection Act and the Federal Transportation of Dangerous Goods Act. Comply with all applicable regulations.

.3 When working with inorganic elements, PCB containing materials, PHCs, and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department as suitable for exposure in the work area. Follow NIOSH guidelines in providing protection for on-site personnel including contract employees and subcontractor, Department Representative and other authorized site personnel. Provide details of protective clothing and equipment required for each work area in the Site Specific Health and Safety Plan as required by Section 01 35 32 – Sire Specific Health and Safety Plan for Contaminated Sites.

.4 Supply sufficient quantities of designated protection equipment to fit all site personnel including Department Representative and authorized visitors. Educate workers as to risks, and train in safe work practices.

1.8 Measurement for Payment

.1 The supply of Contaminated Soil Containers, including leak proof liners, for the transport of all Contaminated Soils with the exception of Hazardous Contaminated Soils, for off-site disposal will be measured for payment by the functional interior storage volume, in cubic metres (m^3), of Contaminated Soil Containers supplied. Supply of Contaminated Soil Containers will be paid under Item 02 55 13-1 in the Basis of Payment Schedule.

.2 The excavation of Tier I and Type A PHC Contaminated Soil from site areas will be measured for payment by the cubic metre (m^3) of excavated contaminated soil in place as determined from survey method identified in Section 31 22 15 - Grading. Tier I and Type A PHC Contaminated Soil Excavation will be paid under Item 02 55 13-2 in the Basis of Payment Schedule.

.3 The scope of work for Item 02 55 13-2, Tier I and Type A PHC Contaminated Soil Excavation includes:

.1 Excavation of Tier I and Type A Contaminated Soil as indicated on the Drawings.

.2 Removal, sorting and containerization of all debris from excavated soils.

.3 Containerization, transport and off-site disposal of the contaminated soil.

.4 The supply, placement and compaction of Type 3 Granular Fill to replace the excavated contaminated soil to original grade, and reshaping of the area.

.4 The excavation of Type B PHC Contaminated Soil from site areas will be measured for payment by the cubic metre (m^3) of excavated contaminated soil in place as determined from survey method identified in Section 31 22 15 - Grading. Type B PHC Contaminated Soil Excavation will be paid under Item 02 55 13-3 in the Basis of Payment Schedule.

.5 The scope of work for Item 02 55 13-3, Type B PHC Contaminated Soil Excavation includes:

.1 Excavation of Type B PHC Contaminated Soil from all site areas as indicated on the drawings.

.2 Removal, sorting and containerization of all debris from excavated soils.

.3 Handling and on-site transport to the soil treatment facility.

.4 The supply, placement and compaction of Type 3 Granular Fill to replace the excavated contaminated soil to original grade and reshaping of the area.

.6 The excavation of Tier II Contaminated Soil from site areas will be measured for payment by the cubic metre (m^3) of excavated contaminated soil in place as determined from survey method identified in Section 31 22 15 - Grading. Tier II Contaminated Soil Excavation will be paid under Item 02 55 13-4 in the Basis of Payment Schedule.

.7 The scope of work for Items 02 55 13-4, Tier II Contaminated Soil Excavation includes:

.1 Excavation of Tier II Contaminated Soil as indicated on the Drawings.

.2 Removal, sorting and containerization of all debris from excavated soils.

.3 Containerization, transport and off-site disposal of the contaminated soil.

.4 The supply, placement and compaction of Type 3 Granular Fill to replace the excavated contaminated soil to original grade and reshaping of the area.

.8 The excavation, off-site transport and disposal at Contractor's Designated Non-Hazardous Waste Disposal Facilities of Non-Hazardous Contaminated Soil resulting from buried debris excavation will be measured for payment by the cubic metre (m^3) of soil, as placed in Contaminated Soil Containers. Off-Site Transport and Disposal of Contaminated Soil – Buried Debris Excavation will be paid under Item 02 55 13-5 in the Basis of Payment Schedule.

.9 The scope of work for Items 02 55 13-5, Off-Site Transport and Disposal of Contaminated Soil – Buried Debris excavation includes, but is not limited to the following:

.1 Containerization of buried debris excavation stockpiles classified as Tier I, Type A PHC, or Tier II contaminated soil.

.2 Preparation and submission to Departmental Representative of waste transport manifest.

.3 Transport of the containerized non-hazardous soil to Contractor's Designated Off-Site Non-Hazardous Waste Disposal Facilities.

.4 Off-loading, handling and disposal of the containerized non-hazardous soil at Contractor's Designated Off-Site Non-Hazardous Waste Disposal Facilities.

.5 The supply, placement and compaction of Type 3 Granular Fill to replace the excavated buried debris to original grade and reshaping of the area.

.10 Collection, containerization, supply of containers, transport and off-site disposal, of Hazardous Contaminated Soil, including hazardous soil from buried debris excavation, will be paid as a provisional cost sum under Item 02 61 33-4, Unknown Hazardous Material in the Basis of Payment Schedule.

.11 The on-site treatment and disposal of Type B PHC Contaminated soil will not be included for payment under this section, but will be provided as indicated in Section 02 61 00 – Hydrocarbon Soil Remediation.

.12 Extra payment will not be made for soil removed from beyond the specified limits of excavation, unless such removal has been specifically directed by the Departmental Representative. The volume of contaminated soil excavation beyond the specified limits that have been approved by Departmental Representative will be determined by survey.

.13 All costs associated with the cleanup or treatment of contamination of areas within or surrounding the contaminated soil handling areas due to the migration of contaminants from those areas as a result of Contractor's actions or inactions are the responsibility of Contractor. These costs are to include all costs of investigation to determine the extent of contamination migration, as well as soil excavation and treatment costs.

.14 The following activities are considered incidental to the work identified by Items 02 55 13-2 through 02 55 13-5 in the Basis of Payment Schedule and will not be measured separately:

.1 Preparation of container inventory summarizing the contents of the Contaminated Soil Containers.

.2 Installation of monitoring equipment as required to confirm and/or calibrate process requirements, as applicable.

.3 Dewatering excavation including testing for the disposal and disposal of wastewater or other process effluents, as applicable.

.4 Any necessary excavation to facilitate testing of contaminated soils.

.5 Equipment decontamination including preparation and operation of the equipment decontamination area.

.6 Provision of all necessary safety equipment and clothing, as specified in Section 01 35 32, Site Specific Health and Safety Plan for Contaminated Sites.

.7 Any requirements of permits.

.8 Grading of backfilled excavations to prevent ponding and blending in with the surrounding terrain, as directed by Departmental Representative, as applicable.

.9 Excavation of contaminated soils within permafrost-affected zones, as applicable.

.10 Removal and disposal of all non-hazardous debris from excavated and re-containerized soils.

.11 Removal of all rocks and boulders greater than 200 millimetres (mm) in diameter from excavated and containerized soils.

.15 Costs for the dewatering of contaminated soil excavations will not be measured for payment. Include all costs for the collection of wastewater from contaminated soil areas and associated storage, treatment and discharge in Item LSA-1, Lump Sum Amount in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule.

.16 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Environmental Protection Supplies

.1 Environmental Protection Supplies: as per Section 01 35 43 - Environmental Procedures.

2.2 Contaminated Soil Containers

.1 Must be in accordance with all requirements of the TDG Acts and Regulations and the Export and Import of Hazardous Waste and Hazardous Recyclable Material Regulations and shall include all necessary leak proof liners to satisfy these regulations. Submit details of the Contaminated Soil Containers to the Departmental Representative forty-five (45) days prior to mobilization.

.2 The functional interior volume of Contaminated Soil Containers will be determined by Departmental Representative by averaging a minimum of three (3) measurements of the interior length, height and width and the rate maximum weight capacity for each type of Contaminated Soil Container.

PART 3 - EXECUTION

3.1 Environmental Protection

.1 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 43 – Environmental Procedures.

.2 The release of all water resulting from the dewatering of ponded contaminated soil areas, cleaning of old containers and the decontamination of equipment is to conform to the Wastewater Discharge Criteria outlines in Section 01 35 15 – Special Project Procedures for Contaminated Sites.

3.2 Excavation of Contaminated Soil and Backfilling

.1 Layout and excavate areas of contaminated soil to the limits as indicated. All layouts are to be field verified by Department Representative prior to excavation.

.2 Remove all surface debris prior to excavation. Remove all debris from excavated soil, sort, and dispose in accordance with Section 02 41 23 – Debris Removal.

.3 Suppress dust generated during excavation operations with a water spray. Prevent surface water from entering the excavated area.

.4 Dewater ponded contaminated soil areas, as required. Maintain soil excavations free of standing water during soil removal, and confirmatory sampling activities. Comply with the requirements of the Waste Water Discharge Criteria indicated in Section 01 35 15 - Special Project Procedures for Contaminated Sites and Section 01 35 43 - Environmental Procedures.

.5 When excavating in the vicinity of a drainage course or a body of water, erect silt fences, floating silt curtains and/or containment berms to prevent the release of sediment and deleterious materials into the water.

.6 When excavating contaminated soils with more than one type of contaminated soil with the area, the soils are to be excavated in the following order:

.1 Hazardous Soil.

.2 Tier II Soil.

.3 Tier I Soil.

.7 Prior to placing contaminated soil in containers, remove all boulders and rocks greater than 200 mm in maximum dimension. Remove all contaminated soil from these materials. Boulders and rocks are to be used as backfill in the excavation.

.8 Decontaminate the equipment used for the excavation of Contaminated Soil in accordance with Section 01 35 15 - Special Project Procedures for Contaminated Site before commencing contaminated soil excavation at another location.

.9 The Department Representative will collect confirmatory soil samples after reaching the contaminated soil excavation limits indicated on Drawings. No further excavation of the soil will proceed until the results of confirmatory samples are assessed by the Departmental Representative.

.10 Do not operate equipment in contaminated soil areas that have been excavated until Department Representative has confirmed, based on the results of confirmatory testing, that

.11 Once directed by the Department Representative, supply Type 3 Granular Fill to backfill excavation areas to original ground, as specified in Section 31 22 15 - Grading.

3.3 Erosion, Sediment and Drainage Controls

.1 Prior to commencement of the work, install temporary erosion, sediment and drainage controls to prevent siltation and disruption of water bodies in accordance with this Section and Section 01 35 15 - Special Project Procedures for Contaminated Sites and Section 01 35 43 - Environmental Procedures.

.2 Erosion, sediment and drainage controls are to be maintained during all stages of work.

.3 At the completion of contaminated soil excavation, remove the erosion, sediment and drainage controls, as directed by Departmental Representative. Dispose of all non-granular erosion, sediment and drainage control materials off-site.

3.4 Containerization and Off-Site Disposal of Contaminated Soil

.1 Assemble, load and secure Contaminated Soil Containers according to manufacturers recommendations. Do not exceed containers specified load limit.

.2 Do not transport off-site loaded containers that have suffered structural damage during handling or on-site transport. Repair or replace damaged containers prior to off-site shipment.

.3 Provide a numbering system and maintain an inventory of all contaminated soil containers with contaminated soil to be transported and disposed of off-site.

.4 Label all containers, using spray paint or other means, with a unique container number and contents (e.g. Tier I Soil, Type A Soil, Tier II Soil, Haz Soil, etc.)

.5 Affix placards and labels for transport, as required.

.6 Transport and handling of containers from the Temporary Storage Area and loading onto the Contractor's mode of transportation.

.7 Submit to Departmental Representative a copy of the inventory of the contents of each container upon request and prior to transportation off-site.

.8 Supply the Departmental Representative with acceptance and disposal manifests for all Contaminated Soil delivered to Contractor's Designated Off-Site Waste Disposal Facilities.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This Section specifies the requirements for the treatment of Type B Petroleum Hydrocarbon (PHC) Contaminated Soil at CAM-C, including the following:

.1 Submission of a Type B PHC Contaminated Soil Treatment Plan.

.2 Provision of proprietary equipment, materials, labour, and supplies as required, to support the soil treatment program.

.3 Handling and storage of material, equipment, and supplies required for the soil treatment process.

.4 Construction of a Soil Treatment Facility at an approved area.

.5 Treatment of Type B PHC Contaminated Soil to specified treatment criteria by a method chosen by the Contractor and reviewed by the Departmental Representative.

.6 Design and implementation of a contaminated soil sampling and laboratory testing program to monitor, calibrate, and verify the contaminated soil treatment process.

.7 Decommissioning and deconstruction of the Soil Treatment Facility following completion of soil treatment operations.

.2 Contractor is to immediately notify Department Representative if Contractor believes that the proposed treatment system will not yield suitable results within the time frame specified due to the nature of the contaminant, soil conditions, or site conditions.

.3 The PHC Contaminated Soil has been characterized as containing diesel fuel at maximum concentrations of approximately 8,900 milligrams per kilogram (mg/kg). A summary of Laboratory test results collected during previous investigations is included in Appendix H.

1.2 Definitions

.1 Treated Soil: Soil, previously classified as Type B PHC Contaminated Soil, that has been treated, sampled, analyzed, and determined to contain concentrations of PHCs lower than the applicable criteria identified below:

PHC FRACTION	Soil Treatment Criteria (mg/kg)
TPH = F1 (C_6 to C_{10}) + F2 (>C_{10} to C_{16}) + F3 (>C_{16} to C_{34})	2,500

.2 Soil Treatment Facility: The site area where Type B PHC Contaminated Soil is to be treated to reduce PHC concentrations.

1.3 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit a Type B PHC Contaminated Soil Treatment Plan outlining the treatment methodology and equipment proposed by the Contractor to complete the Type B PHC Contaminated Soil treatment. Type B PHC Contaminated Soil Treatment Plan must be acceptable to Authorities Having Jurisdiction (AHJs). Submit the Plan ninety (90) days prior to construction.

.3 At minimum, the Type B PHC Contaminated Soil Treatment Plan is to detail the following:

.1 The chosen soil treatment method.

.2 Description of why the chosen treatment methodology is appropriate for site locations and conditions including past experience and relevant technical documentation.

.3 The equipment, materials and supplies required to conduct the treatment, including provisions to deal with equipment breakdown.

.4 Labour and temporary facilities required for the implementation of the treatment program.

.5 The size, shape, and location of the proposed treatment operation, and control measures to prevent contaminant migration outside of the treatment area.

.6 Details of the Contractors contaminated soil sampling and laboratory testing methodology, personnel, and protocols to calibrate, monitor, and verify the effectiveness of the contaminated soil treatment process. Sampling methodology is to meet or exceed requirements of industry best practice and Indigenous and Northern Affairs Canada (INAC) Abandoned Military Site Remediation Protocol, 2009.

.7 Schedule of predicted treatment durations.

.8 Details of the handling and storage of material, equipment, and supplies required for the soil treatment process.

.9 Details on final placement of treated soils.

.10 Details for the final decommissioning of the treatment area and associated facilities.

.4 Submit to the Department Representative on a monthly basis during contaminated soil treatment activities, a Contaminated Soil Treatment Operation Report which is to include the following information, as applicable to the treatment process:

.1 Volume of contaminated soil excavated.

.2 Schedule of treatment process activities.

.3 Date and application rates of amendments added to the soil.

.4 Results of the visual inspection program.

.5 Effluent and contaminated soil test results, including the results of the baseline sampling and analytical program.

.6 Climate data including average daily temperature, dates of precipitation events, and amount of precipitation.

.5 Within 30 days of the completion of each season/year of work, submit to Department Representative an Interim Soil Remediation Report. This report is to include, but not necessarily be limited to, the following information as applicable to the treatment process:

.1 Nature and volume of treated soil.

.2 Equipment usage.

.3 Fuel and/or power usage.

.4 Environmental monitoring and inspection records.

.5 Temperature and precipitation records for the duration of the work season.

.6 Results of all testing including sampling procedures, analytical procedures, analytical results, and Quality Assurance/Quality Control (QA/QC) procedures for baseline and confirmatory testing programs.

.7 Proposed modifications to the treatment process, as required.

.8 Any other information required to meet the water licence and land use permit annual report requirements.

1.4 Qualifications

.1 Contractor is to be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the Specification.

.2 Only Contractor's Soil Remediation Specialist, capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and remediation of

PHC-contaminated soil will be permitted to carry out the work of this Section.

.3 Follow at all times, guidelines such as those established in Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: National Institute for Occupational Safety and Health (NIOSH) Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian LIUNA - Contractors Training Council, 1992.

.4 All activities involving the handling of hazardous materials, are to be directly supervised by Contractor's Soil Remediation Specialist, who has successfully completed a 40 hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program.

.5 Personnel trained as described above are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.

.6 Provide suitable safety clothing and equipment as required during the course of the work.

.7 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) and Interprovincial Movement of Hazardous Waste Regulation (IMHWR) documentation and recording requirements.

1.5 Site Conditions

.1 During or after occurrence of heavy rains, do not operate equipment in designated areas until the material has dried sufficiently to prevent excessive rutting.

.2 Remove debris, snow, ice and standing water from areas prior to construction of the Soil Treatment Facility or placement of soil within the Facility.

1.6 Protection

.1 Environmental protection measures are to be in accordance with the requirements of Section 01 35 43 - Environmental Procedures.

.2 Decontaminate equipment in accordance with Section 01 35 15 – Special Procedures for Contaminated Sites.

.3 The release of all Wastewater shall conform to the Wastewater Discharge Criteria indicated in Section 01 35 15 – Special Procedures for Contaminated Sites.

1.7 Personal Protection

.1 When working with PHCs and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department as suitable for exposure in the work area. Follow NIOSH guidelines in providing protection for on-site personnel including contract employees and subcontractor, Department Representative and other authorized site personnel.

.2 Include requirements for protective clothing for the work outlined in this section in the Site Specific Health and Safety Plan (SSHSP) specified in Section 01 35 32, Site Specific Health and Safety Plan for Contaminated Sites.

.3 Supply sufficient quantities of designated protection equipment to fit all site personnel including Department Representative and authorized visitors. Supply at least five sets of protection equipment for Department Representative and authorized visitors.

.4 No separate pay item is to apply to the work practice requirements, including personal protection, of this Section. Costs are to be included in the applicable payment items to which this Section applies

1.8 Signs

.1 Signage: Provide and erect signage at access points to the Soil Treatment Facility. Signage is to be visible from all sides of these areas. The English version of the sign is to read:

CAUTION, CONTAMINATED SOIL TREATMENT AREA

RESTRICTED ACCESS.

Post a similar sign in the language of the local dialect, Inuinnaqtun.

.2 Graphic Symbols: All lettering is to conform to CAN3-Z321-77, or latest edition thereof. All lettering is to be black, not less than 100 millimetres (mm) high, with a 25 mm wide stroke, on a white background.

1.9 Measurement for Payment

.1 Treatment of Type B PHC Contaminated Soil will be measured for payment by cubic metre of excavated Type B PHC Contaminated Soil in place, based on survey methods outlined in Section 31 22 15 – Grading – and will be paid under the unit price Item 02 61 00-1, Treatment of Type B PHC Contaminated Soil in the Basis of Payment Schedule. Item 02 61 00-1 will have the same cubic metre volume as payment item 02 55 13-3 – Type B PHC contaminated soil excavation.

.2 The scope of work for Payment Item 02 61 00-1 is to include all direct work associated with the construction and operation of the Soil Treatment Facility, according to the accepted Type B PHC Contaminated Soil Treatment Plan, including the following:

.1 Provision of all materials, equipment, labour and supplies to construct the Soil Treatment Facility.

.2 Provision of all materials, equipment, labour and supplies necessary to operate the Soil Treatment Facility.

.3 Dewatering including the removal, treatment and discharge of Contact Water, as required to facilitate treatment operations.

.4 Installation of monitoring equipment, as required.

.5 Provision and erection of signage as described.

.6 Reporting and record keeping.

.7 Equipment decontamination including preparation and operation of an equipment decontamination area, as applicable.

.8 Provision of all necessary safety equipment and clothing.

.9 Any requirements of permits.

.10 Final disposal of treated soil.

.11 Decommissioning of Soil Treatment Facility.

.3 In the event that Contractor's treatment system does not successfully treat the Type B PHC soil within the specified project time frame, the Contractor will be responsible for all costs associated with off-site transport and disposal.

.4 All costs associated with the cleanup or treatment of contamination of areas within or surrounding the Soil Treatment Facility or due to the migration of contaminants from the soil being treated as a result of Contractor's actions or inactions are the responsibility of Contractor. These costs are to include all costs of investigation to determine the extent of contamination migration, as well as soil excavation and treatment costs.

.5 Submission of a Type B PHC Contaminated Soil Treatment Plan will not be measured for payment under this Section. Include all costs in Item BOPC-1, Balance of Project Costs in the Lump Sum Amount Breakdown. Indicate cost of the work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

.6 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Not used.

PART 3 - EXECUTION

3.1 General

.1 Handling and storage of material, equipment, and supplies required for the soil treatment process upon their arrival at site.

.2 Operate the treatment system in the most efficient manner necessary to complete treatment in the minimum time frame possible.

3.2 Soil Treatment Process Requirements

.1 Locate the Soil Treatment Facility within the Proposed Soil Treatment Areas identified on Drawing C02 or other approved area, in consultation with the Departmental Representative to satisfy AHJ requirements.

.2 Treat Type B PHC Contaminated Soil as described in the accepted Type B PHC Contaminated Soil Treatment Plan.

.3 Remove, handle and transport Treated Soil to the disposal location(s) approved by the Departmental Representative. Disposal may be within a section of the Soil Treatment Facility clearly segregated from non-Treated Soil.

.4 Dilution of the contaminated soil with clean or treated soil to reduce the overall contaminant concentration will not be accepted as a remediation approach.

3.3 Testing

.1 Carry out and pay for all testing required to confirm and/or calibrate treatment process requirements and to confirm that contaminated soils have been treated to specified contaminant levels. This testing is to include a baseline sampling and analysis program in the area of the stockpile and treatment areas to verify existing conditions, as well as a confirmatory testing program.

.2 Duplicates of a minimum of 10% of the samples extracted will be collected for Contractor's confirmatory testing program by the Departmental Representative. Costs for this testing will be the responsibility of the Departmental Representative.

.3 Contaminated soil will be designated as treated soil if the results of the laboratory analytical testing of a composite sample obtained from five discrete soil samples representative of a 100 cubic metre soil volume indicate concentration levels of PHCs to be less than the applicable remediation criteria.

3.4 Contact Water and Free Product

.1 Handle, and treat Contact Water encountered during the soil treatment operation as described in Section 02 35 15 – Special Procedures for Contaminated Sites.

3.5 Treated Soil Disposal

.1 Dispose of all Treated Soil in locations greater than 30 m from water bodies and in accordance with AHJ.

.2 Dispose of soil by placing, trackpacking and reshaping to a maximum thickness of 1.5 m with sides that have a maximum slope of 1 vertical to 5 horizontal.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This section specifies the requirements for the collection, containerization, on-site transport, temporary storage and off-site transport and disposal of hazardous waste.

.2 An inventory of known Hazardous Waste Material is provided in the Demolition and Debris inventories in Appendix A and B.

1.2 Definitions

.1 Hazardous Waste Materials: Wastes materials that are designated as “hazardous” or “dangerous goods” under Territorial or Federal legislation or guidelines including: the Transportation of Dangerous Goods (TDG) Act and Regulation, and the Export and Import of Hazardous Waste and Hazardous Recyclable Materials Regulations (EIHWHRMR) under the Canadian Environmental Protection Act (CEPA). The following items, typical of remote Arctic sites, are designated as “hazardous” in accordance with the aforementioned legislation:

.1 Asbestos (unbagged).

.2 Batteries.

.3 Solvents.

.4 Mercury switches and thermostats.

.5 Petroleum, Oil, or Lubricating (POL) materials not meeting incineration criteria, as defined in clause 3.6.6 of this Section.

.6 Tank Sludge.

.7 Hazardous polychlorinated biphenyl (PCB)-Amended Painted (PAP) Material, as defined in Section 02 41 16 - Structure Demolition.

.8 Leachable Lead painted material.

.9 Solids including soil, concrete and paint chips containing PCBs at concentrations equal to or greater than 50 milligrams per kilogram (mg/kg) and/or leachable lead equal to or greater than 5 milligrams per litre (mg/L).

.10 Liquids containing PCBs in a concentration equal to or greater than 2 mg/kg.

.11 Material, including wastewater, groundwater and surface water, identified to be hazardous as the result of testing.

.12 Electrical equipment including, but not necessary limited to, capacitors, transformers, and regulators which contain or are suspected to contain PCBs at concentrations equal to or greater than 50 mg/kg.

.13 Miscellaneous Hazardous Materials defined as those materials not classified as 1 to 12 above but suspected to fall under the definition of Hazardous Wastes and Materials as stated in this Section.

.2 Known and Unknown Debris: As defined in Section 02 41 23 - Debris Removal.

.3 Processing: The sampling, testing, packaging, and containerization of suspected Hazardous Waste Materials.

.4 Hazardous Waste Container: A container, of the appropriate type and size necessary to contain and transport the Hazardous Waste Material placed in it, as required by the TDG Act.

.5 Hazardous Material Processing Area: A designated area, accepted by the Departmental Representative, for the consolidation, processing and containerization of hazardous waste materials, including barrel contents.

.6 Temporary Storage Area: The designated area, approved by Departmental Representative, for the storage of containerized contaminated soil and waste prior to transport off-site. Requirements for the Temporary Storage Area are outlined in Section 01 52 00 – Construction Facilities of these Specifications.

.7 Contaminated Groundwater: The groundwater encountered during contaminated soil, debris or landfill excavation that contains free product or does not conform to the Wastewater Discharge Criteria of the Water License.

.8 Contractor's Designated Hazardous Waste Disposal Facilities: The Licensed Hazardous Waste Disposal Facilities designated by the Contractor and accepted by the Departmental Representative, for the disposal of all hazardous waste specified under the provisions of this contract.

.9 Leachable-Lead Painted Material: Material that is coated with lead based paint that has been analyzed and determined to contain leachable lead concentrations of 5 mg/L or greater.

.10 Known Hazardous Material: Material designated as hazardous in accordance with the definition of hazardous waste in this Section, and which is identified for collection and disposal in the specifications and Drawings.

.11 Unknown Hazardous Material: Material designated as hazardous in accordance with the definition of Hazardous Waste Material in this Section, and which has not been specifically identified for collection and disposal in the specifications and Drawings.

1.3 Submittals

.1 Provide submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit a Waste Management Plan in accordance with Section 01 52 00 – Construction Facilities.

.3 Submit details of the Hazardous Waste Containers in the Waste Management Plan, including a description of the type, volume, number of containers and the rated maximum weight capacity for each type of container. Include written confirmation the proposed containers satisfy TDG Act regulatory requirements for marine and land transport.

.4 Submit details of the Hazardous Material Processing Area in the Waste Management Plan. Details are to include layout and construction details, procedures to prevent contamination of underlying or adjacent soils, a figure showing the location of the Hazardous Material Processing Area and the proposed areas for the various types of Hazardous Material. Update the submission following arrival on site, as required.

.5 Provide documentation from the Designated Hazardous Waste Disposal Facilities in the Waste Management Plan indicating proof of facility licensing and written acceptance for all hazardous waste from the CAM-C site.

.6 Submit qualifications and training records for all Contractor's personnel completing Work as described under this Section.

.7 Submit for review forty-five (45) days prior to mobilization, a detailed description of the proposed barrel processing methodology, including oil/water separation, water treatment, incineration, and containers to be used for the disposal of hydrocarbon absorbent materials and hydrocarbon barrel contents. The description must include product/manufacturer information and specifications for each of the products to be used. Details are to include the proposed location of the Barrel Processing Area. Update the submission following arrival on site, if required.

.8 Submit for review thirty (30) days prior to mobilization to the site, a detailed description of the proposed incineration methodology, process and container(s) to be used for the disposal of oil-absorbent material and liquids contained in fuel tanks and pipelines. The description should include product manufacturer information and specifications.

.9 Submit the hazardous waste disposal tracking information including final inventories of hazardous waste containers and disposal details to Departmental Representative prior to transportation off-site. Provide a photographic record of the interior of all completed Hazardous Waste Containers prior to closing. Submit the photographic record to Departmental Representative together with the corresponding inventory of each container upon request and completion of Work.

10. Hazardous Waste Disposal Tracking Form is provided in Appendix E.

11. Submit waste transport manifests, chain of custody documentation and transport documentation for hazardous wastes to the Departmental Representative and to other Authorities Having Jurisdiction (AHJ) prior to shipment off-site and in accordance with applicable regulations.

.12 Submit destruction and disposal certificates to the Departmental Representative.

.13 In the event of an environmental incident or damage to waste containers, notify the Departmental Representative and applicable AHJ.

1.4 Qualifications and Personnel Protection

.1 Be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the Specifications.

.2 Submit qualifications and training records prior to commencing Work under this Section, for all Contractor’s personnel completing Work as described under this Section.

.3 Follow at all times guidelines such as those established in Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: National Institute for Occupational Safety and Health (NIOSH) Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian LIUNA – Contractors Training Council, 1992.

.4 Only Contractor's personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and satisfy Federal and Territorial requirements will be permitted to supervise and direct the work of this Section.

.5 All activities involving the handling of hazardous materials are to be directly supervised by Contractor's personnel who have successfully completed a forty (40) hour training course for Hazardous Waste Activities in compliance with OSHA 29 CFR 1910.120 or other accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program. Contractor’s key personnel responsible for the removal of leachable lead coatings are to demonstrate appropriate level of experience in the lead control, removal and abatement industry.

.6 Contractor's personnel trained as described in this Section are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices

to be followed in carrying out the Work.

.7 Provide workers with protection appropriate to the potential type and level of exposure. Establish specific safety protocols prior to commencing clean-up activities.

.8 Provide suitable safety clothing and equipment as required during the course of the work. Supply sufficient quantities of protection equipment to fit all site personnel including Departmental Representative, Departmental Representative's staff, and site visitors.

.9 Trained and certified personnel are required to complete all TDG Act documentation and recording requirements.

1.5 Measurement for Payment

.1 The supply of Hazardous Waste Containers, including liners, for the containerization of Hazardous Waste will be measured for payment by the functional interior storage volume, in cubic metres (m^3), of the container. Supply of Hazardous Waste Containers will be paid under Item 02 61 33-1 as indicated in the Basis of Payment Schedule.

.2 The collection, containerization and on-site transport to the Temporary Storage Area of all Hazardous Waste generated from Structure Demolition will not be included for payment under this section, but will be included as specified in Section 02 41 16 – Structure Demolition.

.3 The collection, containerization and on-site transport to the Temporary Storage Area of all Hazardous Waste generated from Debris Removal will not be included for payment under this section, but will be included as specified in Section 02 41 23 – Debris Removal.

.4 The collection, containerization and on-site transport to the Temporary Storage Area of all Hazardous Waste generated from Contaminated Soil Excavation will not be included for payment under this section, but will be included as specified in Section 02 55 13 – Contaminated Soil.

.5 Include all direct costs for the off-site transport of Hazardous Waste Materials from CAM-C to Contractor's Designated Hazardous Disposal Facilities in Item 02 61 33-2, Off-Site Transport of Hazardous Waste to Contractor's Designated Hazardous Waste Disposal Facilities in the Lump Sum Amount Breakdown Schedule. Costs for the off-site transport of hazardous waste will be paid under Item LSA-1, Lump Sum amount, in the Basis of Payment Schedule.

.6 The scope of work for Item 02 61 33-2 - Off-Site Transport of Hazardous Waste Materials to Contractor's Designated Hazardous Waste Disposal Facilities is to include, but not be limited to, the following:

.1 Provision and installation of placards and labels to meet all the requirements of the TDG Act, Interprovincial Movement of Hazardous Waste Regulation (IMHWR) and all other applicable Regulations.

.2 On-site transport of the containers from the Temporary Storage Area and loading onto the Contractor's mode of transportation.

.3 All analytical testing of waste required by the Contractor's Designated Hazardous Waste Disposal Facilities.

.4 Preparation and submission to the Departmental Representative of waste transport manifests to meet all requirements of the TDG Act and Regulations and Interprovincial Movement of Hazardous Waste Regulation (IMHWR).

.5 Preparation and management of an in-transit hazardous materials storage location as required during demobilization activities.

.6 Provision of transport for the containerized Hazardous Waste Materials from the in-transit hazardous materials storage location to Contractor's Designated Hazardous Waste Disposal Facilities.

.7 The off-site disposal of Hazardous Waste Materials from CAM-C will be paid as Provisional Cost Sum under Item 02 61 33-3 in the Basis of Payment Schedule.

.8 The scope of work for Item 02 61 33-3 - Off-Site Disposal of Hazardous Waste Materials at Contractor's Designated Hazardous Waste Disposal Facilities is to include, but not be limited to, the following:

.1 Off-loading and disposal costs of the containerized Hazardous Waste Material at Contractor's Designated Hazardous Waste Disposal Facilities.

.2 Documentation of license and acceptance from Contractor's Disposal Facilities and record keeping of hazardous waste via the Hazardous Waste Disposal Tracking form.

.3 Acquisition and submission of Certificates of Destruction and Disposal for all hazardous materials.

.9 Payment for Item 02 61 33-3 will be made upon receipt of the destruction and disposal certificates, transportation documents and other information from the Contractor's Designated Hazardous Waste Disposal Facilities as described in this Section.

.10 Contractor is responsible for all costs associated with any repackaging of container contents resulting from the failure by the Contractor to properly pack, handle and secure the container and/or contents.

.11 The development, operation, and closure of the Temporary Storage Area, including provisions of signs and barricades, will be paid for as specified in Section 01 52 00 – Construction Facilities.

.12 The development, operation, and closure of the Hazardous Material Processing Areas, including provision of signs and barricades, will not be measured for payment. Include all costs in Item BOPC-1, Balance of Project Costs in the Lump Sum Amount Breakdown. Indicate cost of the work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

.13 Costs for the processing and containerization of Unknown Hazardous Waste Material will be paid as provisional cost sum Item 02 61 33-4, Unknown Hazardous Material, using the Contractor's Labour and Equipment Rates provided in the contract documents. The scope of work for the processing and containerization of Unknown Hazardous Waste Material includes, but is not limited to the following:

.1 Supply and transport of additional containers to the site for Unknown Hazardous Waste Materials.

.2 Equipment and labour for the containerization.

.3 Supply and transport to the site of additional detergents and solvent, required for barrel processing.

.4 Processing of liquid barrel contents as directed by the Departmental Representative, including on-site incineration of contents meeting incineration criteria, or treatment of water to meet discharge criteria.

.5 Disposal of empty barrels resulting from the collection and consolidation of Unknown Hazardous Waste Materials.

.6 Off-site Transport and Disposal of Unknown Hazardous Waste Material, as directed by the Departmental Representative, to the Contractor's Designated Hazardous Waste Disposal Facilities.

.14 Unknown hazardous material is material designated as hazardous in accordance with the definition of hazardous waste material in this Section and which has not been specifically identified for collection or disposal as part of other work components.

.15 Unknown Hazardous Waste Material is to include:

.1 Hazardous debris outside of Known Debris Areas identified in Appendices and/or Drawings, or located beyond 50 metres (m) of the undisturbed edge of any former or existing access road or water course on the site; Hazardous debris in excess of the volume identified in Appendices in the Known Debris Areas to be removed.

.2 Unknown barrel contents and absorbent management materials resulting from barrel processing activities.

.3 Free product collected during contaminated soil excavation or soil treatment operations.

.4 Hazardous material excavated from landfill and buried debris excavations.

.5 Hazardous material encountered during demolition operations that is not identified in the demolition inventory in the Appendix.

.16 Unknown Hazardous Waste Material is not to include:

.1 Materials from facilities to be demolished that are contaminated with PCB-amended paint at PCB concentrations in excess of 50 parts per million (ppm).

.2 Asbestos containing materials from facilities to be demolished.

.3 Fuel and fuel residual product from fuel tanks and pipelines to be demolished.

.4 Sewage and sewage sludge from sewage tanks and lines to be demolished.

.5 Any hazardous material identified in the Demolition Inventory in the Appendix, or elsewhere in these Specifications.

.17 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 – PRODUCTS

2.1 Hazardous Waste Material Containers

.1 Hazardous Waste Containers:

.1 Containers are to satisfy the requirements of the latest edition of the TDG Act, and Regulations, and CEPA EIHWHRMR, and CEPA IMHWR.

.2 Containers are to include all necessary liners to satisfy the TDG Act requirements for marine and land transport.

.3 The functional interior volume of Hazardous Waste Containers will be determined by Departmental Representative by averaging a minimum or three (3) measurements of the interior length, height and width and the rated maximum weight capacity for each type of Hazardous Material Container.

.2 Provide dunnage, locks, and bracing material for securing material placed in steel containers.

.3 For transport by cargo vehicle or vessel, package liquids containing PCBs at concentrations greater than 50 ppm in accordance with TDG Act and Regulations and CEPA regulations (IMHWR and EIHWHRMR) in a combination packaging where the inner package is made of earthenware, plastic or metal, and is leak-proof, and the outer packaging is a drum or box made of steel, aluminium, plywood, fibre or plastic. Provide sufficient absorbent material between the inner and outer packaging to prevent any liquid from escaping the outer packaging. There is no quantity limit per package for cargo vehicle or vessel transport.

.4 For packaging and containerization requirements of Hazardous Waste Materials, all requirements of the TDG Act and Regulations, and CEPA Interprovincial Movement of Hazardous Waste must be met.

.5 Provide access for Departmental Representative to inspect all Hazardous Waste Material Packaging as directed by Departmental Representative.

2.2 Detergent Barrel Wash

.1 General Purpose, phosphate free. Prior to shipment to the site, submit to the DR Safety Data Sheets (SDS). The detergent shipped to the site is to remain the property of the Contractor.

2.3 Solvent Barrel Rinse

.1 Minimum flash point: 60 degrees Celsius (°C). Prior to shipment to the site, submit to Departmental Representative SDS as specified in Section 01 35 32 – Site Specific Health and Safety for Contaminated Sites. The solvent shipped to the site is to remain the property of Contractor.

PART 3 - EXECUTION

3.1 General Requirements

.1 Complete all Work in accordance with all appropriate Federal, Territorial and Provincial legislation, and international conventions.

.2 Individuals shipping and receiving hazardous waste materials are to be licensed under the TDG Act and Regulations, and appropriate territorial environmental Acts and regulations.

.3 Only trained individuals or individuals working under the direct supervision of trained persons are to handle or transport dangerous goods.

.4 Establish Hazardous Material Processing Areas for the packaging of hazardous waste materials, as well as for the consolidation, incineration, and packaging of barrel liquids and sediments, and for the cleaning of barrels. Provide measures to mitigate release of contaminants to the environment including, but not limited to liners, silt fences, sorbent materials, ditching and grading, etc.

.5 Establish Temporary Storage Areas as specified in Section 01 52 00 – Construction Facilities, to provide a secure area for Hazardous Waste Material prior to shipment for disposal as described in this Section.

3.2 Protection

.1 Complete Work in an environmentally acceptable manner. Comply with requirements of Section 01 35 43 - Environmental Procedures.

.2 Avoid releasing any Hazardous Waste Materials into the environment during handling.

.3 In the event of a spill, invoke the emergency response plan and take appropriate action.

.4 Provide a full range of cleanup and protective equipment at the site to contain and clean-up spills, and protect personnel, as detailed in the Spill Contingency Plan and specified in Section 01 35 32 – Site Specific Health and Safety for Contaminated Sites.

.5 When working with PCB-containing materials, leachable lead materials, asbestos, and other contaminants, workers are to wear protective clothing and equipment acceptable to AHJ as suitable for exposure in the work area. Follow National Institute for NIOSH guidelines in providing protection for on-site personnel including contract employees, subcontractors, Departmental Representative, Departmental Representative's staff, and other authorized personnel.

.6 Handle materials containing asbestos in accordance with Section 02 82 00.01- Asbestos Abatement – Minimum Precautions and Section 02 82 00.02 - Asbestos Abatement - Intermediate Precautions.

.7 The release of all water resulting from the cleaning of fuel tanks, pipelines and barrels is to conform to the Wastewater Discharge Criteria of the Water License. Treat washwater to conform to the Discharge Criteria of the Water License, or dispose of any liquid effluent not conforming to the Water License off-site at Contractor’s own cost, in accordance with the requirements of this Section.

.8 Departmental Representative is to complete baseline soil sampling and analyses of the Hazardous Material Processing Area and Temporary Storage Area prior to commencing placement of materials at these areas, and confirmatory sampling following the decommission of the areas. The Contractor is responsible for all contamination resulting from the improper storage and handling of contaminated or hazardous materials over the duration of site remediation activities. In the event of such contamination, the Contractor is to submit to Departmental Representative a plan for site remediation in accordance with all Federal and Territorial Regulations to be enacted upon immediately following approval by Departmental Representative. All clean-up costs, including but not limited to excavation and disposal, will be the responsibility of the Contractor.

.9 Personal protective equipment, as per Section 01 35 32 - Site Specific Health and Safety for Contaminated Sites, is to include clothing, protective suits, respirators, etc. in accordance with NIOSH Guidelines and to comply with anticipated and potential emergency conditions.

.10 Site personnel in the vicinity of the debris removal operations or handling Hazardous Waste Material are required to wear environmental protection equipment in accordance with NIOSH guidelines.

3.3 Hazardous Material Processing Area

.1 Establish Hazardous Material Processing Areas for the purpose of:

.1 Containerization of Hazardous Waste Materials.

.2 Processing of barrels and barrel contents, including consolidation of compatible liquids and sediments, incineration of hydrocarbon liquids meeting incineration criteria, packaging for off-site shipment, and cleaning of barrels.

.2 Establish the Hazardous Material Processing Areas to:

.1 Be of sufficient size and capacity to accommodate the volume of material and number of barrels to be processed at any one time.

.2 Provide for the packaging of Hazardous Waste Materials, barrel contents and wash water.

.3 Minimize the handling of Hazardous Waste Materials.

.4 Isolate Hazardous Waste Materials, barrel contents and wash water from other work operations.

.5 Provide access for consolidation, packaging, cleaning of barrels, and transporting containers to the Temporary Storage Area.

.6 Be leak-proof and contain all runoff water, spills, and leaks so as not to contaminate the environment.

.7 Provide safe working conditions for personnel working in and around these areas.

.8 Meet requirements of AHJ.

.3 The Hazardous Material Processing Areas are to be located as follows:

.1 More than 30 m away from any water body or drainage course.

.2 On stable ground not subject to flooding or seasonal saturation.

.3 In a previously disturbed area if possible.

.4 In a location that will not impede other work required.

.4 Do not use the Hazardous Material Processing Areas until baseline sampling has been completed by the Departmental Representative.

.5 Immediately clean up any spills, leaks, or other releases of liquid or sediment from this area using appropriate techniques.

3.4 Removal and Sorting of Suspected Hazardous Waste Materials

.1 Continually monitor the remediation operation to identify potentially hazardous material.

.2 Immediately suspend work if suspected hazardous material is identified and allow visual confirmation of the nature of the material or debris to be established.

.3 Store suspicious material in a secured area or secured containers, if the nature of the material or debris cannot be visually confirmed. Advise Departmental Representative about the findings. Material needs to be secured until the nature of the material is confirmed by Departmental Representative. Testing for classification will be carried out and paid for by Departmental Representative.

3.5 Containerization of Hazardous PCB and Leachable-Lead Materials

.1 Sort dismantled Hazardous PCB material and Leachable Lead Painted Materials and place in the appropriate Hazardous Waste Containers, as described in this section, as follows:

.1 Do not mix waste material types. Provide separate Hazardous Waste Containers for Hazardous PCB Materials and Leachable Lead Painted Materials.

.2 Place the materials in the container in a manner to minimize voids within the container and such that no movement of the material will occur during normal conditions of transport.

.3 Use a container that is constructed and sized appropriately for the type of waste to be placed within it. Use intermediate containers as required.

.4 Distribute the weight of the material evenly over the floor of the container. Where cargo items of a varying weight are to be packaged into a container or where a container will not be full, arrange the material so that the centre of gravity of the cargo is close to the mid-length of the container. Do not concentrate heavy loads on small areas of the container floor.

.5 Position materials within the container so that the centre of gravity is below the half-height of the container.

.2 Provide a photographic record of the interior of all completed Hazardous Waste Containers prior to closing. Submit the photographic record to Departmental Representative together with the corresponding inventory of each container when requested and upon completion of work. Trained and certified Contractor personnel are required to complete all TDG Act and Regulations documentation and recording requirements.

.3 Clearly mark on all containers the contents in accordance with the requirements of CEPA for the Storage of PCB Materials (SOR/2008-273), and with the TDG Regulations.

.4 Securely affix to all Hazardous Waste Containers containing Hazardous PCB Materials, a label which states “ATTENTION – contains 50 mg/kg or more of PCBs / contient 50 mg/kg ou plus de BPC” in black lettering on a white background, in a font size of no less than 36 points. The label must measure at least 150 mm by 150 mm. State “Date of Commencement of Storage / Date de Début de Stockage” and the date on which the storage begins. The label must be adhered to the Hazardous Waste Containers from the completion of packaging to delivery at the final disposal facility. An example label is provided at the end of this Section.

.5 Remove contamination from clothing before leaving work areas containing PCB or leachable lead materials before leaving work area, and place in polyethylene bags. Remove outer clothing before leaving work area and place in doubled polyethylene bags. Place bags in Hazardous Waste Material Containers specified in this Section.

.6 Decontaminate all equipment that comes into direct contact with hazardous materials. Place all rags or cloths used during the equipment decontamination in polyethylene bags. Place bags in the Hazardous Waste Containers specified in this Section.

.7 Prior to their removal from the facility, spray or dampen with water all drop cloths placed to collect paint particles that become removed during dismantling operations. Place the drop cloths in polyethylene bags, and place the bags in the Hazardous Waste Material Containers specified in this Section.

3.6 Barrel Processing

.1 Flow diagrams for the methodology for the processing, clean-up and disposal of barrels are shown on Figure 1 - Barrel Processing Flowchart and Figure 2 – Barrel Contents Processing Flowchart at the end of this Section.

.2 Inspection:

.1 All barrels are to be inspected by Departmental Representative and Contractor. The purpose of the inspection is to identify the process for opening, sampling, testing and handling of the barrels. The inspection is to address the following items as a minimum:

.1 Symbols, words, or other marks on the barrel that identify its contents, and/or that its contents are hazardous; e.g. radioactive, explosive, corrosive, toxic, flammable.

.2 Symbols, words, or other marks on the barrel that indicate that it contains discarded laboratory chemicals, reagents, or other potentially dangerous materials in small-volume containers.

.3 Signs of deterioration such as corrosion, rust, or leaks at seams, rims, and V grooves.

.4 Evidence of spills or other contamination on the top and sides of the barrel.

.5 Signs that the barrel is under pressure such as bulging and swelling.

.3 Test areas around barrels that show evidence of holes, rust points, or openings using a Volatile Organic Compound (VOC) instrument prior to movement. If levels exceed 20 percent Lower Explosive Limit (LEL) as measured by the VOC, conduct all handling, storage, and transportation operations in accordance with the appropriate sections of the NIOSH guidelines, National Fire Code of Canada, and the TDGA for flammable and combustible materials.

.4 Barrel opening:

.1 Pressurized barrels are extremely hazardous. Open with extreme caution. Use only non-sparking equipment to open barrels. Provide all personnel responsible for opening barrels with appropriate safety equipment and clothing. Open barrels in accordance with the procedures outlined in the Occupational Safety and Health Administration (OSHA) Code of Federal Regulations Title 29, Part 1910, Section 120 (29 CFR 1910.120) Hazardous Waste Operations and Emergency Response (HAZWOPER).

.2 If the bungs of a barrel can be readily moved, then open the barrel slowly, allowing time for any pressure in the barrel to be released before the bungs are fully removed.

.3 If the bungs of a barrel cannot be readily moved, or if barrel inspection suggests that opening of the barrel may present a special hazard, vent the barrels remotely to relieve any internal pressure that may be present prior to opening. Conduct remote barrel venting using a suitable device such as a sharp weighted spear dropped from an appropriate height or released from a tube housing a spring to penetrate the barrel. Drive the spear into the barrel such that the barrel pressure is vented.

.4 Conduct the remote venting operation at a safe distance from other site operations, and from behind suitable walls or barricades.

.5 All barrels are to be clearly numbered and cross-referenced to sample numbers.

.6 Do not transport barrels until it has been determined that they are not pressurized, do not leak, and are sufficiently sound for transport.

.5 Sampling and testing of barrel contents:

.1 Samples of the contents of barrels are to be extracted by Departmental Representative.

.2 Combine barrel contents as directed by Departmental Representative.

.3 Do not consolidate barrel contents consisting of black oil.

.4 Collect barrels and store at the Hazardous Material Processing Area.

.5 Based on the results of the analysis by Departmental Representative; treat barrel contents in accordance with the requirements detailed in Figure 2 at the end of this Section.

.6 Disposal of barrel contents:

.1 Dispose of barrels containing rust and sediment as empty barrels as described below.

.2 For small volumes, agitation with oil-absorbent material to remove any organic material, is acceptable.

.3 Collect aqueous contents and treat to conform to the Discharge Criteria of the Water License, or dispose of any liquid effluent not conforming to the Water License off-site at Contractor's own cost.

.4 Provide a dual chamber, forced, fuel fired POL incinerator with sufficient capability and capacity to incinerate all waste POL product that meets the following incineration criteria:

.1 PCBs < 2 ppm.

.2 Chlorine < 1000 ppm.

.3 Cadmium < 2 ppm.

.4 Chromium < 10 ppm.

.5 Lead < 100 ppm.

.6 Glycol/Alcohol < 2%.

.5 Test used oil and oil-absorbent material to determine treatment and disposal requirements. Incinerate oil and oil-absorbent material meeting the above incineration criteria on-site or package oil and oil absorbent material with contaminants in excess of the above incineration criteria for disposal off-site at Contractor's licensed disposal facilities, in accordance with TDG Act and Regulations as required.

.6 A leachate extraction test is to be carried out by Departmental Representative on the solid residual material resulting from the incineration process. The leachate toxicity of the material will be determined in accordance with CEPA EIHWHRMR. Dispose of materials found to be non-hazardous in the on-site non-hazardous waste landfill. Dispose of materials found not to be leachate toxic, but exceeding Tier II contaminated soil criteria as described in Section 02 55 13 - Contaminated Soil. Package leachate toxic material in accordance with EIHWHRMR, as required.

.7 Cleaning and disposal of barrels:

.1 Steam clean empty barrels resulting from the consolidation of barrel contents. Clean to remove oil, sludge, wax, tar and other fuel residue adhering to the surface.

.2 If residue remains, apply a manual cleaning method. For heavily oil-soaked surfaces, a second application may be required. Steam clean barrels after detergent application.

.3 Only in the event that two-time detergent application proves ineffective, utilize an appropriate solvent rinse for residue removal. Test solvent rinsate material to determine disposal requirements. If the solvent rinsate meets the criteria indicated above, incinerate the material on site. If the solvent rinsate is in excess of the criteria, package the material in accordance with TDGA regulations, as required, for disposal off-site at Contractor's licensed disposal facilities.

.4 Recycling of steam cleaning rinsate is permitted. Direct steam cleaning rinsate to an oil-water separator. Removal of oily waste residue by agitation with oil-absorbent material to remove any organic material is permitted.

.5 Test the resulting steam cleaning rinsate to determine disposal requirements. Treat steam cleaning rinsate to conform to the Waste Water Discharge Criteria of the Water License, or dispose of any liquid effluent not conforming to the Water License off-site at Contractor's own cost at Contractor's licensed disposal facilities.

.6 Dispose of the used oil-absorbent material and/or oily liquid waste in excess of the concentrations indicated in this section.

.7 Crush all empty barrels prior to disposal. Crush the barrels in a manner to reduce the total original barrel volume by a minimum of 75%. Dispose of empty barrels in the on-site non-hazardous waste landfill as non-hazardous waste in accordance with Section 02 41 23 – Debris Removal.

3.7 Cleaning of Fuel Tanks and Pipelines

.1 Fuel tanks to be demolished may contain fuel, sludge and contact water.

.2 Verify fuel volumes contained within each fuel tank prior to commencing disposal.

.3 Prior to the demolition and removal of fuel tanks and pipelines:

.1 Drain and flush all products in connected piping in a manner as to prevent spillage.

.2 After initial draining, remove all residual fuel by passing a "Teflon Ring Pig" through the line.

.3 Isolate the line to prevent the passage of vapours using a standard plumber's plug on the end of a tee handle.

.4 Cut the pipe for eventual disposal in the on-site landfill.

.5 Incinerate all liquids contained in the tank according to Clause 3.6 – Barrel Processing and in accordance with Section 01 35 32 – Site Specific Health and Safety for Contaminated Sites. The incinerator is to be stationed outside DND property boundaries.

.6 Rinse tanks with water to remove any residual product. Filter the wash water through an oil-absorbent material.

.7 Test the used oil-absorbent material to determine disposal requirements. Incinerate on-site oil-absorbent material meeting the incineration criteria. Package for disposal off-site at Contractor's licensed disposal facilities if above the incineration criteria.

.8 Treat and Discharge remaining waste wash water in accordance with the Wastewater Discharge Criteria of the Water License.

.9 Degas all tanks in accordance with the requirements of the Storage Tank Systems for Petroleum Products and Allied Petroleum Product Regulations (SOR/2008-197) of CEPA. Use nitrogen for degassing, as required, if ventilation and purging methods fail. Monitor area surrounding tanks and pipelines for vapour build up during degassing.

.10 Following degassing, interior explosive vapour concentrations are to be less than 10 percent LEL prior to demolition.

3.8 Cleaning of Sewage Tanks and Lines

.1 Prior to demolition of sewage tanks and lines, rinse lines with wash water. Sample and analyse the liquids, including wash water, in accordance with the Sewage Discharge Criteria and Wastewater discharge criteria of the Water License. Treat water as required to meet Discharge Criteria.

.2 Analyse sewage sludge in accordance with the contaminated soil criteria described in Section 02 55 13 - Contaminated Soil. Dispose of this material in accordance with the requirements of Section 02 55 13.

3.9 Temporary Storage Area

.1 Develop Temporary Storage Areas for the storage of containerized Hazardous Waste Materials.

.2 Temporary Storage Area to comply with the requirements identified in Section 01 52 00 – Construction Facilities of these Specifications.

3.10 Packaging, Labelling and Inventory

.1 Provide a unique numbering system and maintain an inventory of all containers with Hazardous Waste Materials to be transported and disposed of off-site.

.2 Package and label each "hazardous material" in accordance with the "Class" and "Packaging Group" and in compliance with the TDG Act.

.3 Submit to Departmental Representative, a copy of the inventory of the contents of each container upon request and at the end of each construction season.

Figure 1

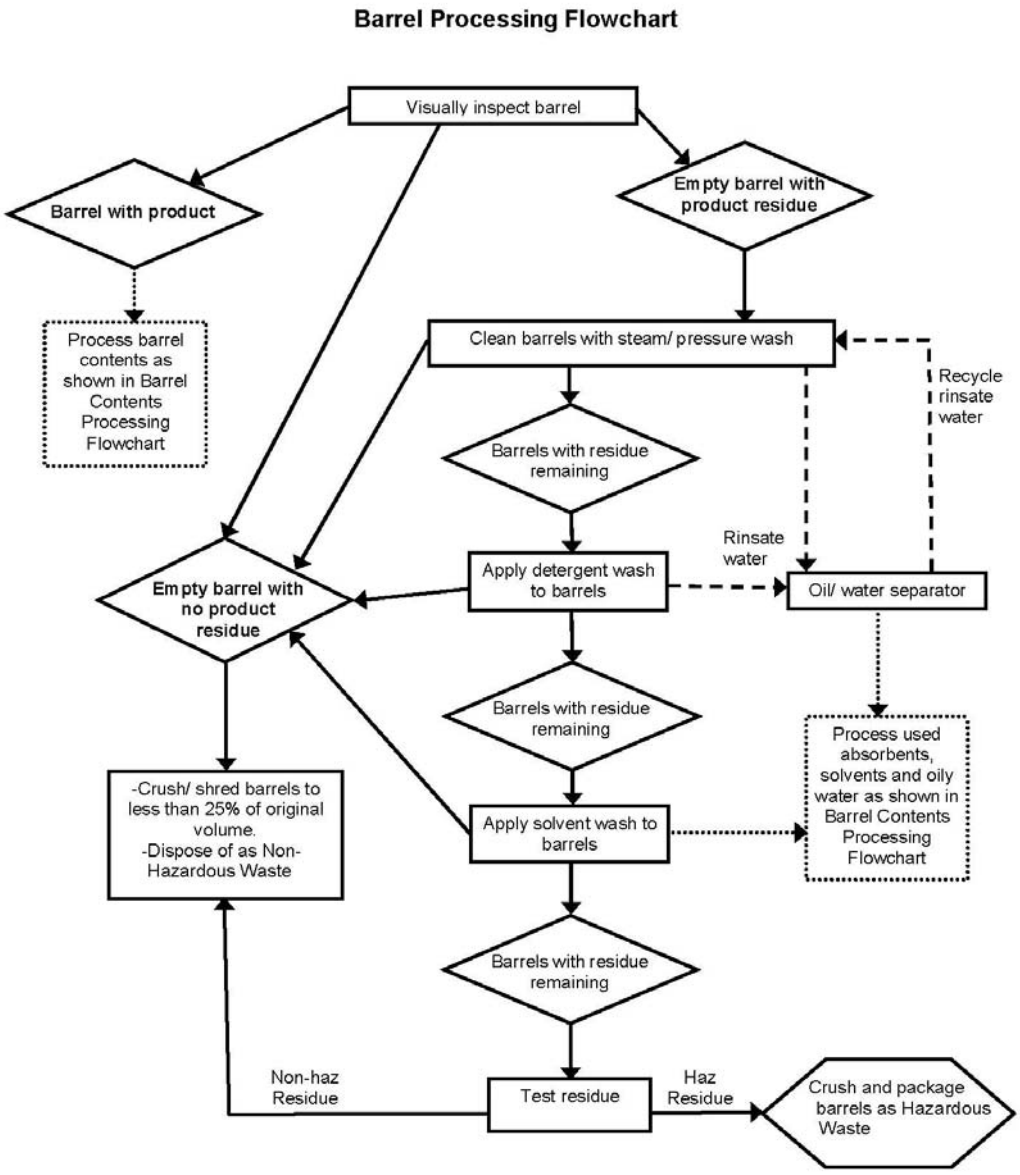

Barrel Processing Flowchart
Visually inspect barrel
Barrel with product
Empty barrel with product residue
Process barrel contents as shown in Barrel Contents Processing Flowchart
Clean barrels with steam/ pressure wash
Recycle rinsate water
Barrels with residue remaining
Rinsate water
Apply detergent wash to barrels
Oil/ water separator
Empty barrel with no product residue
Barrels with residue remaining
Process used absorbents, solvents and oily water as shown in Barrel Contents Processing Flowchart
-Crush/ shred barrels to less than 25% of original volume.
-Dispose of as Non-Hazardous Waste
Apply solvent wash to barrels
Barrels with residue remaining
Non-haz Residue
Test residue
Haz Residue
Crush and package barrels as Hazardous Waste

Figure 2

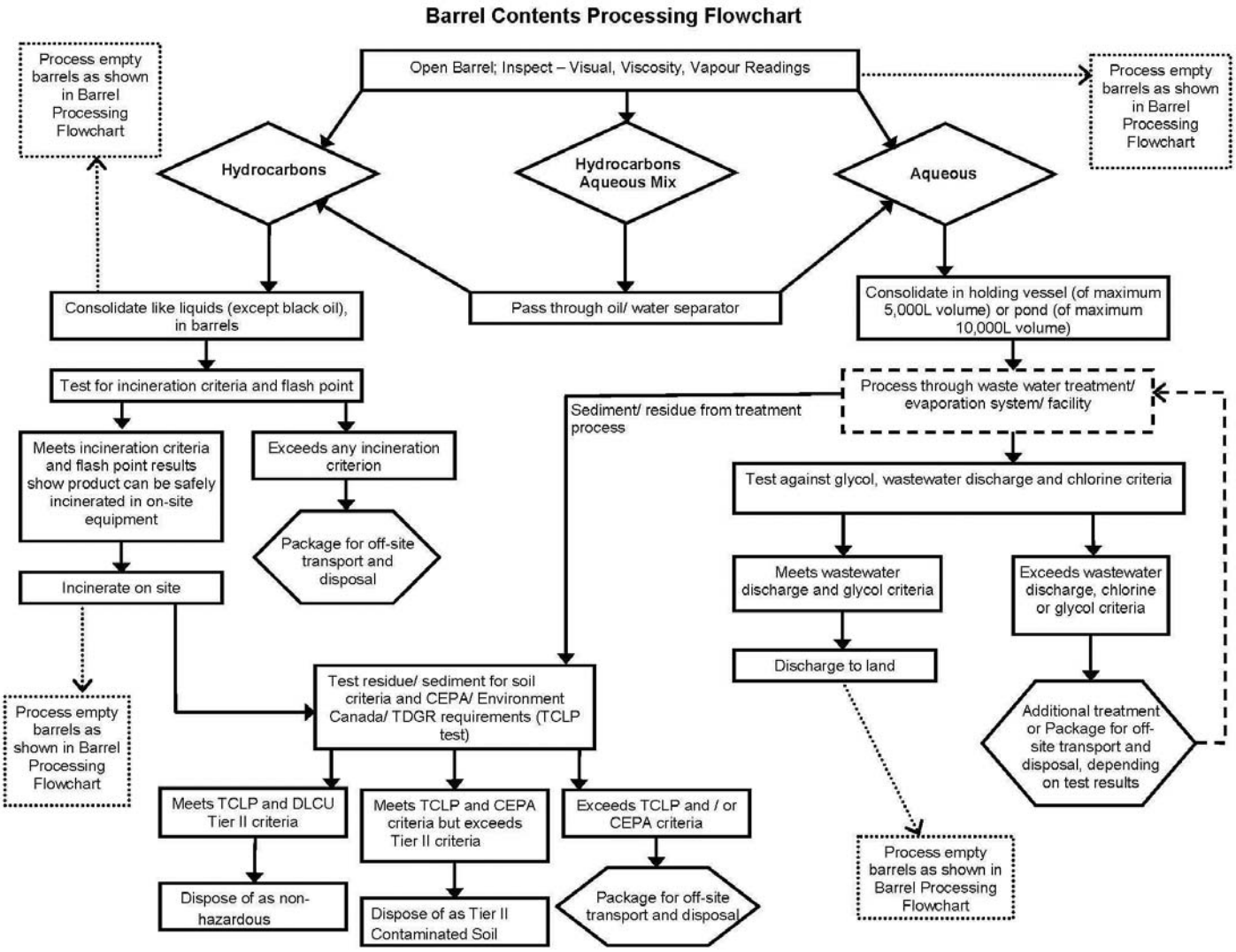

Barrel Contents Processing Flowchart
Open Barrel; Inspect – Visual, Viscosity, Vapour Readings
Process empty barrels as shown in Barrel Processing Flowchart
Process empty barrels as shown in Barrel Processing Flowchart
Hydrocarbons
Hydrocarbons Aqueous Mix
Aqueous
Consolidate like liquids (except black oil), in barrels
Pass through oil/ water separator
Consolidate in holding vessel (of maximum 5,000L volume) or pond (of maximum 10,000L volume)
Test for incineration criteria and flash point
Sediment/ residue from treatment process
Process through waste water treatment/ evaporation system/ facility
Meets incineration criteria and flash point results show product can be safely incinerated in on-site equipment
Exceeds any incineration criterion
Package for off-site transport and disposal
Test against glycol, wastewater discharge and chlorine criteria
Meets wastewater discharge and glycol criteria
Exceeds wastewater discharge, chlorine or glycol criteria
Incinerate on site
Discharge to land
Process empty barrels as shown in Barrel Processing Flowchart
Test residue/ sediment for soil criteria and CEPA/ Environment Canada/ TDGR requirements (TCLP test)
Additional treatment or Package for off-site transport and disposal, depending on test results
Meets TCLP and DLCU Tier II criteria
Meets TCLP and CEPA criteria but exceeds Tier II criteria
Exceeds TCLP and / or CEPA criteria
Process empty barrels as shown in Barrel Processing Flowchart
Dispose of as non-hazardous
Dispose of as Tier II Contaminated Soil
Package for off-site transport and disposal

Figure 3

ATTENTION

PCB

Contains Polychlorinated Biphenyls

Contient des Biphenyls Polychlorés

Contains 50 mg/kg or more of PCBs	**Contient 50 mg/kg ou plus de BPC**

Date of Commencement of Storage:

Identification Number:

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 Comply with requirements of this Section when completing the following work:

.1 Removing wall panels, duct cloth, flue stack covering and vinyl floor tiles containing asbestos as listed in Appendices A and B.

.2 Cut, shape, grind, drill, scrape or abrade materials mentioned above using hand powered tools, or using power tools equipped with a High Efficiency Particulate Air (HEPA) filter.

1.2 References

.1 Department of Justice Canada (Jus).

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Transport Canada (TC).

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.3 Definitions

.1 HEPA vacuum: HEPA filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.

.3 Asbestos-Containing Materials (ACMs): materials identified under Existing Conditions including fallen materials and settled dust.

.4 Asbestos Work Area: area where work takes place which will, or may, disturb ACMs.

.5 Authorized Visitors: Department Representative or designated representatives, and representatives of regulatory agencies.

.6 Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure.

.7 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.8 Occupied Area: any area of the building or work site that is outside Asbestos Work Area.

.9 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.10 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

1.4 Submittals

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written proof satisfactory to Department Representative that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.

.3 Submit Provincial/Territorial and/or local requirements for Notice of Project Form within thirty (30) days of contract award.

.4 Submit proof of Contractor's Asbestos Liability Insurance within thirty (30) days of contract award.

.5 Submit to Department Representative necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

1.5 Quality Assurance

.1 Regulatory Requirements: comply with Federal, Provincial/Territorial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is completed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety for Contaminated Sites.

.2 Safety Requirements: worker protection:

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Non-powered reusable or replaceable filter-type respirator equipped with HEPA filter cartridges, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Territorial/Provincial Authority having jurisdiction.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Before leaving Asbestos Work Area, dispose of protective clothing as contaminated waste as specified.

.4 Workers must wash hands and face when leaving Asbestos Work Area. Facilities for washing are to be located adjacent to the work areas.

.5 No person required to enter an Asbestos Work Area may have facial hair that affects seal between respirator and face.

1.6 ACM Disposal

.1 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 0.15 millimetre (mm) thick bags or leak proof drums. Label containers with appropriate warning labels.

1.7 Existing Conditions

.1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of during this project are available upon request as indicated in Section 01 11 00 – Summary of Work.

.2 Notify Department Representative of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Department Representative.

1.8 Instructions

.1 Before beginning Work , provide Department Representative satisfactory written proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, following minimum requirements:

.1 Fitting of equipment.

.2 Inspection and maintenance of equipment.

.3 Disinfecting of equipment.

.4 Limitations of equipment.

.3 Instruction and training must be provided by a competent, qualified person.

1.9 Signs

.1 Signage: Display signs in all work areas where access to a contaminated area is possible. The English version of the signs is to read:

CAUTION, ASBESTOS HAZARD AREA.

UNAUTHORIZED ENTRY PROHIBITED.

WEAR PROTECTIVE EQUIPMENT.

Post a similar sign in the language of the local dialect.

.2 Sign letters: all lettering is to be HELVETICA Medium font. The letter size is to be:

English:

Caution, Asbestos Hazard Area.	25 mm.
Unauthorized entry prohibited:	19 mm.
Wear Protective Equipment	19 mm.

1.10 Measurement for Payment

.1 The removal, separation, packaging and containerization of known asbestos debris will not be measured for payment and shall be included in the applicable bid price for items outlined in Section 02 41 16, Structure Demolition, and Section 02 41 23, Debris Removal in Basis of Payment Schedule, including, but not limited to the following:

.1 Supply of all materials, labour, and equipment necessary to complete the work in accordance with these specifications, including the supply and transport to the site of asbestos waste containers.

.2 Construction of temporary enclosures.

.3 Handling, separation and disposal of asbestos materials coated with PCB-amended paint.

.4 Preparation of asbestos inventory.

.2 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Materials

.1 Drop Sheets:

.1 Polyethylene: 0.15 mm thick.

.2 Flame Retardant (FR) polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in a concentration to provide thorough wetting of asbestos-containing material.

.3 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene waste bag.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

.3 Labelling requirements: affix preprinted cautionary asbestos warning in both official languages that is visible when ready for removal to disposal site.

PART 3 - EXECUTION

3.1 Procedures

.1 Do construction occupational health and safety in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

.2 Before beginning Work, isolate and prepare the Asbestos Work Area as follows:

.1 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.

.2 Use HEPA vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate.

.3 Do not use compressed air to clean up or remove dust from any surface.

.3 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in Asbestos Work Area where dust and contamination cannot otherwise be safely contained.

.4 Wet materials containing asbestos to be cut, ground, abraded, scraped, drilled, or otherwise disturbed unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity fine - mist sprayer.

.2 Complete Work to reduce dust creation to lowest levels practicable.

.3 Work will be subject to visual inspection and air monitoring.

.4 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.5 Clean-Up:

.1 Frequently during Work and immediately after completion of Work, clean up dust and asbestos-containing waste using HEPA vacuum or by damp mopping.

.2 Place dust and asbestos-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste; wet and fold these items to contain dust, and then place in plastic bags.

.3 Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum and place in second clean waste bag immediately prior to removal from Asbestos Work Area.

.4 Seal waste bags and remove from site. Dispose of in accordance with requirements of Provincial/Territorial and Federal Authority having jurisdiction.

.5 Complete final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA vacuum.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This section specifies the requirements and procedures for asbestos abatement of minor amounts of chrysotile asbestos-containing materials of the type describe within.

1.2 References

.1 Canadian General Standards Board (CGSB).

.1 CAN/CGSB-1.205-94, Sealer for Application of Asbestos-Fibre Releasing Materials.

.2 Department of Justice Canada (Jus).

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS).

.1 Safety Data Sheets (SDS).

.4 Transport Canada (TC).

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

.5 Underwriters' Laboratories of Canada (ULC).

1.3 Definitions

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any dimension at 99.97% efficiency.

.2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

.3 Asbestos-Containing Materials (ACMs): materials identified under Existing Conditions Article, including fallen materials and settled dust.

.4 Minor Amounts of ACMs: less than or equal to 0.1 square metres (m^2) of friable material containing chrysotile asbestos.

.5 Asbestos Work Area: area where work takes place which will, or may disturb ACMs.

.6 Authorized Visitors: Department Representative, or designated representatives, and representatives of regulatory agencies.

.7 Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.

.8 Occupied Area: any area of building or work site that is outside Asbestos Work Area.

.9 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide protection and isolation.

.10 Glove Bag: prefabricated glove bag as follows:

.1 Minimum thickness 0.25 millimetres; mm (10 mil) polyvinyl-chloride bag.

.2 Integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elastic ports.

.3 Equipped with reversible double-pull double throw zipper on top and at approximately mid-section of the bag.

.4 Straps for sealing ends around pipe.

.5 Must incorporate internal closure strip if it is to be moved or used in more than one specific location.

.11 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for scope of work.

1.4 Submittals

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit written proof satisfactory to Department Representative that suitable arrangements have been made to dispose of asbestos-containing waste in accordance with requirements of authority having jurisdiction.

.3 Submit Provincial/Territorial and/or local requirements for Notice of Project Form.

.4 Submit proof of Contractor's Asbestos Liability Insurance.

.5 Submit to Department Representative necessary permits for transportation and disposal of asbestos-containing waste and proof that asbestos-containing waste has been received and properly disposed.

.6 Submit proof satisfactory to Department Representative that employees have had instruction on hazards of asbestos exposure, respirator use, dress, entry and exit from Asbestos Work Area, and aspects of work procedures and protective measures.

.7 Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two days duration, accepted by Department Representative. Minimum of one supervisor for every ten workers.

.8 Submit Worker's Safety Compensation Commission (WSCC) status and transcription of insurance prior to commencing asbestos abatement work.

.9 Submit documentation including test results, fire and flammability data, and Safety Data Sheets (SDS) for chemicals or materials including:

.1 Encapsulants.

.2 Amended water.

.3 Slow-drying sealer.

1.5 Quality Assurance

.1 Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is completed.

.2 Health and Safety:

.1 All workers working with or abating asbestos are required to have Asbestos Worker Training in compliance with regulations.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:

.1 Non-powered reusable or replaceable filter-type respirator equipped with HEPA filter cartridges, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.

.2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.3 Before leaving Asbestos Work Area, dispose of protective clothing as contaminated waste as specified.

.4 Workers must wash hands and face when leaving Asbestos Work Area. Facilities for washing to be located adjacent to work areas.

.5 No person required to enter an Asbestos Work Area may have facial hair that affects seal between respirator and face.

.3 Visitor Protection:

.1 Provide protective clothing and accepted respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.6 ACM Waste Management

.1 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial/Territorial and local regulations. Dispose of asbestos waste in sealed double thickness 0.6 mm thick bags or leak proof drums. Label containers with appropriate warning labels.

1.7 Existing Conditions

.1 Reports and information pertaining to ACMs to be handled, removed, or otherwise disturbed and disposed of during this project are available for review as indicated in Section 01 11 00 – Summary of Work. Select information pertaining to ACMs is included in the Appendices.

.2 Notify Department Representative of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material pending instructions from Department Representative.

1.8 Instructions

.1 Before beginning Work , provide Department Representative satisfactory written proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing.

.2 Instruction and training related to respirators includes, at minimum:

.1 Fitting of equipment.

.2 Inspection and maintenance of equipment.

.3 Disinfecting of equipment.

.4 Limitations of equipment.

.3 Instruction and training must be provided by competent, qualified person.

1.9 Measurement for Payment

.1 The removal, separation, packaging and containerization of known asbestos debris will not be measured for payment and shall be included in the applicable bid price for demolition items outlined in Section 02 41 16 - Structure Demolition and debris items outlined in Section 02 41 23, Debris Removal in Basis of Payment Schedule, including, but not limited to the following:

.1 Supply of all materials, labour, and equipment necessary to complete the work in accordance with these specifications, including the supply and transport to the site of asbestos waste containers.

.2 Construction of temporary enclosures.

.3 Handling, separation and disposal of asbestos materials coated with PCB-amended paint.

.4 Preparation of asbestos inventory.

.2 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Materials

.1 Drop and Enclosure Sheets.

.1 Polyethylene: 0.15 mm thick.

.2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in concentration to provide thorough wetting of asbestos-containing material.

.3 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene bag or where glove bag method is used, glove bag itself.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

.3 Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site.

.4 Glove bag:

.1 Acceptable materials: safe-T-Strip products in configuration suitable for Work.

.2 Glove bags intended for use in more than one location must be equipped with reversible, double-pull, double-throw zipper on top and at approximately mid-section of bag.

.5 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

.6 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.

.1 Sealer: flame spread and smoke developed rating less than 50.

PART 3 - EXECUTION

3.1 Supervision

.1 Minimum of one (1) Supervisor for every 10 workers is required.

.2 Accepted Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

3.2 Disposal

.1 Comply with all applicable health and safety policies and procedures as described in Section 01 35 32 - Site Specific Health and Safety for Contaminated Sites.

.2 Before beginning Work, at each access to Asbestos Work Area, install warning signs in both official languages in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used: 'CAUTION ASBESTOS HAZARD AREA (25 millimetres) / NO UNAUTHORIZED ENTRY (19 millimetres) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 millimetres) / BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 millimetres)'.

.3 Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.

.1 Use HEPA vacuum or damp cloths where damp cleaning does not create hazard and is otherwise appropriate.

.2 Do not use compressed air to clean up or remove dust from any surface.

.4 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in work areas where dust or contamination cannot otherwise be safely contained.

.2 When removing asbestos containing material from piping or equipment and "glove-bag" method is not used erect enclosure of polyethylene sheeting around work area, shut off mechanical ventilation system serving work area and seal ventilation ducts to and from work area.

.5 Remove loose material by HEPA vacuum; thoroughly wet friable material containing asbestos to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity sprayer or airless spray equipment capable of producing mist or fine spray.

.2 Complete Work in a manner to reduce dust creation to lowest levels practicable.

.6 Pipe Insulation Removal Using Glove Bag:

.1 Place tools necessary to remove insulation in tool pouch. Wrap bag around pipe and close zippers. Seal bag to pipe with cloth straps.

.2 Place hands in gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag.

.3 Insert nozzle of garden reservoir type sprayer into bag through valve and wash down pipe and interior of bag thoroughly. Wet surface of insulation in lower section of bag.

.4 When glove bags are intended for use at more than one location: after wash-down and application of sealer, seal off waste in lower section of bag using zipper at mid-section of bag. Remove air from top section of bag through elasticized valve using HEPA vacuum. Remove bag from pipe, reinstall in new location, and reseal to pipe prior to opening lower section of bag. Repeat stripping operation.

.5 If bag is to be moved along pipe, first remove air from top section through elasticized valve using HEPA vacuum. Next loosen straps, move bag, re-seal to pipe using double-pull zipper to pass hangers. Repeat stripping operation.

.6 To remove bag after completion of stripping, wash top section and tools thoroughly. Remove air from top section through elasticized valve using a HEPA vacuum. Pull polyethylene waste container over glove bag before removing from pipe. Release one (1) strap and remove freshly washed tools. Place tools in water. Remove second strap and zipper. Fold over into waste container and seal.

.7 After removal of bag the pipe must be made free of residue. Remove residue using HEPA vacuum or wet cloths. Surfaces must be free of sludge which after drying could release asbestos dust into atmosphere. Seal exposed surfaces of pipe and ends of insulation with slow-drying sealer to seal in any residual fibres.

.8 Upon completion of Work shift, cover exposed ends of remaining pipe insulation with polyethylene taped in place.

.7 Work is subject to visual inspection and air monitoring. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.8 Clean-up:

.1 Frequently during Work and immediately after completion of work, clean up dust and asbestos-containing waste using HEPA vacuum or by damp mopping.

.2 Place dust and asbestos-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.

.3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.

.4 Seal and remove double-bagged waste from site. Dispose of in accordance with requirements of Provincial/Territorial and Federal authority having jurisdiction. Supervise dumping and make the dump operator fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

.5 Complete final thorough clean-up of Asbestos Work Areas and adjacent areas affected by Work using HEPA vacuum.

3.3 Final Cleanup and Demobilization

.1 From beginning of Work until completion of cleaning operations, Department Representative to take air samples on daily basis outside of Asbestos Work Area enclosures in accordance with Health Canada recommendations.

.1 Contractor will be responsible for monitoring inside enclosure in accordance with applicable Provincial/Territorial Occupational Health and Safety Regulations.

.2 If air monitoring shows that areas outside Asbestos Work Area enclosures are contaminated, enclose, maintain and clean these areas in same manner as that applicable to Asbestos Work Area.

.3 Respiratory safety factors are not to be exceeded.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This Section specifies general requirements for the processing of aggregates to be incorporated into the work as granular fill.

.2 It is anticipated that there will be no requirement for crushing of granular materials to satisfy gradation specifications. There are requirements to select, blend, and/or screen granular materials to satisfy gradation specifications as indicated in this Section. Moisture conditioning of material from borrow sources may be required. There are requirements to dry materials from several borrow areas.

.3 A summary of the CAM-C borrow sources, including estimated raw quantities from each source, is provided in Appendix F – Geotechnical Information.

1.2 Source Approval

.1 Abide by conditions of the Land Use Permit, Water Licence, Quarry Permit and/or other requirements of Authorities Having Jurisdiction (AHJ).

.2 Source of materials to be incorporated into work requires approval by Departmental Representative.

.3 Defined borrow areas are to be used as indicated on the Drawings. Approval to excavate borrow material from new areas will be granted by Departmental Representative based on areas that do not require new access roads, areas that have minimal ice-rich permafrost and areas located away from water bodies.

.4 The existing airstrip is not to be used as a granular borrow source.

.5 Inform Departmental Representative of proposed source of aggregates and provide access for sampling at least seven days prior to commencing production. Departmental Representative will conduct confirmatory testing of borrow material, if required, to determine if any contamination is present.

.6 If, in the opinion of Departmental Representative, materials from the proposed source do not meet, or cannot reasonably be processed to meet specified requirements, locate an alternative source or demonstrate that material from source in question can be processed to meet specified requirements.

.7 Should a change of material source be proposed during work, advise Departmental Representative one (1) week in advance of proposed change to allow sampling and testing.

.8 Acceptance of a material at source does not preclude future rejection if it is subsequently found to lack uniformity, or if it fails to conform to requirements specified, or if its field performance is found to be unsatisfactory.

.9 Geotechnical information, including a borrow assessment and the results of laboratory analyses of soil samples obtained from the site, is included in in Appendix F – Geotechnical Information.

1.3 Production Sampling

.1 Aggregate will be subject to continual sampling by Departmental Representative during production either at the stockpile or at the location of work. The aggregate is to meet the required specifications regardless of the location of sampling.

.2 Provide Departmental Representative with ready access to source and processed material for purpose of sampling and testing.

.3 Samples are to be obtained according to industry acceptable practices.

1.4 Measurement for Payment

.1 Development of aggregate sources including access, stripping, processing, handling, stockpiling, replacement of organics, and any necessary restoration will be considered incidental to the work of Section 31 22 15 - Grading and will not be measured separately for payment. Include associated costs in the applicable Lump Sum and Unit Prices for the supply and placement of Granular Fill materials.

PART 2 - PRODUCTS

2.1 Materials

.1 Aggregate quality is to be sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material or other deleterious substances.

.2 Flat and elongated particles are those whose greatest dimension exceeds five times their least dimension.

.3 Fine aggregates satisfying requirements of applicable section are to be one (1), or a blend of the following:

.1 Natural sand.

.2 Screened sand.

.4 Coarse aggregates satisfying requirements of applicable section are to be composed of naturally formed particles of stone.

.5 Type 1 Granular Fill:

.1 Type 1 Granular Fill is used for erosion protection.

.2 Gradations to be within the following limits when tested to ASTM C136 and ASTM C11 sieve sizes to CAN/66SB-8.2:

Sieve Designation (millimetres)	% Passing by Weight
500	100
200	40 to 100
100	20 to 70
50	0 to 50
10	0 to 10

.6 Type 2 Granular Fill:

.1 Type 2 Granular Fill is select material obtained from excavations or other sources accepted by Departmental Representative, generally consisting of pit-run, screened stone, gravel or sand in an unfrozen state and free from rocks larger than 150 millimetres (mm), waste or other deleterious material.

.2 Type 2 Granular Fill is used for cover and regrading requirements.

.3 Gradations to be within the following limits when tested to ASTM C136 and ASTM C117, sieve sizes to CAN/CGSB-8.2:

Sieve Designation (millimetres)	% Passing by Weight
150	100
50	60 to 100
5	25 to 60
0.425	8 to 37
0.08	2 to 25

.7 Type 3 Granular Fill:

.1 Type 3 Granular Fill consists of granular pit-run material, with a maximum particle size of 200 mm, from identified borrow sources and is generally used for:

.1 Regrading low areas as indicated.

.2 Backfill for contaminated soil excavations.

.3 General site grading requirements.

.2 Type 3 Granular Fill may be designated by Departmental Representative as a suitable alternative for other material types.

.3 Type 2 Granular Fill may be designated by Departmental Representative as a suitable alternative for Type 3 Granular Fill.

.8 Granular materials classified as unsuitable will include:

.1 Non-uniform material of widely varying moisture density characteristics.

.2 Material with moisture content exceeding optimum moisture by 5% or more.

.3 Material containing organic material, snow, ice or other deleterious material.

PART 3 - EXECUTION

3.1 Development of Aggregate Source

.1 Remove all debris known or unknown from the area, as described in Section 02 41 23 - Debris and Miscellaneous Removals, prior to excavating borrow materials.

.2 Any significant deposits of organic material, as determined by Departmental Representative, are to be avoided and left undisturbed during development of an aggregate source, or stripped and stockpiled for replacement to restore borrow area.

.3 Strip an area ahead of excavating operation sufficient to prevent contamination of aggregate by deleterious materials.

3.2 Processing

.1 Process aggregate uniformly using methods that prevent contamination, segregation and degradation.

.2 Blend aggregates if required to obtain gradation requirements specified. Use methods and equipment that are accepted by the Departmental Representative.

.3 Blending to decrease percentage of flat and elongated particles is permitted.

.4 When operating in stratified deposits use excavation equipment and methods that will produce uniform, homogeneous aggregate.

.5 Moisture condition aggregate as required to achieve the specified density and/or degree of saturation.

.6 Dry aggregate as required to provide ease of handling during freezing temperatures or to place and compact according to this Specification.

3.3 Handling

.1 Handle and transport aggregates to avoid segregation, contamination and degradation.

3.4 Stockpiling

.1 If required, stockpile aggregates on site in locations indicated or designated by Departmental Representative. Stockpiles are to not be located on undisturbed tundra.

.2 Stockpiling sites are to be level, well drained, and of adequate bearing capacity and stability to support stockpiled materials and handling equipment.

.3 Except where stockpiled on acceptably stabilized areas, provide compacted sand base not less than 300 mm in depth to prevent contamination of the aggregate, or stockpile aggregates on ground but do not incorporate bottom 300 mm of pile into work.

.4 Separate aggregate stockpiles of different types sufficiently far apart to prevent intermixing.

.5 Reject intermixed or contaminated materials. Remove and dispose of rejected materials as directed by Departmental Representative within forty-eight (48) hours of rejection.

.6 Stockpile materials in uniform layers of one (1) metre (m) maximum thickness.

.7 Complete each layer over the entire stockpile area before beginning next layer.

.8 Uniformly spot-dump aggregates delivered to stockpile in trucks and build up stockpile as specified.

.9 Coning of piles or spilling of material over edges of pile will not be permitted.

.10 During snowy conditions, prevent ice and snow from becoming mixed into stockpile.

3.5 Reclamation of Aggregate Source and Stockpile Cleanup

.1 When aggregate source excavation is completed, dress sides of excavation to achieve stable slopes, no steeper than 5H:1V, which fit local topography, and provide swales or ditches as required to prevent surface standing water.

.2 Trim off and dress slopes of waste material piles and leave site in neat condition.

.3 Flatten remaining stockpiles to low piles with sides that have a maximum slope no steeper than 5H:1V.

.4 Leave stockpile site in a well drained condition, free of standing surface water.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This Section specifies requirements for:

.1 The grading of designated areas including landfill and buried debris areas, concrete foundations and pads, depressions created by the removal of debris and contaminated soil, and general site areas requiring regrading and reshaping.

.2 The supply and placement of granular fill materials.

.3 Maintenance and upgrading of site roads.

.2 Designated areas are indicated for design grades, contours, design elevations, and cover soil thicknesses.

1.2 Definitions

.1 Reshaping: The levelling and grading, to a maximum depth of 600 millimetres (mm), including the movement of boulders, of designated areas to blend in with the natural terrain and provide positive drainage. Reshaping does not require the supply and placement of additional granular fill material. Excavation of the terrain to a depth greater than 600 mm during reshaping operations is to be considered as Unclassified Excavation.

.2 Scarifying: The disturbance or loosening of a soil to a minimum depth of 300 mm to allow for compaction or aeration.

.3 Regrading: The supply and placement of granular fill in designated areas to blend in with the natural terrain and provide positive drainage.

.4 Unclassified Excavations: Excavation of materials of whatever nature encountered in the work to a depth greater than 600 mm.

.5 Granular Fill: Type 1, Type 2, and Type 3 material as specified in Section 31 05 17 - Aggregate Materials.

.6 Berm: Granular fill of type indicated on the Drawings, placed above the original ground and built-up to a design elevation.

.7 Surficial Boulders: Visible rocks with a nominal diameter of 300 mm or greater.

.8 General Fill: Type 3 Granular fill used for regrading low areas and to backfill contaminated soil excavations.

.9 Erosion Protection: Type 1 Granular Fill used for erosion protection.

.10 Waste Material: Excavated material unsuitable for use in work or surplus to requirements.

.11 Borrow Material: Material obtained from accepted areas and required for grading work.

.12 Specific classifications of granular fill materials are described in Section 31 05 17 - Aggregate Materials.

.13 Maximum Dry Density is determined by the Standard Proctor Method in accordance with ASTM D698. It is applicable if less than 30% of the material is retained on the ASTM 19 mm sieve.

.14 Corrected maximum dry density is applicable if more than 30% of the material is retained on the ASTM 19 millimetre sieve. It is defined as:

.1 $$D = \frac{D1 \times D2}{(F1)(D2) + (F2)(D1)}$$

.2 Where:

D = corrected maximum dry density kg/m³

F1 = fraction (decimal) of total field sample passing ASTM 19.0 millimetre sieve

F2 = fraction (decimal) of total field sample retained on ASTM 19.0 millimetre sieve (equal to 1.00 - F1)

D1 = maximum dry density, kg/m³ of material passing ASTM 19.0 millimetre sieve determined in accordance with Method C of ASTM D698 or latest edition thereof.

D2 = bulk density, kg/m³ of material retained on ASTM 19.0 millimetre sieve, equal to 1,000 G where G is bulk specific gravity (dry basis) of material when tested to ASTM C127-84, or latest edition thereof.

1.3 Submittals

.1 Provide all submittals in accordance with Section 01 33 00 – Submittal Procedures.

.2 Submit the Site Access Upgrade Plan for CAM-C to Departmental Representative prior to mobilization.

.3 Site Access Upgrade Plan is to include, but not be limited to, the following:

.1 Blasting or scaling requirements.

.2 Bridge installation/upgrade requirements.

.3 Drainage improvements.

.4 Airstrip upgrade and maintenance.

.5 Road sections to be upgraded.

.6 Estimated quantity of granular material required and borrow sources.

.7 Passing, pull-out or turn around location.

.8 Safety measures to be put in place in narrow and steep road sections.

1.4 Site Conditions

.1 Suspend grading operations whenever climatic conditions are unsatisfactory for grading Work to conform with this Specification.

.2 Do not operate equipment in work areas until the material has dried sufficiently to prevent excessive rutting.

.3 Areas to be graded are to be free from debris and excessive snow, ice or standing water prior to grading work beginning.

.4 Contractor is advised that soft ground conditions may be prevalent at the site during periods of maximum thaw of the permafrost. Schedule and carry out work to minimize disturbance to permafrost soils.

.5 Contractor is advised that existing access roads to be used during construction activities will require repair and upgrading.

1.5 Protection

.1 Protect archaeological features from damage by construction activities.

.2 Protect unanticipated archaeological resources encountered during construction. Suspend all activities in that area and notify Departmental Representative immediately.

.3 Protect survey monuments. Repair or replace, at no cost to the Departmental Representative, any survey monuments damaged by the Contractor's operations.

.4 Protect and do not disturb spawning beds and breeding grounds during construction.

.5 Environmental protection measures are to be in accordance with the requirements specified in Section 01 35 43 - Environmental Procedures. Follow the accepted Erosion, Sediment and Drainage Control Plan submitted in accordance with Section 01 35 43 - Environmental Procedures.

1.6 Samples

.1 Inform Departmental Representative of proposed source of granular fill materials and provide access for sampling. Give at least seven (7) days' notice prior to commencing production to allow for lab analysis of samples.

1.7 Measurement for Payment

.1 Items to be measured for payment by survey, survey the area to receive granular fill either by cross section or by grid, following removal/stripping (if required) of surface material. Survey significant breaks in the original ground surface grade, incorporating at minimum the cross section locations indicated on the Drawings. The maximum distance between cross sections or grid points is to not exceed 10 metres (m) unless otherwise indicated by Departmental Representative. Survey accuracies should be 10 mm or less. Following placement of granular fill material, Contractor is to resurvey the cross sections or grid points. The volume measurement of granular material for payment will be determined by digital terrain model, as Departmental Representative deems appropriate for the survey information provided.

.2 The unit of measurement for reshaping within designated areas indicated and to limits authorized by Departmental Representative will be by the square metre (m^2) of surface area reshaped, as measured by survey. Reshaping associated with earthworks, including, but not limited to, placement of granular materials, regrading or levelling of areas prior to construction, is not to be measured as part of reshaping, but is to be considered incidental to the unit price bid for such earthworks. Areas on the drawings requiring levelling prior to construction will not be considered for payment under reshaping, unless explicitly noted on the Drawings, or authorized by the Departmental Representative. Reshaping will be paid under Item 31 22 15-1, Reshaping, in Basis of Payment Schedule.

.3 The supply and placement of Type 1 Granular Fill as shown on the Drawings, will be measured for payment by the cubic metre (m^3) in-place volume as determined by survey method identified in this section. Type 1 Granular Fill will be paid under Item 31 22 15-2, Type 1 Granular Fill, in Basis of Payment Schedule.

.4 The supply, placement and compaction of Type 2 Granular Fill as shown on the drawings, will be measured for payment by the cubic metre (m^3) in-place volume as determined by survey method identified in this section. Type 2 Granular Fill will be paid under Item 31 22 15-3, Type 2 Granular Fill, in Basis of Payment Schedule.

.5 The supply and placement of Type 3 Granular Fill required for backfilling associated contaminated soil excavation will be in accordance with Section 02 55 13 – Contaminated Soil.

.6 Include all costs for the upgrading, construction and maintenance of site access roads and airstrip, including placement of granular material, and installation of culverts, in Item 31 22 15-4, Access Road and Airstrip Upgrading and Maintenance in the Lump Sum Amount Breakdown Schedule. Costs for site access upgrading and maintenance will be paid under Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule.

.7 The following work items will be incidental to the work described in this Section, and will not be measured separately:

.1 Stripping, stockpiling and replacement or placement to a new location of organic material from the borrow areas as directed by Departmental Representative, and where required from construction areas upon where granular material is to be placed.

.2 Disposal of waste material from the borrow areas.

.3 Removal of surficial boulders over 300 mm in diameter in areas to receive granular fill.

.4 Excavating, separating, processing, screening, and stockpiling of borrow materials.

.5 Reshaping of areas with ponded water (standing water covering over 5 m^2 and more than 0.2 m deep) and rutting (ruts more than 0.1 m deep) caused by contractor's construction activities.

.6 Grading of borrow areas to approximate the before-construction condition upon completion.

.7 Loading, hauling and haul road construction, maintenance and rehabilitation.

.8 Water for moisture conditioning, compaction and dust control.

.9 All construction surveying, including layout of facilities, slope staking, and supply and installation of witness grade stakes to monitor the depth of granular material placement.

.10 Surveying and calculation of granular material quantities for progress payment purposes.

.11 Reshaping and regrading of Contractor’s laydown areas including the supply, placement and compaction of granular material.

.12 Dewatering of wet areas prior to and during regrading operations.

.13 Dewatering of borrow areas for borrow development.

.14 Reshaping and regrading as a result of the Contractor’s activities.

.8 No measurement for payment will be made for:

.1 Rejected material.

.2 Surplus material.

.3 Excavation, and stripping and replacement of organic material beyond specified limits.

.4 Excavation to investigate borrow sources.

.5 Placement of granular fill beyond the limits and depths specified, unless specifically authorized by Departmental Representative.

.9 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Materials

.1 Granular fill materials in accordance with Section 31 05 17 - Aggregate Materials.

.2 There is a requirement to selectively acquire, blend and/or screen granular materials to satisfy gradation specifications as indicated in Section 31 05 17 - Aggregate Materials.

PART 3 - EXECUTION

3.1 Site Preparation

.1 Unless specifically indicated, do not remove existing topsoil or organic materials from embankment construction areas. Remove exposed surface boulders over 300 mm in diameter that are located in areas to receive granular fill. Dispose of boulders by placing on embankment side slopes.

.2 Borrow Excavation:

.1 Obtain from potential borrow areas as indicated, all required granular fill material.

.2 The existing airstrips and roadways at the site are not to be used as granular material borrow sources unless specifically authorized by Departmental Representative.

.3 Advise Departmental Representative of selected borrow areas seven days in advance of excavation operations for appropriate testing to be completed.

.4 Notify Departmental Representative whenever unsuitable materials are encountered in borrow areas.

.5 Remove and dispose of any abandoned utility lines in these areas in accordance with Section 02 41 16 - Structure Demolition.

.6 Stripping, stockpiling and replacement or placement to a new location of organic material and stripping and disposal of waste material found when excavating existing granular material to be as directed by Departmental Representative.

.7 Final grading of borrow area upon completion to be as indicated in Section 31 05 17 – Aggregate Materials.

.8 Transport aggregate from borrow areas to the work areas via existing access routes where available. Maintain and provide for dust control on the access route between the borrow area and the work areas.

3.2 Placement, Moisture Conditioning, and Compaction of Granular Fill Material

.1 Set grades and lay out work in detail from control points in areas of granular fill placement. Verify the original ground topography by survey.

.2 Haul granular fill material from borrow sites to designated areas.

.3 Place granular fill material to the lines, grades, elevations and dimensions indicated, or agreed to with Departmental Representative.

.4 Do not place granular fill on snow or surface ice.

.5 Maintain natural drainage patterns, unless otherwise directed, and fill depressions to avoid any ponding of water adjacent to embankments.

.6 All Granular Fill material are to be placed in an unfrozen state. Granular Fill material is to be free from debris, snow and ice. Do not place Granular Fill if the outside air temperature is below zero degrees Celsius (°C), unless otherwise directed by Departmental Representative.

.7 Maintain a crowned surface during construction to provide ready runoff of surface water. Do not place material in free standing water. Drain low areas, before placing material.

.8 Do not dump Granular Fill material over the side slopes of berms.

.9 Place and compact Type 2 and Type 3 Granular Fill material in horizontal lifts.

.10 Cease construction at any sign of movement or bulging in the embankments to allow assessment by Departmental Representative.

.11 For Type 2 and Type 3 Granular Fill depths greater than 500 mm, place granular material in lifts not exceeding 250 mm in loose thickness. For fill depths greater than 200 mm and less than 500 mm, place material in two lifts of equal depth. For fill depths less than 200 mm, place material in one lift.

.12 Moisture condition Type 2 and Type 3 Granular Fill as required to meet compaction requirements. Provide a water truck capable of efficiently placing water on granular fill. If material is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.

.13 Place Type 1 Granular Fill in one lift. Type 1 Granular Fill is not to be compacted.

.14 Compact Type 2 and Type 3 Granular Fill material to a minimum of 95% of Maximum Dry Density determined in accordance with ASTM D698 or as determined from a Control Strip Density. The method for determining the maximum dry density will be established by the Departmental Representative.

.15 Control Strip Density:

.1 A Control Strip is a lift of granular material placed over a minimum 300 m^2 area that requires regrading.

.2 To determine the Control Density, moisture and density readings are to be taken by Departmental Representative during the compaction process until a Maximum Dry Density is attained.

.3 The density and moisture content of the Control Strip are to be measured by Departmental Representative after each pass of the compaction equipment to determine the type of equipment and number of passes required to obtain the specified density.

.4 A new Control Strip will be required if, as established by Departmental Representative, the material type, moisture content, or subgrade of the area to be regraded is significantly different than that of the Control Strip.

.5 Proofroll areas compacted in accordance with the Control Strip Density upon completion of grading and compaction or as requested by Departmental Representative.

.6 Use a fully loaded haul truck for the proofrolling operation. The speed of the vehicle is not to exceed 4 kilometres (km) per hour during proof rolling. Departmental Representative may authorize the use of alternative proofrolling equipment.

.7 Make sufficient passes with the proofrolling equipment to subject every point on the surface to three separate passes of a loaded tire.

.8 Where proofrolling reveals areas of defective granular fill, remove and recompact the granular fill, and modify the compaction process, as required.

.9 The Control Strip Density method for compaction is not intended to relax the specified compaction requirements, but to reduce compaction testing requirements.

.16 Compaction equipment must be capable of obtaining required densities uniformly in materials on project. Hand equipment must be available for compaction in areas where large equipment cannot access. Tracked or tired equipment may be substituted for dedicated compaction equipment, provided it can demonstrate the specified compactive effort.

.17 Following compaction of granular fill material placed on slopes, travel in a direction parallel to the slope direction with a cat-track to create small ridges in the slope. In soft ground, travel in a direction parallel to the toe of the slope with a cat track.

.18 Shape finished surface to required cross-section and grade, or as directed by Departmental Representative.

3.3 Regrading

.1 Supply, place, blade and trim Type 2 and Type 3 Granular Fill material to elevation, grades, and cross-section dimensions indicated on Drawings or as directed by Departmental Representative.

.2 Supply and install witness grade stakes in areas to be regraded to monitor the depth of granular material. The grade stakes are to be placed on a grid spacing accepted by Departmental Representative for each specific regrade area. Immediately replace all grade stakes that are damaged or displaced by Contractor operations.

.3 Compact and moisture condition Granular Fill material as necessary to obtain specified density in accordance to Clause 3.2 of this Section.

3.4 Reshaping

.1 Obtain authorization from Departmental Representative prior to beginning reshaping operations.

.2 Blade and trim material to elevation, grades, and cross-section dimensions indicated or directed by Departmental Representative. Obtain Department Representative's approval before reshaping any area.

.3 Make use of material within the area designated for reshaping to provide a surface that is smooth and compact with firm slopes.

.4 Remove or cover debris exposed during reshaping with a minimum depth of Type 2 Granular Fill as directed by Departmental Representative.

.5 Grade excavation side-slopes from culvert removal at 10H:1V, or as directed by Departmental Representative, to provide a stable channel for drainage and to allow for vehicle passage.

.6 Blend the final reshaped surface with the natural terrain and provide positive drainage.

3.5 Excavating

.1 Lay out work in detail from control points in areas of excavation. Verify the original ground topography by survey. If survey verification is not completed, original ground is to be as shown on the Drawings.

.2 Excavate to lines, grades, elevations and dimensions as indicated on the Drawings or designated by Departmental Representative.

.3 Keep excavations sufficiently free of water to complete work. Protect open excavations against flooding and damage due to surface run-on. Dispose of water in a manner not detrimental to work completed or under construction. The release of all water resulting from the dewatering of open excavations is to conform to the Water License Discharge Criteria outlined in Section 01 35 15 - Special Project Procedures for Contaminated Sites, and may require temporary storage or treatment prior to discharge.

.4 Where required due to unauthorized over-excavation, fill areas with Type 3 Granular Fill, as directed by Departmental Representative, and compact to a minimum 95% of Maximum Dry Density in accordance with ASTM D698.

3.6 Backfilling

.1 For backfilling operations, use compaction equipment capable of obtaining required densities.

.2 Do not proceed with backfilling operations until Departmental Representative has inspected and accepted excavation.

.3 Areas to be backfilled are to be free from debris, snow, and ice, and sufficiently free of water so as to allow backfilling to proceed without displacement of water outside of excavation, and to allow for compaction of backfill material.

.4 Commence backfilling of excavated soil areas within one (1) day of receipt of confirmatory sampling results indicating no further excavation in the area is required. Costs for any extra work caused as a result of leaving excavations open longer will be the responsibility of Contractor.

.5 Place specified backfill material in uniform horizontal layers in depths to grades indicated. Compact each layer before placing succeeding layer.

.6 Trenches or excavations are not to be left open during the winter.

3.7 Testing

.1 Testing of materials and compaction testing will be carried out and paid for by Departmental Representative.

.2 Frequency of testing will be determined by Departmental Representative.

3.8 Finishing and Tolerances

.1 All areas to be covered with granular material are to be uniform without projections or depressions exceeding 100 mm in 3 m.

.2 Granular fill surfaces to be within 100 mm of design elevations but not uniformly high or low.

.3 Finished surfaces are to be graded to promote positive drainage and minimize standing water.

3.9 Maintenance

.1 Maintain finished surfaces in a condition in accordance with this Section until succeeding material is applied or until acceptance.

END OF SECTION

PART 1 - GENERAL

1.1 Description

.1 This Section specifies the requirements for the excavation, sorting and disposal of Hazardous and Non-Hazardous Waste Material from the site areas identified for buried debris excavation.

1.2 Definitions

.1 Buried Debris Excavation: Excavation of all materials from the designated buried debris excavation areas to the lateral extent and slope limits indicated on the Drawings. The depth of Buried Debris Excavation is to extend to the depth where debris is not visible, to competent bedrock or as directed by Departmental Representative.

.2 Contractor’s Designated Hazardous Waste Disposal Facilities: The Licensed Hazardous Waste Disposal Facilities, designated by Contractor and pre-approved by Departmental Representative, for the disposal of all hazardous waste specified under the provisions of this contract. Contractor must be able to provide documentation from the Designated Hazardous Waste Disposal Facilities indicating full responsibility for all hazardous waste accepted from the CAM-C site.

.3 Contractor’s Designated Non-Hazardous Waste Disposal Facilities: The Licensed Non-Hazardous Waste Disposal Facilities designated by the Contractor and pre-approved by the Departmental Representative, for the disposal of all non-hazardous waste specified under the provisions of this contract. Contractor must provide documentation from the Designated Non-Hazardous Waste Disposal Facilities indicating full responsibility for all non-hazardous waste accepted from the CAM-C site.

1.3 Qualifications

.1 Be thoroughly familiar with and knowledgeable about existing site conditions, scope of work and requirements of the specification.

.2 Only Contractor's personnel capable of demonstrating a history of satisfactory experience in the area of hazardous waste management and who can satisfy Federal and Territorial requirements will be permitted to supervise and direct the work of this Section. Contractor’s Superintendent responsible for the work of this section is to have appropriate level of experience in the area of hazardous waste management.

.3 Guidelines such as those established in Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: National Institute for Occupational Safety and Health (NIOSH) Publication No. 85-115, or Hazardous Waste Worker Training Manual: Canadian LIUNA - Contractors Training Council, 1992, are to be followed at all times.

.4 All activities involving the handling and testing of materials are to be directly supervised by Contractor’s personnel who have successfully completed a forty (40) hour training course for hazardous waste activities in compliance with OSHA 29 CFR 1910.120, or other accepted equivalent training courses such as the Canadian Hazardous Waste Workers Program.

.5 Contractor's personnel trained as described above are to instruct and direct all workers with respect to the waste management procedures and labour and safety practices to be followed in carrying out the work.

.6 Provide all workers with suitable safety clothing, equipment and protection appropriate to the potential types and levels of exposure encountered.

.7 Trained and certified personnel are required to complete all Transportation of Dangerous Goods Act (TDGA) documentation and recording requirements.

1.4 Environmental and Personnel Protection

.1 Environmental protection measures are to be as specified in Section 01 35 43 - Environmental Procedures.

.2 Install temporary erosion, sediment and drainage controls prior to construction and excavation activities in accordance with the Erosion, Sediment and Drainage Control Plan and Section 01 35 43 – Environmental Procedures.

.3 Dewater buried debris areas as required. Maintain excavations free of standing water during waste removal, confirmatory sampling and backfilling activities. Comply with the requirements indicated in Section 01 35 43 – Environmental Procedures.

.4 Suspend operations whenever climatic conditions are unsatisfactory for excavation or grading to conform with this specification.

.5 Some areas designated for cleanup under this contract involve soils and hazardous materials which contain polychlorinated biphenyls (PCBs), inorganic elements, asbestos and other contaminants which are considered hazardous to human health.

.6 A listing of the waste materials that may exist within the buried debris areas is included in Section 01 11 00 - Summary of Work.

.7 PCBs are considered to be hazardous substances at concentrations above 50 parts per million (ppm). Storage, handling and disposal of PCBs at concentrations above 50 ppm are regulated under the Canadian Environmental Protection Act and the Federal Transportation of Dangerous Goods Act. Comply with all applicable regulations.

.8 When working with inorganic elements, PCB containing materials, and other contaminants, workers are to wear protective clothing and equipment acceptable to Labour Canada or Territorial Labour Department as suitable for exposure in the work area. Follow NIOSH guidelines in providing protection for on-site personnel including contract employees and subcontractor, Departmental Representative and Departmental Representative's Authorized Personnel.

.9 Supply sufficient quantities of designated protection equipment to fit all site personnel including Departmental Representative and authorized visitors. Workers are to also be educated as to risks, and be trained in safe work practices.

.10 Unless otherwise specified, carry out buried debris excavation work in accordance with Section 01 35 32 – Site Specific Health and Safety Plan.

.11 Notify Departmental Representative of the schedule for buried debris excavation at least two weeks prior to commencement of excavation.

1.5 Measurement for Payment

.1 The excavation of buried debris areas will be measured for payment by the cubic metre (m^3) excavated in situ as determined by the survey method identified in Section 31 22 15 - Grading. Buried Debris Excavation will be paid under Item 31 23 11-1 in the Basis of Payment Schedule.

.2 The scope of work for Item 31 23 11-1, Buried Debris Excavation includes:

.1 Excavation of all soil and debris to the specified limits for each buried debris area.

.2 Transport of excavated material to the Material Processing Area (MPA).

.3 Separation of debris from soil and placement of soil within individual stockpiles or windrows not exceeding 20 cubic metres (m^3) at the MPA for testing and classification by the Departmental Representative.

.4 Sorting of debris into hazardous and non-hazardous waste.

.5 Sorting of soil within stockpiles or windrows as clean or contaminated, based on results of testing by Departmental Representative.

.6 Dewatering of buried debris excavations and Material Processing Areas (MPAs) including testing for the disposal and disposal of wastewater or other process effluents, as applicable.

.7 Collection of wastewater from buried debris areas and MPAs including all associated storage, treatment and discharge, as required..

.8 Backfilling of excavations upon approval by the Departmental Representative.

.9 On-site disposal or reshaping of clean soil derived from excavations.

.10 Record keeping documents for Items listed above.

.3 The packaging/containerization transport and off-site disposal of non-hazardous waste, excluding soils, from excavation of buried debris areas will be measured for payment by the compacted cubic metres (m^3) collected as determined by survey method. For items to be measured for payment by survey, survey the area to receive non-hazardous waste either by cross section or by grid. The maximum distance between cross sections or grid points is to not exceed 2 metres (m) unless otherwise indicated by Departmental Representative. Survey accuracies should be 10 millimetres (mm) or less. Following placement and compaction of waste, Contractor is to resurvey the area that received non-hazardous waste. The volume measurement of waste for payment will be determined by digital terrain model for the survey information provided.

.4 Packaging/Containerization, Transport and Off-Site Disposal of Non-Hazardous Waste - Buried Debris Excavation will be paid under Item 31 23 11-2 in the Basis of Payment Schedule.

.5 The scope of work for Item 31 23 11-2, Packaging/Containerization, Transport and Off-Site Disposal of Non-Hazardous Waste - Buried Debris Excavation includes:

.1 Dismantling or size reduction and stockpiling or packaging/containerization of excavated non-hazardous waste.

.2 Compacting waste during stockpiling or packaging/containerization by track-packing or approved alternative.

.3 Size reduction for placement in stockpiles or containers, cut all debris as required:

.1 To minimize air void space in the debris.

.2 So that the maximum dimension of any one material component does not exceed 0.5 mm.

.3 Large equipment/vehicles shall be cut to length and reduced in volume at the recommendation and discretion of the on-site Departmental Representative.

.4 Transport and disposal of containerized non-hazardous waste at the Contractor's Designated Non-Hazardous Waste Disposal Facilities.

.6 Except as indicated above, work under this section will not be measured. Include all costs in Item BOPC-1, Balance of Project Costs in the Lump Sum Amount Breakdown. Indicate cost of the work of this section as a separate line item in the Contract Work Breakdown Structure (CWBS) specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

.1 Installation and maintenance of all erosion, sediment and drainage controls during excavation and backfilling activities.

.2 Removal and disposal of erosion, sediment and drainage control materials.

.3 Reshaping and grading of areas affected by erosion, sediment and drainage controls.

.4 Development, operation, and closure of Material Processing Area.

.7 Removal of surficial debris within the Buried Debris Area limits will be considered as Known Debris as specified in Section 02 41 23 – Debris Removal.

.8 The treatment of Type B Hydrocarbon Contaminated Soil from buried debris areas will not be included for payment under this section, but is to be provided as indicated in Section 02 61 00 – Hydrocarbon Soil Remediation.

.9 The excavation, off-site transport and disposal of Non-Hazardous Contaminated Soil resulting from buried debris excavation at Contractor's Designated Non-Hazardous Waste Disposal Facilities will not be included for payment under this section, but is to be provided as indicated in Section 02 55 13 – Contaminated Soil.

.10 The supply of packaging materials/containers appropriate for transport of non-hazardous waste derived from Buried Debris Excavation as described in this Section will not be included for payment under this section, but is to be provided as indicated in Section 02 41 16 – Structure Demolition.

.11 The supply of Hazardous Waste Containers for containerization of hazardous waste derived from Buried Debris Excavation as described in this Section will not be included for payment under this section, but is to be provided as indicated 02 61 33 – Hazardous Waste Materials.

.12 The off-site disposal of all hazardous waste from Buried Debris Excavations at the Contractors Designated Hazardous Waste Disposal Facilities will not be included for payment under this section, but is to be provided as indicated in Section 02 61 33 – Hazardous Waste Materials.

.13 Except as indicated above, work under this section will not be measured. Include all costs in Item LSA-1, Lump Sum Amount, in the Basis of Payment Schedule. Payment will be in accordance with the Lump Sum price provided for in Item BOPC-1, Balance of Project Costs, in the accepted Lump Sum Amount Breakdown Schedule. Indicate cost of the work of this section as a separate line item in the CWBS specified in Section 01 32 18 - Construction Progress Schedules - Bar (GANTT) Chart.

PART 2 - PRODUCTS

2.1 Materials

.1 Containers for hazardous soil and debris as described in Section 02 61 33 – Hazardous Waste Material.

.2 Containers for contaminated soil as described in Section 02 55 13 - Contaminated Soil.

.3 Granular Fill as per Section 31 05 17 - Aggregate Materials and Section 31 22 15 - Grading.

.4 Environmental Protection Supplies as per Section 01 35 43 - Environmental Procedures.

PART 3 - EXECUTION

3.1 Excavation and Removal of Waste

.1 Remove all surface debris in accordance with Section 02 41 23 – Debris Removal. Advise Departmental Representative when all surficial debris has been removed.

.2 Do not commence excavation operations until the Buried Debris Excavation Limits have been reviewed with Departmental Representative.

.3 In conjunction with Departmental Representative, examine the area to be excavated to assess the types of materials present.

.4 Prior to buried debris excavation, remove all surface debris, surface/snow ice and direct surface water run-off around the buried debris excavation.

.5 When excavating in the vicinity of a drainage course or a body of water, erect silt fences, floating silt curtains and/or containment berms to prevent the release of sediment or deleterious materials into the water.

.6 Water removed from the excavation must be collected at the excavation low point. Water must be tested and treated as required to conform to the Wastewater Discharge Criteria described in Section 01 35 15 – Special Project Procedures for Contaminated Sites. Submit results of testing to Departmental Representative.

.7 The Contractors designated Hazardous Waste Specialist is to monitor operations continuously during excavation, and is to be in direct visual contact with the excavation equipment operator.

.8 Use a volatile organic compound (VOC) instrument to continuously measure the concentrations of VOC during buried debris excavation operations, and prior to the removal of barrels from the buried debris area. When the concentrations of VOC exceed 20% lower explosive level (LEL), temporarily halt work until ventilation (natural or induced) reduces the concentration levels to a safe working level.

.9 Excavate within the buried debris excavation areas in “wide valleys” as opposed to “pits” to ensure good and thorough ventilation of the excavated area at all times.

.10 Keep thoroughly wet or frozen during excavation and transportation, all asbestos containing material encountered during buried debris excavation. Once excavated, immediately containerize the asbestos material. Keep asbestos materials thoroughly wet or frozen until the container is sealed. All workers are to wear protective clothing and respirators appropriate for the type of asbestos to be removed in accordance with the requirements of the Asbestos Abatement Sections 02 82 00.01 and 02 82 00.02.

3.2 Material Processing Area

.1 Establish a Material Processing Area (MPA), as specified in Section 02 61 33 – Hazardous Waste Materials, for processing of excavated materials.

3.3 Handling and Processing of Excavated Materials

.1 Place materials excavated from the buried debris areas in stockpiles within the MPA. Individual stockpiles may be placed adjacent to one another to form windrows.

.2 Separate all debris from excavated soil. Segregate excavated materials into stockpiles of similar material type components as follows:

.1 Barrels.

.2 Asbestos-containing materials.

.3 Creosote-treated timbers.

.4 Non-hazardous debris.

.5 Hazardous and potentially hazardous debris.

.6 Stained or potentially contaminated soil including soil excavated from within one metre of hazardous buried debris material.

.7 Other soil.

.3 Limit soil stockpiles to 20 cubic metres (m^3) in volume, or alternatively mark windrows indicating 20 cubic metres (m^3) increments. Do not place stained or obviously contaminated soil with other soil.

.4 Throughout the buried debris excavation process, testing and collection of samples will be carried out at the MPA to classify and delineate contaminated soil and other materials. Departmental Representative will not carry out testing and classification at the face of the excavation. Provide Departmental Representative ready access to the MPA for sampling and investigation. The results of the material testing and classification process will be available within fourteen (14) calendar days from the date that material samples are transported from the site for laboratory analysis. No payment will be made to Contractor for equipment transport or standby time during this investigation period.

.5 Based on the results of the testing, stockpiled/windrow materials will be classified for disposal, treatment and/or containerization requirements. Work closely and cooperate with Departmental Representative during the material testing and classification process.

.6 Provide stockpile for on-site treatment, or containerize and dispose off-site contaminated soil based on the results of analyses in accordance with Section 02 55 13 - Contaminated Soil.

.7 Place excavated intact barrels in overpacks. Inspect and classify barrel contents as specified in Section 02 61 33 - Hazardous Waste Materials.

.8 Replace excavated stockpiles classified as clean back into the excavation. Provide additional granular fill to completely backfill the buried debris excavations to original grade to prevent ponding and blend into the surrounding terrain.

.9 Containerize Hazardous Waste Materials in accordance with Section 02 61 33 - Hazardous Waste Material in conjunction with work under this section. Do not allow Hazardous Waste Material to remain exposed to elements.

END OF SECTION

APPENDIX A
DEMOLITION INVENTORY

Structure	Description of Major Components	Hazardous Material	Estimated Volume (m^3) (crushed/cut)		Comments
			Non-Haz	Haz	
Communication Tower	Painted steel pipe and triangular cross beam construction antenna (66 m L x 5 m B x 5 m H) and metal cables. Four associated concrete foundations (3 m L x 3 m W).	-	165	-	Paint samples from previous sites were non-detect for PCBs and below criteria for leachable lead. Crushed volume is approximately 5% of original volume. Concrete foundations to be left in place and regraded.
Warehouse	12.5 m x 9 m x 0.4 m concrete floor on concrete footings. Eight footings (0.75 m x 0.75 m x 0.25 m). Eight columns (0.45 m x 0.45 m x 1.0 m).	-	-	-	Concrete floor samples from previous sites were determined to be below CEPA criteria for PCBs. Concrete floor slab and columns to be collapsed in place. Floor slab, columns and footing to be regraded.
Garage	Concrete foundation. 12.5 m x 10.2 m concrete slab with portion with honeycomb steel mesh armour in slab.	-	-	-	Concrete floor samples from previous sites were determined to be below CEPA criteria for PCBs. Concrete slab and ramps to be left in place and regraded.
POL Line and POL Line Barrel Markers with Cribbing	POL Line: Steel, 1,260 m in length and 75 mm in diameter. Approximately 100 barrels. Approximately 5 m^3 of wooden cribbing will be incinerated.	-	40	-	POL line to be segmented for disposal, barrels crushed, and cribbing incinerated. POL lines to be demolished to include all associated pipe supports, markers and ancillary equipment.
Culverts Five known culverts on site	Airstrip: 600 mm barrel culvert, 28 m in length Road Sec. 2: 600 mm barrel culvert, 6 m long Road Sec. 3: 600 mm CSP culvert, 6 m long Road Sec. 4: 600 mm barrel culvert, 6 m long Lobe B: shallow buried culvert	-	4	-	

Structure	Description of Major Components	Hazardous Material	Estimated Volume (m^3) (crushed/cut)		Comments
			Non-Haz	Haz	
Station POL Tank and Beacon Foundations Located at the Station Area and at the Beach Area	Station POL Foundations: Two concrete ring footings 0.6 m wide with outside diameter of 2.5 m. One associated square concrete slabs, 1 m x 1 m. Beacon Foundation: 1 m x 1 m x 0.3 m small concrete foundation.	-	-	-	Foundations and slabs to be left in place and regraded.
Pumphouse Foundation	Concrete foundation (2.5 m x 2.5 m).	-	-	-	Pumphouse foundation to be disposed of at the base of TP13-13 and covered with a minimum 500 mm of Type 3 granular fill.
Beach POL Tank Foundations and Concrete Piles	Beach POL Foundations: Two concrete ring footings 0.6 m wide with outside diameter of 2.5 m.	-	-	-	Foundations and concrete piles to be disposed of at the base of TP13-24 and covered with a minimum 500 mm of Type 3 granular fill.

** All dimensions are approximate.

ASBESTOS INVENTORY FOR CAM-C MATHESON POINT

Structure	Asbestos – Containing Materials Identified On Site
Warehouse	- Approximately 0.5 m^3: Asbestos-containing pipe wrap and tank insulation
Warehouse	- Approximately 0.75 m^3: Asbestos-containing wallboard
Garage	- Approximately 0.25 m^3: Asbestos-containing tank wrap
Debris Area #10	- Approximately 0.5 m^3: Asbestos-containing tile and insulation
Total Approximate Quantity:	**2.0 m^3**

Note: Asbestos material that has been double bagged is classified as Non-Hazardous material, unless coated with PAP.

APPENDIX B
DEBRIS INVENTORY

CAM-C MATHESON POINT KNOWN DEBRIS AREAS

Debris Area	Description	Location	Aerial Extent (m^2)	Approx. Number of Barrels	Estimated Crushed Volume (Includes Barrels) m^3	Estimated Hazardous Volume (crushed) (m^3)	Comments
Debris Area #13	Empty barrels and wood.	Freshwater Lake.	2,808	<10	2	N/A	
Debris Area #12	Scrap metal and wood.	Along access road to Freshwater Lake.	400	N/A	1	N/A	
Debris Area #10	Weathered painted plywood, metal can, 'train' heating fan, metal staircase from comm tower, metal vents, red compressed CO_2 cylinder, weathered pipe wrap, piece of metal.	North of Station Area beside road to Freshwater Lake.	12,150	N/A	4	1	Asbestos amended pipe wrap, tiles and insulation.
Station Debris Area	Pipe wrap, heating oil burner, heat registers, water tank, 2 building train water tanks, 2-500 US gallon diesel tank, I-beams (3), piping, wood, cable, communication cable, metal mesh, plywood, metal framing, boiler, metal sheeting, tile wood, empty barrels, snow fencing, small barrels (2), strapping, POL valve, 3 sets of CAT tracks.	West of the Airstrip and north of the Station West Landfill.	162,260	15	33	2	Asbestos amended pipe wrap, tiles and insulation.
Station West Landfill Debris Area	Empty barrels, cans, 1 gallon cans, wood, culvert, metal mesh, wire, battery, machine parts, pipe, tire, CAT tracks.	South of the Station Pad Area.	240,610	20	22	1	Battery.

CAM-C MATHESON POINT KNOWN DEBRIS AREAS

Debris Area	Description	Location	Aerial Extent (m^2)	Approx. Number of Barrels	Estimated Crushed Volume (Includes Barrels) m^3	Estimated Hazardous Volume (crushed) (m^3)	Comments
Airstrip Debris Area	Barrel markers, wires.	Each end and the length of the airstrip.	58,950	10	2	N/A	
Beach Debris Area	Empty barrels, wood pallets, sink, stove, furnace, machine parts, hot water tank, garbage bin.	Beach Area east and west of access road.	39,990	530	115	N/A	

APPENDIX C
SITE PHOTOGRAPHS

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
DSCN008	26-08-13

Direction Photo Taken:

View north- northeast

Description:

Site overview
(taken from airplane).

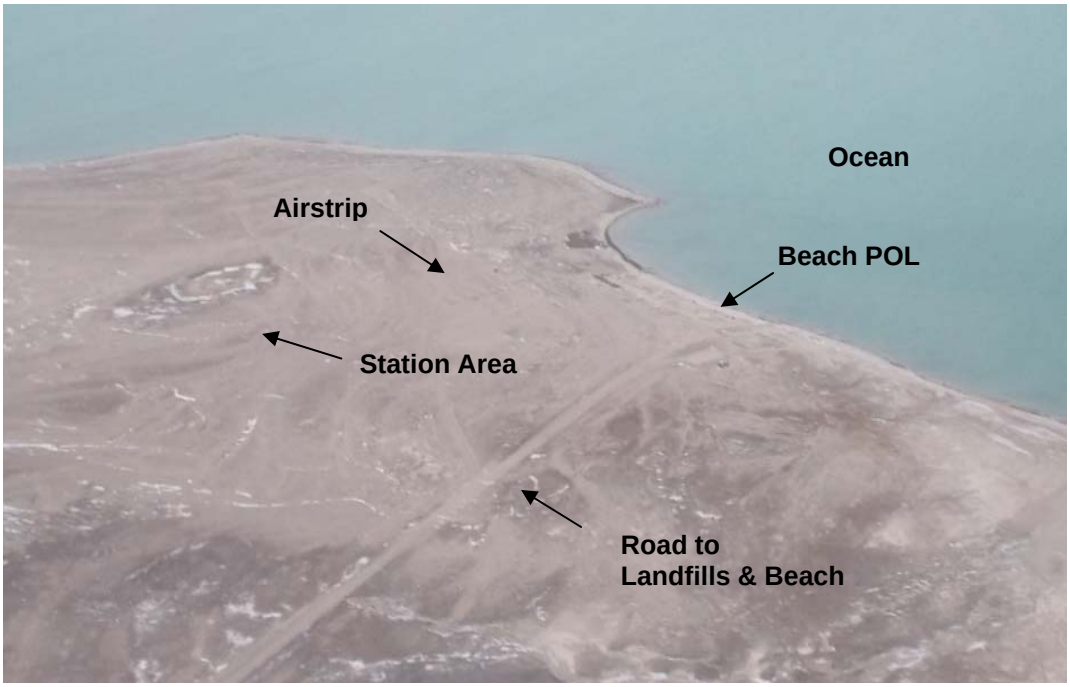


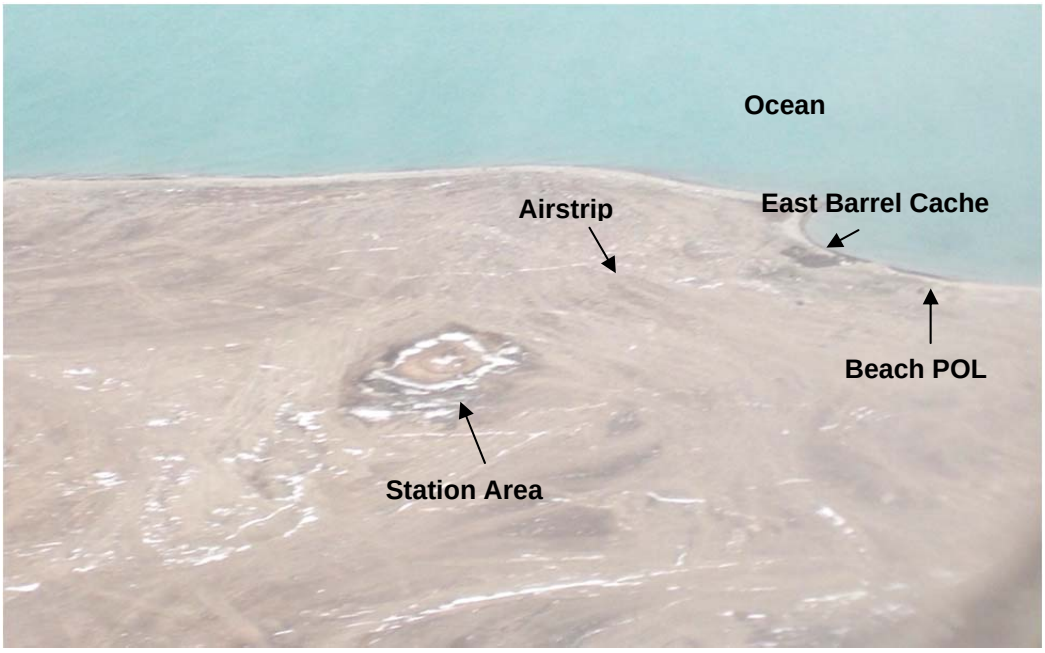
Photo No.	Date:
DSCN0009	26-08-13

Direction Photo Taken:

View north- northeast

Description:

Site overview
(taken from airplane).



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
DSCN0065	26-08-13

Direction Photo Taken:
Facing northwest

Description:

View of remaining foundations at Station Area and partially buried debris areas, including Lobe D.

Photo No.	Date:
DSCN0070	26-08-13

Direction Photo Taken:

View facing west-northwest

Description:

View of remaining concrete pads, radar tower, and structures at the Station Area; view across Lobe C.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
DSCN0073	26-08-13

Direction Photo Taken:

View facing west-northwest

Description:

Top end of radar tower from Lobe C (pink flag in foreground).

Photo No.	Date:
IMG_0744	29-07-13

Direction Photo Taken:

View facing northeast

Description:

Top end of radar tower and cables.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0746	29-07-13

Direction Photo Taken:

Facing south

Description:

Top end of radar tower and associated debris.

Photo No.	Date:
IMG_0743	29-07-13

Direction Photo Taken:

Ground.

Description:

Size and type of cable from radar tower.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0747	29-07-13

Direction Photo Taken:

View facing northwest

Description:

Debris around top of radar tower.

Photo No.	Date:
IMG_0742	29-07-13

Direction Photo Taken:

View facing east.

Description:

Base of radar tower; concrete foundation to right of photo; Station Area infrastructure in background.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0733	29-07-13

Direction Photo Taken:
Facing southeast

Description:

View of remaining water tanks at Station Area.

Photo No.	Date:
IMG_0734	29-07-13

Direction Photo Taken:

View facing east

Description:

Side profile of water tanks.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0751	29-07-13

Direction Photo Taken:

View facing east

Description:

Former module train water tanks.

Photo No.	Date:
IMG_0738	29-07-13

Direction Photo Taken:

View facing southeast

Description:

West side of Station Area (in front of radar tower). Imprint of module train in foreground. Water tanks and diesel tanks from module train can be seen in the background.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0736	29-07-13

Direction Photo Taken:

View facing northeast

Description:

Diesel tanks and debris around water tanks; note radar tower in background left.

Photo No.	Date:
IMG_0737	29-07-13

Direction Photo Taken:

View facing southeast

Description:

Water tanks and imprint of module train (foreground); garage pad in background right, and concrete anchor pads for the radar tower in background left.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0752	29-07-13

Direction Photo Taken:

View facing southeast

Description:

Anchor pad for radar tower (east side), and barrels; North of Station Area.

Photo No.	Date:
IMG_0753	29-07-13

Direction Photo Taken:

View facing east.

Description:

Venting and other wood/metal debris on the north side of the garage pad.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0755	29-07-13

Direction Photo Taken:

View facing northeast

Description:

Debris area at southwest end of Station Area.

Photo No.	Date:
IMG_0756	29-07-13

Direction Photo Taken:

View facing south

Description:

Signal structure and scattered debris.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0757	29-07-13

Direction Photo Taken:

View facing northeast

Description:

Warehouse foundation and scattered debris.

Photo No.	Date:
IMG_0762	29-07-13

Direction Photo Taken:

View facing east

Description:

Top of warehouse foundation.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0763	29-07-13

Direction Photo Taken:

View facing east

Description:

West end of warehouse foundation and surrounding debris, including tanks, wood and other miscellaneous metal.

Photo No.	Date:
IMG_0765	29-07-13

Direction Photo Taken:

View facing west

Description:

Warehouse foundation with barrel and wood debris in foreground.

PHOTOGRAPHIC LOG

Site Name: CAM-C, Matheson Point	Site Location: Station Area	Project No. 60299674

Photo No.	Date:
IMG_0759	29-07-13

Direction Photo Taken:

View facing west

Description:

Station Area debris east of radar tower.

Photo No.	Date:
IMG_0760	29-07-13

Direction Photo Taken:

View facing north-northeast

Description:

Concrete radar tower anchor foundation.

Small amount of surficial debris at north end of the Station Area pad.

Airstrip (airplane) visible in top right of photo.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0750	29-07-13

Direction Photo Taken:

View facing south-southeast

Description:

View of northwest corner of Station Area pad Area.

Photo No.	Date:
IMG_0758	29-07-13

Direction Photo Taken:

View facing east

Description:

View from south side of Station Area pad over east side of the Station Area.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0766	29-07-13

Direction Photo Taken:

View facing east

Description:

Garage foundation.

Former boiler and tanks remaining on former garage pad.

Photo No.	Date:
IMG_0768	29-07-13

Direction Photo Taken:

View facing southeast

Description:

Garage foundation.

Former boiler, tanks, barrel and other miscellaneous metal debris remaining on pad.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0771	29-07-13

Direction Photo Taken:

View facing east

Description:

Garage foundation.

Weathered asbestos pipe wrap.

Two sumps noted below foreground of photo.

Photo No.	Date:
IMG_0770 and 0769	29-07-13

Direction Photo Taken:

View of ground on Garage Foundation

Description:

Garage foundation with two sumps on pad.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0772	29-07-13

Direction Photo Taken:

View facing northwest

Description:

Garage foundation and metal tank. Note weathered asbestos wrap behind tank.

Photo No.	Date:
IMG_0773	29-07-13

Direction Photo Taken:

View facing east

Description:

Metal debris (heater) on west side of Garage foundation.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0774	29-07-13

Direction Photo Taken:

View facing north

Description:

Debris along the north slope of the Station Area, mid-way along the site (north of the Garage).

Photo No.	Date:
IMG_0775	29-07-13

Direction Photo Taken:
View facing northeast

Description:
View of the northern end of the slope along the Station Area base; north of the Garage. Note communications cables in metal pipe.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0776	29-07-13

Direction Photo Taken:

View facing east

Description:
Metal debris at northeast end of Station Area.

3 'I' Beams east of garage.

Photo No.	Date:
IMG_0777	29-07-13

Direction Photo Taken:
View facing east

Description:
3 'I' Beams east of garage; this debris is the same as in the previous photo.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
IMG_0779	29-07-13

Direction Photo Taken:

View facing west

Description:

Metal 'I' Beams (same as in above photo, but from east side).

Photo No.	Date:
IMG_0778	29-07-13

Direction Photo Taken:

View facing northeast

Description:

Metal panels from garage. Now located to the east of the garage pad.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	**Date:**
IMG_0781	29-07-13

Direction Photo Taken:

View facing southeast

Description:

Vent stack south of Garage foundation.

Photo No.	**Date:**
IMG_0786	29-07-13

Direction Photo Taken:

View facing northeast

Description:

View along south side of Station Area from top of POL line. Coolers in centre of photo located north of TP13-01.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area POL	60299674

Photo No.	Date:
P7290033	29-07-13

Direction Photo Taken:

View facing north

Description:

View from south end of Station Area POL Pad.

Photo No.	Date:
P7290034	29-07-13

Direction Photo Taken:

View facing northeast

Description:

View of centre of Station Area POL structures.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area POL Line to Beach	60299674

Photo No.	**Date:**
P7290037	29-07-13

Direction Photo Taken:

View facing west

Description:

View from south side of Station Area pad over POL line (continues towards beach).

Photo No.	**Date:**
SAM_1096	29-07-13

Direction Photo Taken:

View facing north

Description:

Location of TP13-09 (at flag and trowel); sampling beneath POL pipe valve.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area POL Line to Beach	60299674

Photo No.	**Date:**
DSCN0018	26-08-13

Direction Photo Taken:

View facing southwest

Description:

Culvert across road towards Beach POL line.

Photo No.	**Date:**
P7310070	31-07-13

Direction Photo Taken:

View facing northeast

Description:

View of Beach POL line from the access road leading from the Station Area towards the Beach Area. Note the barrel markers for the POL line, as well as the barrel markers (orange) for the end of the airstrip.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Beach Area	60299674

Photo No.	Date:
J6	31-07-13

Direction Photo Taken:

View facing north from north side of Beach POL

Description:

Standing at Beach POL facing north over West and East Barrel Caches

Photo No.	Date:
J8	31-07-13

Direction Photo Taken:

View facing southeast from south side of Beach POL pad

Description:

Note pink flag marking TP13-39. Minimal debris.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Soil Testing Locations	60299674

Photo No.	Date:
J25	01-08-13

Direction Photo Taken:

Ground

Description:

TP13-24 soil profile to approximately 0.48 metres. Sand and cobbles.

TP13-24 was located on the south side of the Beach POL pad.

Photo No.	Date:
J27	31-07-13

Direction Photo Taken:

Ground

Description:

At the Beach POL: TP13-28 soil profile to approximately 1.05 metres. Sand and some cobbles.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Beach POL	60299674

Photo No.	Date:
IMG_0800	01-08-13

Direction Photo Taken:

View facing west

Description:

Downgradient of the Beach POL pad, note the Beach POL line. Quad and quadavator on Beach POL pad.

Photo No.	Date:
IMG_0801	01-08-13

Direction Photo Taken:

View facing northwest

Description:

End of Beach POL line, closest to ocean. Note barrel cache on northeast corner of Beach POL pad.

PHOTOGRAPHIC LOG

Site Name: CAM-C, Matheson Point	Site Location: Barrel Caches	Project No. 60299674

Photo No.	Date:
IMG_0788	01-08-13

Direction Photo Taken:

View southeast

Description:

View from north side of East Barrel Cache over both barrel caches.

Photo No.	Date:
IMG_0797	01-08-13

Direction Photo Taken:

View facing southwest

Description:

View of south side of East Barrel Cache; quadavator at work on Beach POL pad (photo left).

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Barrel Caches	60299674

Photo No.	Date:
IMG_0789	01-08-13

Direction Photo Taken:

View facing southwest

Description:

View of south side of West Barrel Cache; quadavator at work on Beach POL pad (photo left).

Photo No.	Date:
DSCN0045	26-08-13

Direction Photo Taken:

View facing west.

Description:

Close up of West Barrel Cache.

PHOTOGRAPHIC LOG

Site Name: CAM-C, Matheson Point	Site Location: Barrel Caches	Project No. 60299674

Photo No.	Date:
IMG_0790	01-08-13

Direction Photo Taken:

View facing west

Description:

Closer view of north side of East Barrel Cache.

Photo No.	Date:
DSCN0042	26-08-13

Direction Photo Taken:

Ground

Description:

Debris Area #20. Sink, stove, furnace and other metal debris. In respect to previous picture, sink is between the barrels (foreground) and the large tank (background) near the remains of machinery.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Barrel Caches	60299674

Photo No.	Date:
DSCN0039	26-08-13

Direction Photo Taken:

View facing northeast

Description:

Close up of East Barrel Cache; no barrels with residual contents observed.

Photo No.	Date:
IMG_0805	01-08-13

Direction Photo Taken:

View facing west

Description:

Barrels and wood pallets located on the south side of the Beach POL pad, comprising Debris Area #19.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Debris Area #1	60299674

Photo No.	Date:
IMG_0701	29-07-13

Direction Photo Taken:

View facing northeast

Description:

View of part of Debris Area #1 located south/southeast of the Station Area. Composition: 9 empty barrels, cans, 1 gallon cans (20-30), wood, wire, culvert, metal mesh from garage floor, wire. Approximate size is 10 m x 10 m.

Photo No.	Date:
IMG_0705	29-07-13

Direction Photo Taken:

View facing northwest

Description:

Alternate view of Debris Area #1.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station West Landfill	60299674

Photo No.	Date:
IMG_0709	29-07-13

Direction Photo Taken:

View facing north

Description:

Toe of Station West Landfill - surface debris includes batteries, tin cans, wood, pipe, strapping, mesh, barrels, cable, and machine parts.

Photo No.	Date:
IMG_0710	29-07-13

Direction Photo Taken:

View facing west

Description:

View of south face of Station West Landfill. Note battery in foreground. At least 5 batteries noted scattered over landfill surface.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station West Landfill	60299674

Photo No.	**Date:**
DSCN0082	26-08-13

Direction Photo Taken:

View facing west

Description:

Station West Landfill/Debris Area.

Photo No.	**Date:**
IMG_0708	29-07-13

Direction Photo Taken:

View facing north

Description:

Extent of Station West Landfill/Debris Area (background of photo). Debris Area #5 in foreground.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Airstrip Landfill	60299674

Photo No.	Date:
P7310056	31-07-13

Direction Photo Taken:

Facing northwest

Description:

View upslope view of Airstrip Landfill

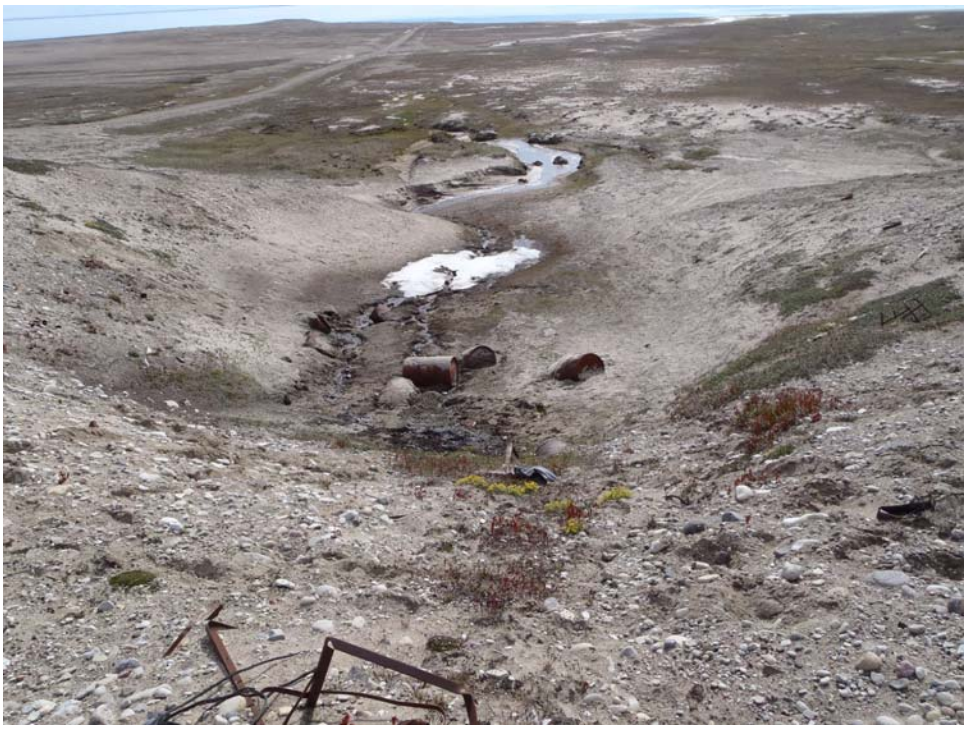
Photo No.	Date:
P7310062	31-07-13

Direction Photo Taken:

Facing southeast

Description:

Downslope view of Airstrip Landfill



PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Debris Areas	60299674

Photo No.	Date:
IMG_0712	29-07-13

Direction Photo Taken:

View facing north

Description:

South of Station West Landfill (formerly called South Landfill), located within the former borrow area, timber cribbing was noted.

Photo No.	Date:
IMG_0713	29-07-13

Direction Photo Taken:

West

Description:

Debris Area #6 located south of the Station West Landfill

PHOTOGRAPHIC LOG

Site Name: CAM-C, Matheson Point	Site Location: Debris Areas	Project No. 60299674

Photo No.	Date:
IMG_0715	29-07-13

Direction Photo Taken:

View facing south.

Description:

Debris Area #2; surface debris of metal, wire, and cans.

Photo No.	Date:
IMG_0722	29-07-13

Direction Photo Taken:

View facing northwest.

Description:

Debris Area #2; surface debris of metal, empty barrels, wire, and cans.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Debris Areas	60299674

Photo No.	Date:
IMG_0720	29-07-13

Direction Photo Taken:

View facing west

Description:

Closer view of surface debris in Debris Area #2.

Photo No.	Date:
IMG_0727	29-07-13

Direction Photo Taken:

View facing East

Description:

Debris Area #3, including strapping and cans west of the Station Pad.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Debris Areas	60299674

Photo No.	Date:
IMG_0707/ SAM_1143	30-07-13

Direction Photo Taken:

View facing Upslope and Downslope west of Station Area

Description:

Debris Area #14 with metal strapping and Debris Area #15 with partially buried wooden debris.

Photo No.	Date:
IMG_0724	29-07-13

Direction Photo Taken:

View facing north

Description:

Debris Area #7: Three sets of cat tracks.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Debris Areas	60299674

Photo No.	**Date:**
SAM_1137	30-07-13

Direction Photo Taken:

View facing northwest

Description:

View of Debris Area #10.

Photo No.	**Date:**
SAM_1136	30-07-13

Direction Photo Taken:

Ground

Description:

Debris Area #12: Miscellaneous metal, wood, and wire debris beside Freshwater Lake Road.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Station Area	60299674

Photo No.	Date:
SAM_1103	30-07-13

Direction Photo Taken:

Facing south

Description:

West side of the Warehouse Foundation - location of asbestos sample ASB #1 (painted wall board).

Photo No.	Date:
IMG_0724	29-07-13

Direction Photo Taken:

View facing north

Description:

East side of the Warehouse Foundation - location of asbestos sample ASB #2 (floor tile).

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Asbestos Samples	60299674

Photo No.	Date:
SAM_1107	30-07-13

Direction Photo Taken:

View facing east

Description:

Location of asbestos sample ASB #3 (weathered pipe wrap): northwest corner of the Station Area Pad.

Photo No.	Date:
SAM_1109	30-07-13

Direction Photo Taken:

Ground

Description:

Location of asbestos sample ASB #4 (weathered tank wrap): northwest corner of the Station Area Pad; southeast of ASB #3 location.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Airstrip	60299674

Photo No.	Date:
DSCN0053	26-08-13

Direction Photo Taken:

View facing southeast

Description:

Airstrip; Summit Air Dornier parked on runway.

Photo No.	Date:
DSCN0011	26-08-13

Direction Photo Taken:

Runway

Description:

South end of runway (view from plane).

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Airstrip/Freshwater Lake	60299674

Photo No.	Date:
SAM_1087	29-07-13

Direction Photo Taken:

View facing east-southeast

Description:

Middle of airstrip.

Photo No.	Date:
J9	31-07-13

Direction Photo Taken:

View facing southwest from road to Freshwater Lake

Description:

View of Freshwater Lake shore and minimal debris northwest of the lake (Debris Area #13). Water sample obtained from shore at the end of the road. A loon with a baby was noted in the lake.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Beach POL Pad and Road	60299674

Photo No.	Date:
DSCN0050	26-08-13

Direction Photo Taken:

View facing southwest

Description:

Road immediately west of Beach POL

Photo No.	Date:
DSCN0050	26-08-13

Direction Photo Taken:

View facing southeast

Description:

West side of Beach POL pad; also termination of road from Station Area.

PHOTOGRAPHIC LOG

Site Name: CAM-C, Matheson Point	Site Location: Vegetation	Project No. 60299674

Photo No.	Date:
J14	31-07-13

Direction Photo Taken:

Ground

Description:

Mountain sorrel
Oxyria arvenses

Photo No.	Date:
J16	31-07-13

Direction Photo Taken:

Ground

Description:

Red stem cinquefoil
Potentilla rubricaulis

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Vegetation	60299674

Photo No.	Date:
J22	31-07-13

Direction Photo Taken:

Ground

Description:

Three toothed saxifrage
Saxifraga tricuspidata

With sedges *(Carex sp.)*

Photo No.	Date:
J23	31-07-13

Direction Photo Taken:

Ground

Description:

Thrift
Armeria maritima

With grasses

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Vegetation	60299674

Photo No.	Date:
J1	31-07-13

Direction Photo Taken:

Ground

Description:

Arctic fleabane
Erigeron humilis

With grasses and willow leaves.

Photo No.	Date:
J2, J3	31-07-13

Direction Photo Taken:

Ground

Description:

Arctic poppy
Papaver laestadianum

Closeup inset.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Vegetation	60299674

Photo No.	Date:
J4	31-07-13

Direction Photo Taken:

View northeast

Description:

Arctic willow,
Salix arctica
White lichen (unidentified species),
White mountain avens
Dryas integrifolia

Photo No.	Date:
J5	31-07-13

Direction Photo Taken:
Ground

Description:

Arctic Willow and goose droppings.

PHOTOGRAPHIC LOG

Site Name: CAM-C, Matheson Point	Site Location: Vegetation	Project No. 60299674

Photo No. J13	Date: 31-07-13

Direction Photo Taken:

Ground

Description:

Moss campion
Silene acaulis

Photo No. J21	Date: 31-07-13

Direction Photo Taken:

Ground

Description:

White mountain aven
Dryas integrifolia
(blooming specimen from site inset) and grasses.

PHOTOGRAPHIC LOG

Site Name:	Site Location:	Project No.
CAM-C, Matheson Point	Wildlife evidence/Freshwater Lake	60299674

Photo No.	Date:
J32	31-07-13

Direction Photo Taken:

Ground

Description:

Caribou skull, antlers, and vertebrae identified near Freshwater Lake (northeast side of road).

Photo No.	Date:
J37	31-07-13

Direction Photo Taken:

On Freshwater Lake

Description:

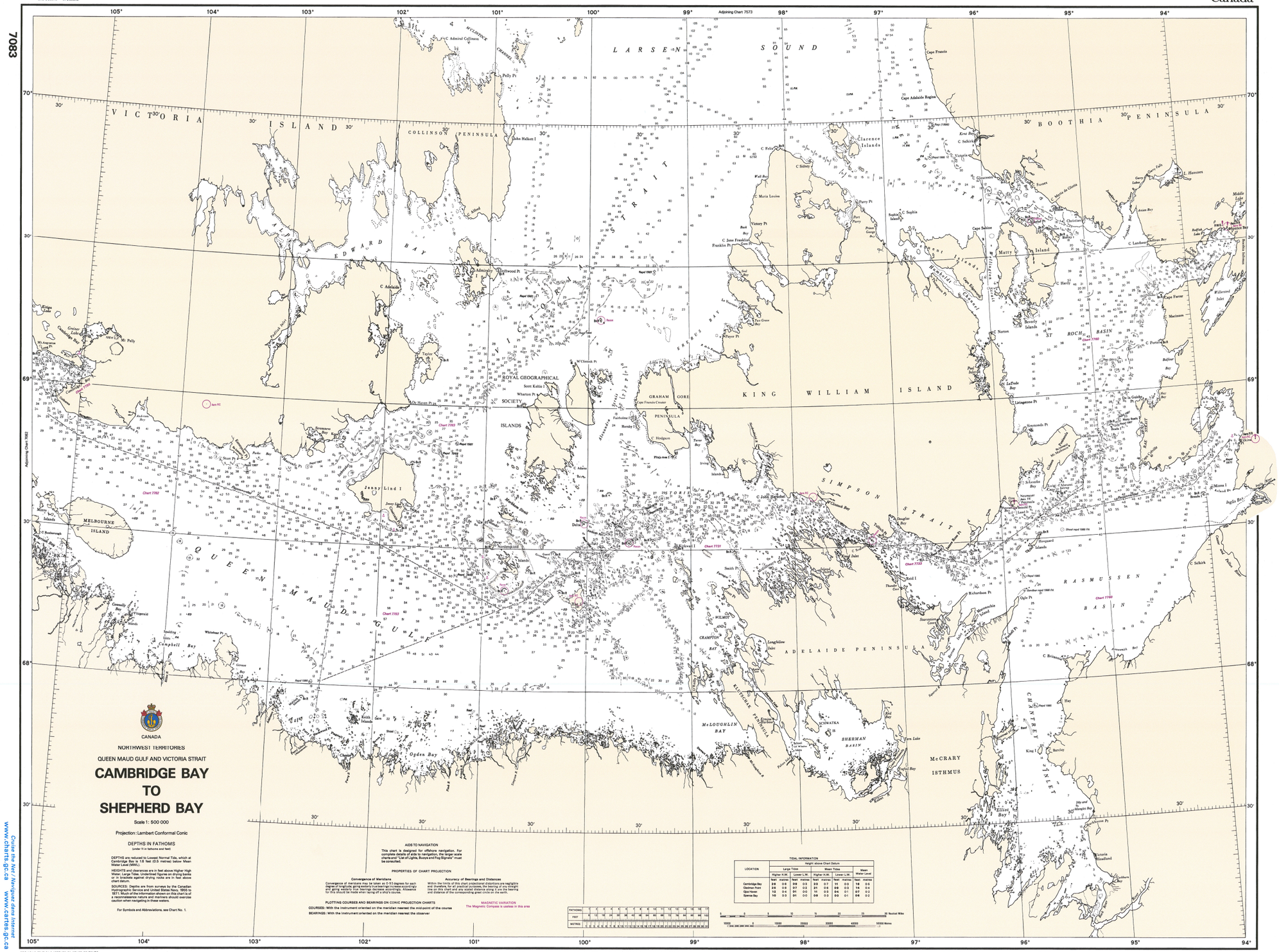
Loon and chick noted on Freshwater Lake

APPENDIX D
NAVIGATIONAL CHARTS

Fisheries and Oceans / Pêches et Océans

Canada

7083



Cruise the Net / Naviguez dans Internet
www.charts.gc.ca www.cartes.gc.ca

PREVIOUS EDITIONS 1955 '60 '61 '62 '63 '66 '72 '73
NEW EDITION JUNE 15 1984
Corrected to NOTICES TO MARINERS / Corrigé jusqu'à l'AVIS AUX NAVIGATEURS : 2013-09-27
See Notices to Mariners for subsequent corrections / Voir Avis aux navigateurs pour les corrections subséquentes

Corrected Through Notices to Mariners 2013-12-06
Corrigée par le biais des Avis aux navigateurs à la date susmentionnée

PUBLISHED BY THE CANADIAN HYDROGRAPHIC SERVICE

Nautical Charts Protect Lives, Property and the Marine Environment
Les cartes marines protègent la vie, la propriété et l'environnement marin

HORIZONTAL DATUM: This chart is drawn on an unknown datum. Positions plotted from navigation systems such as GPS, SATNAV or Loran-C co-ordinate conversion after ASF correction may be in error by 4 miles. Positioning methods such as range and bearing should therefore be used.

Northwest Territories
Queen Maud Gulf and Victoria Strait
CAMBRIDGE BAY TO SHEPHERD BAY

7083

APPENDIX E
REPORTING TEMPLATES

Worksheet 1 - Employment and Training Record

Supplier Name	AOC Employment Target (%)

Employee Categorization								Employment and Training Hours for Quarter __[4]											
									Training										
			Employee Category[3]						EHS Awareness	EHS Health and Safety							EHS Environmental		
Please specify "Supplier Internal Resource" or indicate the Subcontractor Name if applicable[1]	Employee ID[2]	Employee Gender	Southern, Non-Aboriginal	Southern, Aboriginal	Northern, Non-Aboriginal	Northern, Aboriginal	Aboriginal Opportunity Consideration	Total Hours Worked by Employee for Current Quarter	Policy & Proc	HAZWOPR	WHMIS	First Aid	Wildlife safety	Water safety	Fire response	Other	Spills response	Other	General Training (Non-EHS)

Notes:

1) For supplier internal resources, please enter "Supplier Internal Resource". For subcontrator's resources, please enter the releveant subcontractor's name.
2) Please enter a unique identifier (employee initials, employee ID etc) for each employee. Please do not enter employee names to ensure privacy.
3) Please enter an "x" into the most appropriate category.
4) Please enter total employment hours and training hours in increments no smaller than 15 minutes. Please specify the current quarter.

Worksheet 2 - Suppliers

Supplier Name	AOC Employment Target (%)

Supplier Categorization						Supplier Utilization	
Please specify "Supplier Internal Costs" or indicate the Subcontractor Name if applicable[1]	Supplier Category [2]					Quarter: __ [3]	
	Southern, Non-Aboriginal	Southern, Aboriginal	Northern, Non-Aboriginal	Northern, Aboriginal	Aboriginal Opportunity Consideration	Used in this Quarter [4]	Value ($)

Notes:

1) For supplier internal costs, please enter "Supplier Internal Costs". For costs relating to a supplier's subcontrator, please enter the releveant subcontractor's name.
2) Please enter an "x" into the most appropriate category.
3) Please enter the current quarter.
4) Please enter an "x" if the supplier / subcontractor was utilized in the current quarter.

Worksheet 3 - Project Statistics

Supplier Name

Categories		Metrics	Quarter: 2 [1]
EHS Performance			
Incidents, Inspections and Audits			
Safety Incidents	Major Incident	# of incidents	
	Moderate Incident	# of incidents	
	Minor Incident	# of incidents	
	Near misses	# of near misses	
Environmental Incidents	Environmental Incidents	# of incidents	
		Spill Volume (L)	
Inspections / Audits	Inspections/Audits (external)	# performed	
		# of non-compliances	
	Inspections/Audits (internal)	# performed	
		# of non-compliances	
Other Corrective Actions	New procedures	# of procedures	
	Other initiatives	# of initiatives	
Consultations, Engagements and Media Events			
Events	Consultations	#	
		# of persons	
	Community Engagements	#	
		# of persons	
	Media Events	#	

Notes:

1) Please specify the current quarter, and enter metrics values in this column.

Glossary

Term	Definition
Aboriginal Employee	Section 35 of the Constitution Act recognizes three groups of Aboriginal people (Indians, Métis and Inuit) as descendants of the original inhabitants of North America. For the purposes of the socio-economic employment and training data, the Aboriginal Employee categories include First Nation, Inuit and/or Métis individuals who are working, either on-site or off-site, performing services related to the project for a contractor, subcontractor or supplier who has a contract with AANDC or PWGSC to do work related to the project. Aboriginal employees of AANDC or PWGSC are not included in this category.
Aboriginal Opportunities Consideration (AOC)	Point-rated evaluation criteria used within a competitive solicitation process which evaluate Bidders on the basis of the type and extent of commitments made to maximizing Aboriginal participation within the resulting contract work. Bidders are required to submit an AOC proposal demonstrating their proposed approach to implementing this component. Upon Award, the successful Bidder's proposed AOC target become a firm commitment under the contract.
Aboriginal Supplier	As defined by the Procurement Strategy for Aboriginal Business, an enterprise that is: a sole proprietorship, limited company, co-operative, or not-for-profit organization in which Aboriginal persons have majority ownership and control (meaning at least 51 percent), and in which, in the case of a business enterprise with six or more full time employees, at least 33 percent of the full-time employees are Aboriginal persons; or, a joint venture or consortium in which an Aboriginal business or Aboriginal businesses as defined above have at least 51 percent ownership and control.
Awareness – EHS Policy and Procedures Training	General training, provided to all individuals working on the project site, related to the Environmental Health and Safety (EHS) policies and procedures that apply to the site
Environmental Incident	A release or spill that is reportable as stipulated in federal or territorial legislation or in a license or permit applicable to the project. Resources to determine whether a spill or release needs to be reported can be found through the following resources: • Yukon – See Schedule A of the Spill Regulations of the Environment Act. Please see: http://www.env.gov.yk.ca/environment-you/spills.php • Northwest Territories – See Schedule B of the Spill Contingency Planning and Reporting Regulations. Please see: https://www.justice.gov.nt.ca/en/files/legislation/environmental-protection/environmental-protection.r2.pdf • Nunavut - See Schedule B of the Spill Contingency Planning and Reporting Regulations. Please see: http://www.justice.gov.nu.ca/apps/fetch/download.aspx?file=%2fapps%2fuploads%2ffiles%2fconsolidated+law%2foriginal%2fenvironmental+protection+act%2f633404216383300000-662918185-reg558.pdf • Federal – For releases, Sections 95, 169, 179 and 212 of the Canadian Environmental Protection Act, 1999 (CEPA, 1999). For environmental emergencies, Section 201 of CEPA, 1999. For an unauthorized deposit of a deleterious substance in water frequented by fish or a serious and imminent danger of such an occurrence, Subsection 38(5) of the Fisheries Act. Please see: https://www.ec.gc.ca/ee-ue/default.asp?lang=En&n=EED2E58C-1
First Aid Training	Emergency First Aid, Wilderness First Aid, Cardiopulmonary Resuscitation (CPR) Level C training provided to all individuals working on the project site.
HAZWOPER Training	Occupational Safety and Health Administration (OSHA, USA) Hazardous Waste Operations and Emergency Response (HAZWOPER) training provided to all individuals working on the project site.
Inspections/Audits (external)	An environmental, health and safety site inspection or audit performed by a third party expert (e.g. a representative of an authority that has jurisdiction over the site or a consultant hired by AANDC).
Inspections/Audits (internal)	An environmental, health and safety site inspection or audit performed by AANDC staff.
Major Incident	An incident resulting from activities performed at the project site that results in a severe and irreversible disability, impairment, injury, illness or fatality to an individual or individuals.
Media Events	Any radio, television, social media, Internet or newspaper reports and/or media tours that cover the project.
Minor Incident	An incident resulting from activities performed at the project site that results in injury or illness that inconveniences an individual or individuals.
Moderate Incident	An incident resulting from activities performed at the project site that results in a reversible disability, impairment, injury or illness that temporarily alters the lives of an individual or individuals.
Near Misses	An unplanned incident resulting from activities performed at the project site, which did not result in any disability, impairment, injury, illness or fatality, but had the potential to do so.
Northern Employee	A person with permanent residence of greater than six months in any of the three territories. Does not include employees of AANDC or PWGSC.
Northern Supplier	A company with a head office, or other regional office, in any of the three territories.
Quarter	Q1 = April to June (inclusive), Q2 = July to September (inclusive), Q3 = October to December (inclusive), Q4 = January to March (inclusive)
WHMIS Training	Workplace Hazardous Materials Information System (WHMIS) training provided to all individuals working on the project site.
Consultation	Formal Consultations that fulfill the Duty to Consult requirements related to the potential or established Aboriginal or Treaty rights recognized and affirmed in section 35 of the Constitution Act, 1982. The specific requirements for formal Consultation are outlined in the Government of Canada document: Aboriginal Consultation and Accommodation Updated Guidelines for Federal Officials to Fulfill the Duty to Consult (March 2011). Please see: http://www.aadnc-aandc.gc.ca/eng/1100100014664/1100100014675

Indigenous and Northern Affairs Canada

QUANTITY QUARRIED FROM EACH AREA									
Permit No.	Borrow Area #	Quantity Quarried (cubic metres)							
		Authorized	June	July	August	September	October	Total	Remaining
	TOTALS								

QUANTITY REMOVED FROM EACH AREA									
Permit No.	Borrow Area #	Quantity Quarried (cubic metres)							
		Authorized	June	July	August	September	October	Total	Remaining
	TOTALS								

Indigenous and Northern Affairs Canada

WATER SOURCES UTILIZED						
	GPS Coordinates					
	Latitude			Longitude		
	Deg	Min	Sec	Deg	Min	Sec

WASTEWATER DISCHARGE AREAS						
(Effluent meeting Discharge Criteria)						
	GPS Coordinates					
	Latitude			Longitude		
	Deg	Min	Sec	Deg	Min	Sec

WASTE DISPOSAL AREAS						
	GPS Coordinates					
	Latitude			Longitude		
	Deg	Min	Sec	Deg	Min	Sec

UNAUTHORIZED DISCHARGES (Wastewater, fuel, oil, etc.)								
Date	Description	Summary of Follow-up Actions Taken	GPS Coordinates					
			Latitude			Longitude		
			Deg	Min	Sec	Deg	Min	Sec

Indigenous and Northern Affairs Canada

DAILY WATER USAGE LOG			
WATER SOURCE:			
Month	Day	Volume (L)	Use
	1		
	2		
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		
	21		
	22		
	23		
	24		
	25		
	26		
	27		
	28		
	29		
	30		
	31		
TOTAL (L)			
AVERAGE PER DAY			

Indigenous and Northern Affairs Canada

WILDLIFE ENCOUNTERS

Date	Time	Description	Action / Mitigation Measures Taken

Indigenous and Northern Affairs Canada

TAKEOFFS AND LANDINGS AT AIRSTRIP

Date	Airline	Initial Takeoff	Intermediate Destinations	Final Landing	# of Takeoffs & Landings at Site
				Total Takeoffs and Landings at Site	

Indigenous and Northern Affairs Canada

HELICOPTER TOUCHDOWNS

Date	Airline	Initial Takeoff	Intermediate Touchdown(s)	Final Landing	Reason for Touchdown(s)	# of Touchdowns
Total Touchdowns at Site						

Indigenous and Northern Affairs Canada

HAZARDOUS WASTE DISPOSAL TRACKING							
Date Submitted:							
Number	Reception Date	Manifest Number	Container Number	Description	Designated Disposal Facility		
					Name	Owner / Operator	Address

APPENDIX F
GEOTECHNICAL INFORMATION

Environment

Public Works and Government Services Canada

CAM-C, Matheson Point, Nunavut Phase III Environmental Site Assessment Report - Final

Prepared by:

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17007 – 107th Avenue **780 486 7000 tel**
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www.aecom.com

Project Number:

60299674 (502)

Date:

February 21, 2014

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Appendices

3.7 Granular Borrow Source Assessment

Granular fill is required for construction of new landfills and landfarms, remediation/re-grading of existing dumps and debris areas, as well as for general backfill for excavation areas. To minimize environmental impacts associated with clean-up construction; existing disturbed areas should be utilized before exploiting undeveloped areas where possible.

3.7.1 Methodology

Air photographs of the site were reviewed prior to the field investigation. The air photos were assessed to identify potential borrow areas and potential landfill and landfarm locations. Three sets of air photos were assessed, with the following scales:

- 1:70,000 Year: 1982
- 1:60,000 Year: 1958
- 1:5,000 Year: 1964

The locations identified as potential borrow areas and landfill and landfarm sites were assessed during the investigation. Locations of the potential borrow areas and proposed landfill/landfarm locations are shown on Figure 2.

The site investigation consisted of excavating shallow testpits using hand tools (pickaxe and shovel) and/or a small backhoe attachment on an ATV (quadavator) to obtain representative samples at each potential borrow location. Testpit locations are shown on Figure 2. Soil samples were collected from each testpit for laboratory index testing. The testpit depths varied from approximately 0.5 m to 1.5 m, and were typically terminated on frozen ground, boulder, or due to seepage and sloughing. The testpits were backfilled with excavated soils after completion.

Photographs were taken of each excavated testpit and other features of note. Selected site photographs are provided in Appendix C.

Laboratory testing was conducted on selected soil samples to determine their moisture and gradation characteristics. The laboratory testing generally included determination of moisture contents, particle size distribution (sieve and hydrometer analysis). The laboratory test results are presented in Appendix D and are also shown on testpit logs in Appendix F.

3.7.2 Granular Material Types and Specifications

Various granular fill material types are required for construction of landfills and landfarms, remediation of existing landfills, backfill of excavated areas, and repair of roads and airstrip. Specifications of six granular materials (Type 1 to 6 Granular Fills) required for different applications were developed by EBA Engineering Consultants Ltd. as part of the original DEW Line Clean Up Program for Department of National Defence and Defence Construction Canada. The granular fill types were also adopted by AANDC for their abandoned military sites. The granular fill types can be used for the current project and are described below.

3.7.2.1 Type 1 Granular Fill

Type 1 Granular Fill typically consists of coarse gravel or cobble size material used for erosion protection on finished slopes or within drainage courses. The gradation requirements of Type 1 Granular Fill may vary significantly depending on the material availability and specific application. Type 1 Granular Fill can be obtained from screening of oversize material from other granular materials on site. If Type 1 granular material is in limited quantity, finished slopes may be flattened by using Type 2 or 2A granular material without armouring. The grain size distribution shown in Table 3-6 is recommended:

Table 3-6: Grain Size Distribution Limits – Type 1 Granular Fill

Particle Size (mm)	% Passing
500	100
200	40-100
100	20-70
50	0-50
10	0-10

Boulders and cobbles were noted throughout the site and at many locations, it is possible to screen or selectively mine boulders and cobbles to produce Type 1 material.

3.7.2.2 Type 2 Granular Fill

Type 2 Granular Fill is well graded sand and gravel used for construction of berms and cover. Type 2 Granular Fill should have a grain size distribution within the limits presented on Table 3-7.

Table 3-7: Grain Size Distribution Limits - Type 2 Granular Fill

Particle Size (mm)	% Passing
150	100
50	60-100
5	25-60
0.425	8-37
0.08	2-25

Source material for Type 2 Granular Fill is available from Borrow Areas 1, 2, 3, 4, 5, 8, 9, 11, 12, 13, 14, 15, 17, 19, and 20.

3.7.2.3 Type 2A Granular Fill

Type 2A Granular Fill would be suitable for armouring landfills if sufficient quantities of Type 1 material are not available. Typically, the Type 2A would be placed about 0.5 m thick with the requirement to use this material dependent upon the finished slopes. Based on the material available on site, the grain size distribution shown in Table 3-8 is recommended for Type 2A granular fill:

Table 3-8: Grain Size Distribution Limits - Type 2A Granular Fill

Particle Size (mm)	% Passing
150	100
50	40-100
25	20-65
5	0-25
0.425	0-15
0.08	0-8

3.7.2.4 Type 3 Granular Fill

Type 3 Granular Fill is a select material with a maximum particle size of 200 mm. It is generally obtained from excavations or other approved sources and is used for general site grading and backfilling excavations. At this site, Type 2 and Type 4 Granular Fills are acceptable alternatives for Type 3 Granular Fill.

3.7.2.5 Type 4 Granular Fill

Type 4 Granular Fill is a non-saline, well graded sand and silt with some gravel used for construction of containment berms and backfill of key trench excavations for a Tier II Soil Disposal Facility. If used as backfill for the key trench excavations, the water content of Type 4 Granular Fill must be adjusted to achieve a minimum degree of saturation of 90%. Type 4 Granular Fill may be wet and soft at the time of production from the borrow source and it may be necessary to air-dry it, if used for construction of berms, so that it can be placed and compacted to achieve density specification. The material should have a maximum salinity of 5 parts per thousand (5 ppt) and have a grain size distribution within the limits presented on Table 3-9.

Table 3-9: Grain Size Distribution Limits - Type 4 Granular Fill

Particle Size (mm)	% Passing
150	100
50	80-100
25	55-95
12.5	55-90
5	45-90
2	35-85
0.425	25-75
0.08	20-60

Source material for Type 4 Granular Fill was encountered in Borrow Area 16.

3.7.2.6 Type 5 Granular Fill

Type 5 Granular Fill is used as liner embedment material and should consist of rounded particles with a maximum size of 25 mm. This type of fill material should be free from angular particles, stones larger than 25 mm in diameter, waste or other deleterious materials. Type 5 Granular material should have a particle size distribution with the limits presented on Table 3-10.

Table 3-10: Grain Size Distribution Limits - Type 5 Granular Fill

Particle Size (mm)	% Passing
25	100
5	80-100
1	60-95
0.425	30-90
0.15	0-70
0.08	0-10

Source material for Type 5 Granular Fill was encountered in Borrow Areas 7, 10 and 18.

3.7.2.7 Type 6 Granular Fill

Type 6 Granular Fill is generally used as an intermediate cover within landfills and is obtained from excavations or other sources generally consisting of gravel or sand in an unfrozen state and free of deleterious material. The maximum particle size of the material should be less than 150 mm with less than 8% of the material, by weight, passing 0.08 mm sieve. Type 6 material was widely available on site.

3.7.3 Borrow Area Locations

A total of 20 borrow areas were identified and investigated during the site investigation. One testpit was excavated in each borrow area to characterize the subsurface materials and to determine groundwater and permafrost conditions. The borrow areas generally contained oversized material (boulders) that will have to be removed, however these oversized materials may be suitable as Type 1 material for erosion protection of landfill surfaces. The locations of the borrow areas and testpits are shown on Figure 2. Each of the borrow areas is described in the following sections.

3.7.3.1 Borrow Area 1 (BA-1)

Borrow Area 1 is located south of the Station Area on a disturbed area as shown on Figure 2. The area is south and downslope of Borrow Area 2. One testpit (TP-12) was excavated in this borrow area and the subsurface soils consisted primarily of coarse gravelly sand with occasional cobbles. The testpit was terminated at 1.1 mBGS, where permafrost was encountered. Photos G-1 and G-2 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-12. The sample had 29% gravel, 71% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine gravel, coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-1, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 12,600 square metres (m^2) in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 9,500 m^3.

3.7.3.2 Borrow Area 2 (BA-2)

Borrow Area 2 is located south of the Station Area on a disturbed area as shown on Figure 2. The area is north and upslope of Borrow Area 1. The area is easily accessible from the Station Area. One testpit (TP-24) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand with some gravel and occasional cobbles. The testpit was terminated at 1.2 mBGS where permafrost was encountered. Photos G-3 and G-4 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-24. The sample had 57% gravel, 41% sand, and 2% fines indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. The particle size results are presented on Figure 3-2, included in Appendix D. The moisture content of the soil sample was 1.0%.

The identified area is approximately 4,700 m^2 in size. Assuming an average thickness of 1 m of material, the volume of the material that can be obtained from this area is approximately 4,700 m^3.

3.7.3.3 Borrow Area 3 (BA-3)

Borrow Area 3 is located south of the Station Area on a disturbed area as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-7) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand with some gravel and occasional cobbles. The testpit was terminated at 1.3 mBGS where permafrost was encountered. Photos G-5 and G-6 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-7. The sample had 36% gravel, 63% sand, and 1% fines indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine gravel, coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-3, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 17,600 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 13,200 m^3.

3.7.3.4 Borrow Area 4 (BA-4)

Borrow Area 4 is located south of the Station Area at the end of the airstrip on a disturbed area as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-13) was excavated in this borrow area and the subsurface soils consisted primarily of well graded coarse sand and gravel. The testpit was terminated at 0.75 mBGS due to refusal in gravel. Photo G-7 and G-8 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-13; the sample had 55% gravel, 43% sand, and 2% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine sand may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-4, included in Appendix D. The moisture content of the soil sample was 1.7%.

The identified area is approximately 2,400 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 1,800 m^3.

3.7.3.5 Borrow Area 5 (BA-5)

Borrow Area 5 is located east of the Station Area, adjacent to the airstrip as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-17) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand and gravel with some cobbles. The testpit was terminated at 1.1 mBGS where permafrost was encountered. Photo G-9 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-17. The sample had 45% gravel, 52% sand, and 3% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine sand may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-5, included in Appendix D. The moisture content of the soil sample was 1.0%. Proctor results indicated that the optimum dry density of 2,065 kilograms per cubic metre (kg/m^3) is achieved with an optimum moisture content of 6.8%.

The identified area is approximately 6,100 m^2 in size. Assuming an average thickness of 1 m of material, the volume of the material that can be obtained from this area is approximately 6,100 m^3.

3.7.3.6 Borrow Area 6 (BA-6)

Borrow Area 6 is located east of the Station Area, adjacent to the airstrip as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-18) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand. The testpit was terminated at 1.2 mBGS where permafrost was encountered. Photos G-10 and G-11 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-18. The sample had 6% gravel, 93% sand, and 1% fines indicating that the borrow area contains material generally suitable as Type 5 Granular Fill. The particle size results are presented on Figure 3-6, included in Appendix D. The moisture content of the soil sample was 1.3%.

The identified area is approximately 4,000 m^2 in size. Assuming an average thickness of 1 m of material, the volume of the material that can be obtained from this area is approximately 4,000 m^3.

3.7.3.7 Borrow Area 7 (BA-7)

Borrow Area 7 is located northeast of the Station Area and is adjacent to the road as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-19) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand with boulders encountered. The testpit was terminated at 1.0 mBGS due to refusal on boulders. Photo G-12 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-19. The sample had 33% gravel, 67% sand, and no fines. The borrow area contains material that may be suitable as Type 5 Granular Fill if the oversized particles are removed. Selective mining or minor blending may be required to bring material within Type 5 gradation limits. The particle size results are presented on Figure 3-7, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 8,400 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 6,300 m^3.

3.7.3.8 Borrow Area 8 (BA-8)

Borrow Area 8 is located northeast of the Station Area and is adjacent to the road, as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-20) was excavated in this borrow area and the subsurface soils consisted primarily of gravel underlain by coarse sand. The testpit was terminated at 1.3 mBGS where permafrost was encountered. Photos G-13 and G-14 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-20. The sample had 57% gravel, 43% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or minor blending with fine sand may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-8, included in Appendix D. The moisture content of the soil sample was 1.6%.

The identified area is approximately 4,900 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 3,700 m^3.

3.7.3.9 Borrow Area 9 (BA-9)

Borrow Area 9 is located northeast of the Station Area and is adjacent to the airstrip as shown on Figure 2. The area is easily accessible from the Station Area. One testpit (TP-3) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand, with gravel content and size increasing with depth. The testpit

was terminated at 1.15 mBGS where permafrost was encountered. Photo G-15 (Appendix C) shows the borrow area.

A sieve analysis was conducted on a sample from TP-3. The sample had 33% gravel, 67% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fine gravel, coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-9, included in Appendix D. The moisture content of the soil sample was 1.2%.

The identified area is approximately 16,400 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 12,300 m^3.

3.7.3.10 Borrow Area 10 (BA-10)

Borrow Area 10 is located east of the airstrip as shown on Figure 2. The area is easily accessible from the airstrip. One testpit (TP-16) was excavated in this borrow area and the subsurface stratigraphy in the borrow area consisted of coarse sand with some gravel. Boulders were encountered at approximately 0.8 mBGS. The testpit was terminated at 1.3 mBGS where permafrost was encountered.

A sieve analysis was conducted on a sample from TP-16. The sample had 22% gravel, 76% sand, and 2% fines. The borrow area contains material which may be suitable as Type 5 Granular Fill, if oversized particles are removed. Some blending with fine to medium sand may be required to bring material within Type 5 gradation limits. The particle size results are presented on Figure 3-10, included in Appendix D. The moisture content of the soil sample was 0.8%.

The identified area is approximately 15,700 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 11,800 m^3.

3.7.3.11 Borrow Area 11 (BA-11)

Borrow Area 11 is located east of the airstrip as shown on Figure 2. The area is easily accessible from the airstrip. One testpit (TP-15) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand. Boulders were encountered at approximately 0.8 mBGS. The testpit was terminated at 1.5 mBGS due to excessive sloughing of the sand.

A sieve analysis was conducted on a sample from TP-15. The sample had 34% gravel, 66% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or minor blending with fine gravel, coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-11, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 34,000 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 25,500 m^3.

3.7.3.12 Borrow Area 12 (BA-12)

Borrow Area 12 is located at the south end of the airstrip as shown on Figure 2. The area is easily accessible from the road. One testpit (TP-14) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand underlain by sand and gravel. The testpit was terminated at 1.1 mBGS where permafrost was encountered. Photo G-16 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-14. The sample had 57% gravel, 43% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Some removal of oversize material and minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-12, included in Appendix D. The moisture content of the soil sample was 1.0%.

The identified area is approximately 3,900 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 2,900 m^3.

3.7.3.13 Borrow Area 13 (BA-13)

Borrow Area 13 is located northwest of the Station Area, adjacent to the road leading to the Freshwater Lake, as shown on Figure 2. The area is easily accessible from the road. One testpit (TP-23) was excavated in this borrow area and the subsurface soils consisted primarily of sand and gravel underlain by coarse sand. The testpit was terminated at 1.3 mBGS where permafrost was encountered. Photos G-17 and G-18 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-23. The sample had 43% gravel, 56% sand, and 1% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Some removal of oversize material and minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-13, included in Appendix D. The moisture content of the soil sample was 1.4%.

The identified area is approximately 1,900 m^2 in size. Assuming an average thickness of 1 m of material, the volume of the material that can be obtained from this area is approximately 1,900 m^3.

3.7.3.14 Borrow Area 14 (BA-14)

Borrow Area 14 is located northwest of the Station Area, adjacent to the road leading to the Freshwater Lake, as shown on Figure 2. The area is easily accessible from the road. One testpit (TP-22) was excavated in this borrow area and the subsurface soils consisted primarily of sand and gravel. The testpit was terminated at 1.1 mBGS where permafrost was encountered. Photos G-19 and G-20 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-22. The sample had 47% gravel, 51% sand, and 2% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or some minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-14, included in Appendix D. The moisture content of the soil sample was 1.3%.

The identified area is approximately 2,100 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 1,600 m^3.

3.7.3.15 Borrow Area 15 (BA-15)

Borrow Area 15 is located north of the Station Area, east of the airstrip as shown on Figure 2. The area is easily accessible from the airstrip. One testpit (TP-2) was excavated in this borrow area and the subsurface soils consisted primarily of coarse sand. The testpit was terminated at 1.1 mBGS where permafrost was encountered. Photos G-21 and G-22 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-2. The sample had 57% gravel, 41% sand, and 2% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or

minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-15, included in Appendix D. The moisture content of the soil sample was 1.8%.

The identified area is approximately 53,000 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 39,800 m^3.

3.7.3.16 Borrow Area 16 (BA-16)

Borrow Area 16 is located north of the Station Area, east of the airstrip as shown on Figure 2. The area is easily accessible from the airstrip. One testpit (TP-21) was excavated in this borrow area and the subsurface soils consisted primarily of sand and gravel underlain by silt. The testpit was terminated at 0.5 mBGS where permafrost was encountered in the stiff silt. Photos G-23, G-24 and G-25 (Appendix C) show the borrow area and testpit profile.

A sieve analysis was conducted on a sample from TP-21. The sample had 37% gravel, 50% sand, and 13% fines, indicating that the borrow area contains material generally suitable as Type 4 Granular Fill or blend material for Type 2 Granular Fill. The particle size results are presented on Figure 3-16, included in Appendix D. The moisture content of the soil sample was 2.2%. Proctor results indicated that the optimum dry density of 2,182 kg/m^3 is achieved with an optimum moisture content of 6.5%.

The identified area is approximately 4,800 m^2 in size. Assuming an average thickness of 0.5 m of material, the volume of the material that can be obtained from this area is approximately 2,400 m^3.

3.7.3.17 Borrow Area 17 (BA-17)

Borrow Area 17 is located southeast of the Station Area, near the shoreline of the ocean as shown on Figure 2. The area is easily accessible from the road leading to the ocean. One testpit (TP-10) was excavated in this borrow area and the subsurface soils consisted primarily of sand and gravel with occasional boulders. The testpit was terminated at 0.8 mBGS due to refusal on boulders. Photo G-26 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-10. The sample had 60% gravel, 40% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Selective mining or minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-17, included in Appendix D. The moisture content of the soil sample was 1.1%.

The identified area is approximately 14,700 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 11,000 m^3.

3.7.3.18 Borrow Area 18 (BA-18)

Borrow Area 18 is located southeast of the airstrip, below BA-12 as shown on Figure 2. The area is easily accessible from the road leading to the ocean. One testpit (TP-6) was excavated in this borrow area and the subsurface soils consisted primarily of sand. The testpit was terminated at 0.6 mBGS due to flowing water. Photo G-27 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-6. The sample had 7% gravel, 89% sand, and 4% fines, indicating that the borrow area contains material generally suitable as Type 5 Granular Fill if oversized particles are removed. The particle size results are presented on Figure 3-18, included in Appendix D. The moisture content of the soil sample was 3.8%. Proctor results indicated that the optimum dry density of 1,865 kg/m^3 is achieved with an optimum moisture content of 11.5%.

The identified area is approximately 18,000 m^2 in size. Assuming an average thickness of 0.5 m of material, the volume of the material that can be obtained from this area is approximately 9,000 m^3.

3.7.3.19 Borrow Area 19 (BA-19)

Borrow Area 19 is located southeast of the Station Area, near the shoreline of the ocean as shown on Figure 2. The area is easily accessible not easily accessible. One testpit (TP-9) was excavated in this borrow area and the subsurface soils consisted primarily of sand with trace to some gravel. The testpit was terminated at 1.05 mBGS where permafrost was encountered. Photo G-28 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-9. The sample had 38% gravel, 62% sand, and no fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Some minor blending with fine gravel coarse sand and fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-19, included in Appendix D. The moisture content of the soil sample was 1.4%.

The identified area is approximately 10,000 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 7,500 m^3.

3.7.3.20 Borrow Area 20 (BA-20)

Borrow Area 20 is located southeast of the Station Area, near the shoreline of the ocean as shown on Figure 2. The area is easily accessible not easily accessible. One testpit (TP-11) was excavated in this borrow area and the subsurface soils consisted primarily of gravel and sand with occasional boulders. The testpit was terminated at 0.9 mBGS due to refusal on boulders. Photo G-29 (Appendix C) shows the testpit profile.

A sieve analysis was conducted on a sample from TP-11. The sample had 62% gravel, 37% sand, and 1% fines, indicating that the borrow area contains material generally suitable as Type 2 Granular Fill. Some minor blending with fines may be required to bring material within Type 2 gradation limits. The particle size results are presented on Figure 3-20, included in Appendix D. The moisture content of the soil sample was 1.4%.

The identified area is approximately 4,400 m^2 in size. Assuming an average thickness of 0.75 m of material, the volume of the material that can be obtained from this area is approximately 3,300 m^3.

3.7.4 Summary of Borrow Materials

The soil types encountered in the borrow areas generally comprise source material for all of the granular materials identified. A summary of granular material estimated to be available from the potential borrow areas is presented in Table 3-11.

Table 3-11: Summary of Borrow Sources

Borrow Area	Available Granular Fill Types	Area (m^2)	Depth (m)	Volume (m^3)	Comments
BA-1	Types 2, 3 or 6	12,600	0.75	9,500	Disturbed
BA-2	Types 2, 3 or 6	4,700	1	4,700	Disturbed
BA-3	Types 2, 3 or 6	17,600	0.75	13,200	Disturbed
BA-4	Types 2, 3 or 6	2,400	0.75	1,800	Disturbed
BA-5	Types 2, 3 or 6	6,100	1	6,100	Excessive sloughing of sand
BA-6	Types 3 and 6	4,000	1	4,000	
BA-7	Type 5	8,400	0.75	6,300	Excessive sloughing of sand
BA-8	Types 2, 3 or 6	4,900	0.75	3,700	
BA-9	Types 2, 3 or 6	16,400	0.75	12,300	
BA-10	Type 5	15,700	0.75	11,800	
BA-11	Types 2, 3 or 6	34,000	0.75	35,500	Excessive sloughing of sand, Disturbed
BA-12	Types 2, 3 or 6	3,900	0.75	2,900	
BA-13	Types 2, 3 or 6	1,900	1	1,900	Undisturbed
BA-14	Types 2, 3 or 6	2,100	0.75	1,600	Undisturbed
BA-15	Types 2, 3 or 6	53,000	0.75	39,800	Disturbed
BA-16	Type 4	4,800	0.5	2,400	
BA-17	Types 2, 3 or 6	14,700	0.75	11,000	Disturbed
BA-18	Type 5	18,000	0.5	9,000	Sloughing and water ingress
BA-19	Types 2, 3 or 6	10,000	0.75	7,500	Disturbed
BA-20	Types 2, 3 or 6	4,400	0.75	3,300	Refusal due to boulders, Disturbed

3.8 Acid Rock Drainage (ARD) Potential

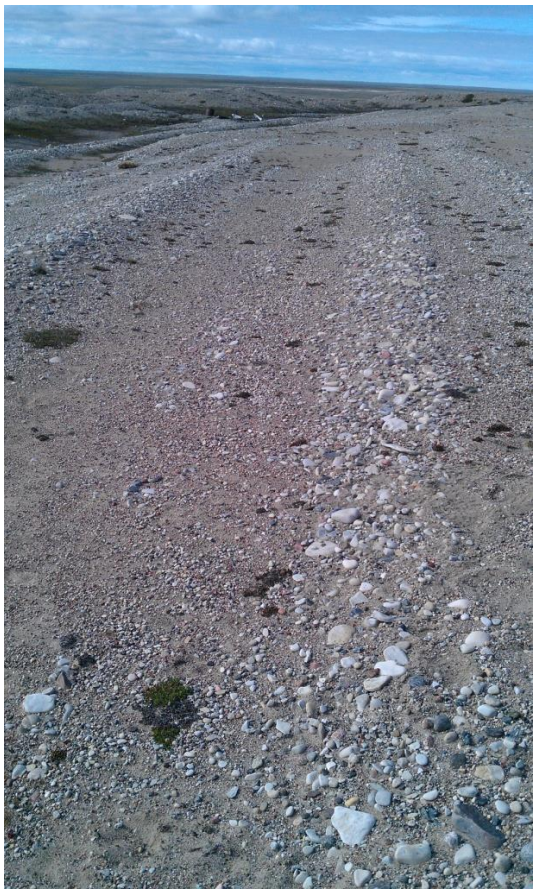
ARD potential is generally considered the likelihood of a material to release sulphide materials in the presence of oxygen and water. The surface or ground water exposed to these sulphide ions subsequently becomes acidified, which can result in environmental degradation through affecting the accepted pH range for plants and aquatic life or by mobilizing metals, which can adversely affect the environment through a variety of pathways (human, wildlife, plant, microorganism, and aquatic life).

The weathering of sulphide minerals from bedrock or soil is a naturally occurring process, but when previously undisturbed (unweathered) rock is brought to the surface by construction disturbances (building a roadway, collecting/placing borrow material, etc.), the ARD potential is increased beyond naturally occurring conditions.

Seasonal melts at CAM-C will result in the site being temporarily inundated with surface water and groundwater. Additionally, the permafrost fluctuations can release groundwater at different depths, which theoretically creates the conditions for increased ARD potential. However, the geology of the weathered material is the other consideration in this equation; if the material does not contain any/much sulphide mineral content, the potential for ARD will be low. The form of sulphide minerals most likely to be released (based on overall geological formation chemistry) also plays a role in whether acid-creating ions will be released or the sulphide minerals will weather in a more stable, less reactive (and less acid-generating) form.

Appendix C

Site Photographs



Photograph 1. Borrow Area 1 Surface ↑

Photograph 2. Borrow Area 1 Testpit Profile↑

Photograph 3. Borrow Area 2 Surface ↑

Photograph 4. Borrow Area 2 Testpit Profile↑

Photograph 5. Borrow Area 3 Surface ↑

Photograph 6. Borrow Area 3 Testpit Profile↑

Photograph 7. Borrow Area 4 Surface ↑

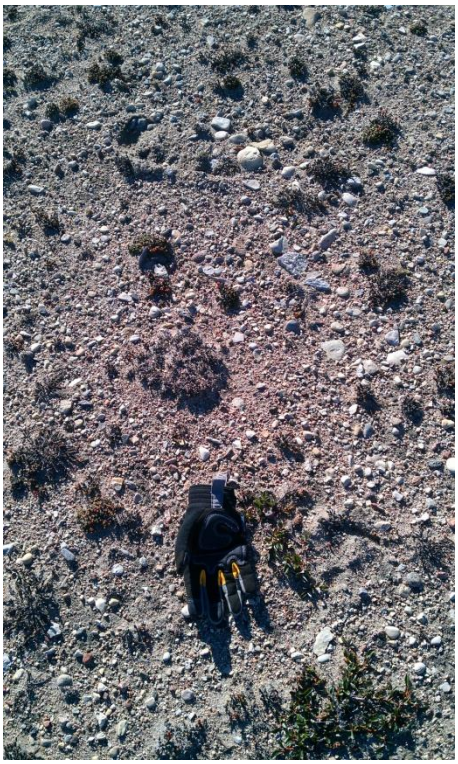
Photograph 8. Borrow Area 4 Testpit Profile↑

Photograph 9. Borrow Area 5 Testpit Profile ↑

Photograph 10. Borrow Area 6 Surface↑

Photograph 11. Borrow Area 6 Testpit Profile↑

Photograph 12. Borrow Area 7 Testpit Profile ↑



Photograph 13. Borrow Area 8 Surface↑

Photograph 14. Borrow Area 8 Testpit Profile↑

Photograph 15. Borrow Area 9 Surface↑

Photograph 16. Borrow Area 12 Testpit Profile↑

Photograph 17. Borrow Area 13 Surface↑

Photograph 18. Borrow Area 13 Testpit Profile↑

Photograph 19. Borrow Area 14 Surface↑

Photograph 20. Borrow Area 14 Testpit Profile↑

Photograph 21. Borrow Area 15 Surface↑

Photograph 22. Borrow Area 15 Testpit Profile↑

Photograph 23. Borrow Area 16 Surface↑

Photograph 24. Borrow Area 16 Surface With Gravel↑

Photograph 25. Borrow Area 16 Testpit Profile↑

Photograph 26. Borrow Area 17 Testpit Profile↑

Photograph 27. Borrow Area 18 Testpit Profile↑

Photograph 28. Borrow Area 19 Testpit Profile↑

Photograph 29. Borrow Area 20 Testpit Profile↑

GRAIN SIZE ANALYSIS

AECOM

CLIENT :	Public Works and Government Services Canada		
PROJECT :	CAM-C Matheson Point		
JOB No. :	60299674 - 9.6		
LOCATION :		SAMPLE:	BA-5
TESTHOLE:	TP-17	DEPTH :	
DATE :	Aug. 19, 2013	TECHNICIAN :	KL/GU

TOTAL DRY WEIGHT OF SAMPLE		SIEVE NO. (μm)	SIZE OF OPENING APPROX. INCHES	SIZE OF OPENING mm	WEIGHT RETAINED (g)	PERCENT RETAINED	PERCENT FINER THAN	REMARKS
Before Washing		150,000	6	150.0		0%	100%	
Wet + Tare		75,000	3	75.0		0%	100%	
Dry+Tare	880.6	50,000	2	50.0		0%	100%	
Tare	100.0	40,000	1 1/2	40.0		0%	100%	
Wt. Dry	780.6	25,000	1	25.0		0%	100%	
Moisture Content		20,000	3/4	20.0		0%	100%	
Wet + Tare		16,000	5/8	16.0	23.1	3%	97%	
Dry+Tare		12,500	1/2	12.5	62.7	8%	92%	
Tare		10,000	3/8	10.0	98.8	13%	87%	
MC (%)		5,000	0.185	5.0	246.0	32%	68.5%	
	Passing							
After Washing		2,000	0.0937	2.0	412.4	53%	47.2%	
Wt. Dry+Tare		1,250	0.0469	1.25	481.6	62%	38.3%	
Tare		630	0.0234	0.63	619.3	79%	20.7%	
Wt. Dry		315	0.0116	0.315	737.5	94%	5.5%	
Tare No.		160	0.0059	0.160	746.7	96%	4.3%	
		75	0.00295	0.075	748.2	96%	4.2%	
		PAN						

HYDROMETER DATA		READING	TIME (min)	DIAMETER (mm)	TEMP. (°C)	CORR. READING	PERCENT FINER THAN	REMARKS
Wt Dry+Tare	880.6	12	0.5	0.069	24	9	4.0%	
Wt Tare	100.0	11	1	0.049	24	8	3.5%	
Wt Dry	780.6	10	2	0.036	22	6	2.8%	
Sample Size :	100	9	5	0.023	22	5	2.3%	
Wt Retained 2 mm:	412.4	8	15	0.013	22	4	1.9%	
% Passing 2 mm:	47.2%	7	30	0.009	22	3	1.4%	
Specific Gravity :	2.70	6	60	0.007	22	2	0.9%	
Hydrometer No.:	43-9856	5	120	0.005	22	1	0.5%	
Solution (g/L) :	40	4	240	0.003	22	0	0.0%	
		4	1440	0.001	22	0	0.0%	
		4	2880	0.001	22	0	0.0%	

FORM: Public Work Hydro. TP17 BA 5 .xls
DATE: 8/27/2013

GRAIN SIZE ANALYSIS

AECOM

CLIENT :	Public Works and Government Services Canada		
PROJECT :	CAM-C Matheson Point		
JOB No. :	60299674 - 9.6		
LOCATION :		SAMPLE:	BA-5
TESTHOLE:	TP-17	DEPTH :	
DATE :	Aug. 19, 2013	TECHNICIAN :	KL/GU

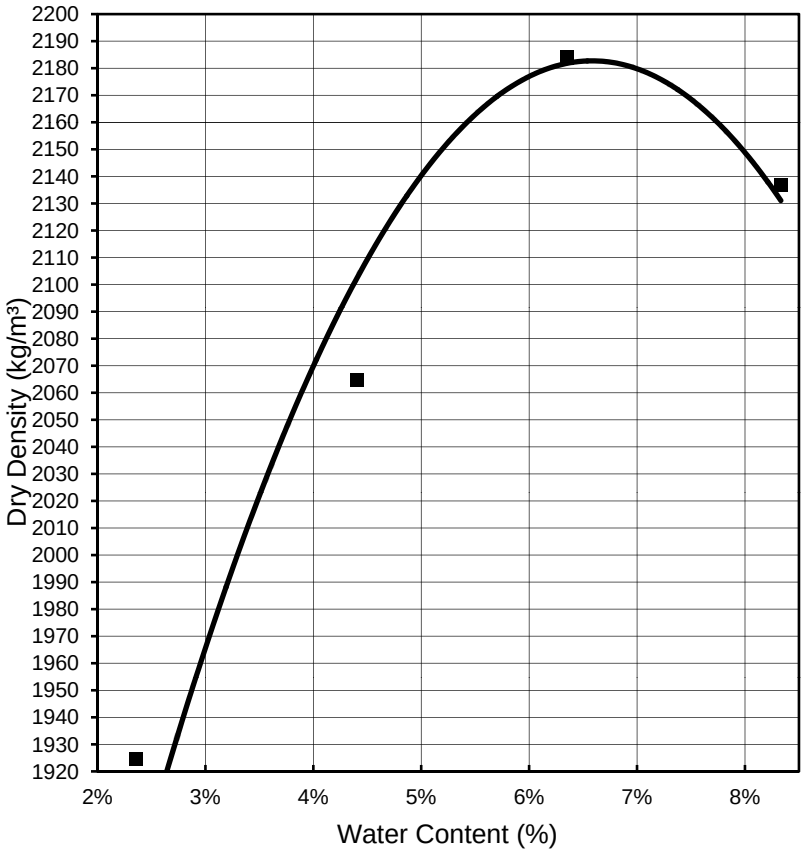
FORM: Public Work Hydro. TP17 BA 5 .xls
DATE: 8/27/2013

PROCTOR TEST

AECOM

CLIENT :	Public Works and Government Services Canada		
PROJECT :	CAM-C Matheson Point		
JOB No. :	60299674 - 9.6		
LOCATION :		SAMPLE:	BA-16
TESTHOLE :	TP-21	DEPTH :	
DATE :	26-Aug-13	TECHNICIAN :	GU

TRIAL No.	1	2	3	4		
DENSITY DETERMINATION						
Mould Number						
Volume of Mould (cm³)	940.0	940.0	940.0	940.0		
Wt. Sample (wet+mould)(g)	6222.7	6379.9	6372.5	6048.3		
Wt. Mould (g)	4196.6	4196.6	4196.6	4196.6		
Wet Density (kg/m³)	2155	2323	2315	1970		
Dry Density (kg/m³)	2065	2184	2137	1925		
WATER CONTENT DETERMINATION						
Tare Number						
Wt. Sample (wet+tare)(g)	599.8	635.5	777.7	795.7		
Wt. Sample (dry+tare)(g)	575.2	598.5	718.9	777.7		
Wt. Tare (g)	16.1	15.9	13.2	13.4		
Wt. Dry Soil (g)	559.1	582.6	705.7	764.3		
Wt. Water (g)	24.6	37.0	58.8	18.0		
Water Content (%)	4.4%	6.4%	8.3%	2.4%		



At Optimum:

Water Content	6.5%
Dry Density (kg/m³)	2182

Method of Compaction:	D-698
Dia. of Mould (cm):	10
No. of Layers:	3
No. Blows per Layer:	25
Ht. of Free Fall (cm):	30
Wt. of Tamper (g)	2500
Shape of Tamping Face:	FLAT

Description of Sample:
Gravel with some Sand

Rock Corrections:

% Rock	Density	Optimum
5%	2205	6.2%
10%	2228	5.9%
15%	2252	5.6%
20%	2276	5.2%

Remarks:

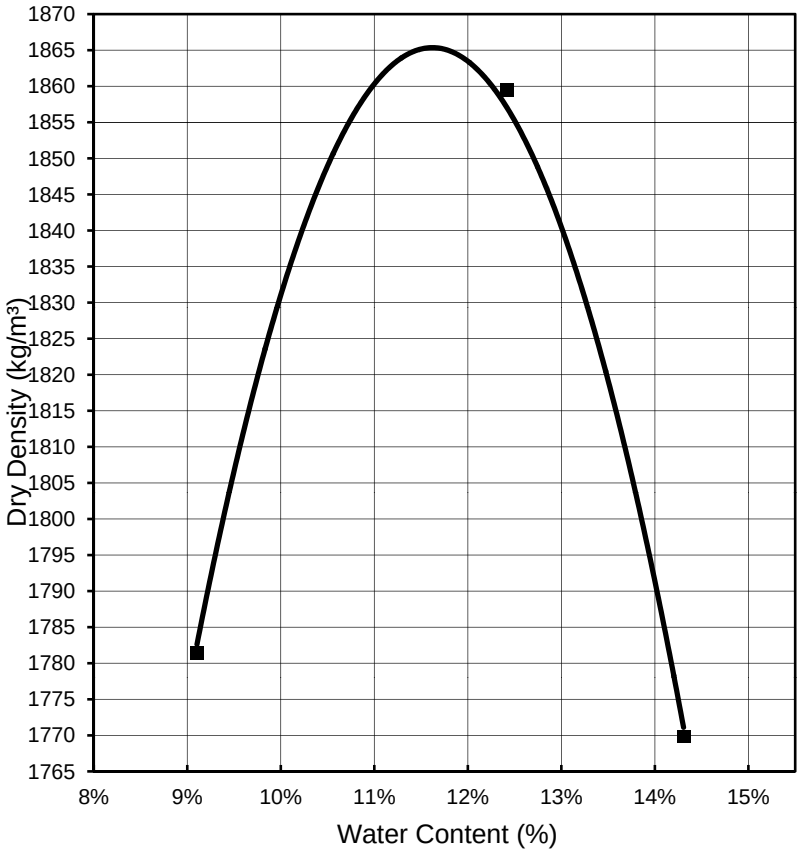
FORM: Public Woks Procto TP21 BA-16 .xls
DATE: 8/27/2013

PROCTOR TEST

AECOM

CLIENT :	Public Works and Government Services Canada		
PROJECT :	CAM-C Matheson Point		
JOB No. :	60299674 - 9.6		
LOCATION :		SAMPLE:	BA-18
TESTHOLE :	TP-6	DEPTH :	
DATE :	19-Aug-13	TECHNICIAN :	KL/GU

TRIAL No.	1	2	3	4		
DENSITY DETERMINATION						
Mould Number						
Volume of Mould (cm³)	940.0	940.0	940.0	940.0		
Wt. Sample (wet+mould)(g)	6130.6	6152.9	6015.3	6090.0		
Wt. Mould (g)	4196.7	4196.7	4196.7	4196.7		
Wet Density (kg/m³)	2057	2081	1935	2014		
Dry Density (kg/m³)	2057	1860	1781	1770		
WATER CONTENT DETERMINATION						
Tare Number						
Wt. Sample (wet+tare)(g)	394.3	573.3	424.8	460.9		
Wt. Sample (dry+tare)(g)	356.0	513.7	392.2	406.6		
Wt. Tare (g)	13.6	13.5	13.3	13.3		
Wt. Dry Soil (g)	342.4	500.2	378.9	393.3		
Wt. Water (g)	38.3	59.6	32.6	54.3		
Water Content (%)		11.9%	8.6%	13.8%		



At Optimum:

Water Content	11.5%
Dry Density (kg/m³)	1865

Method of Compaction:	D-698
Dia. of Mould (cm):	10
No. of Layers:	3
No. Blows per Layer:	25
Ht. of Free Fall (cm):	30
Wt. of Tamper (g)	2500
Shape of Tamping Face:	FLAT

Description of Sample:
Gravel With Some Sand

Rock Corrections:

% Rock	Density	Optimum

Remarks:

FORM: Public Woks Procto TP6 BA-18 .xls
DATE: 8/25/2013

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 1 (TYPE 2 MATERIAL)

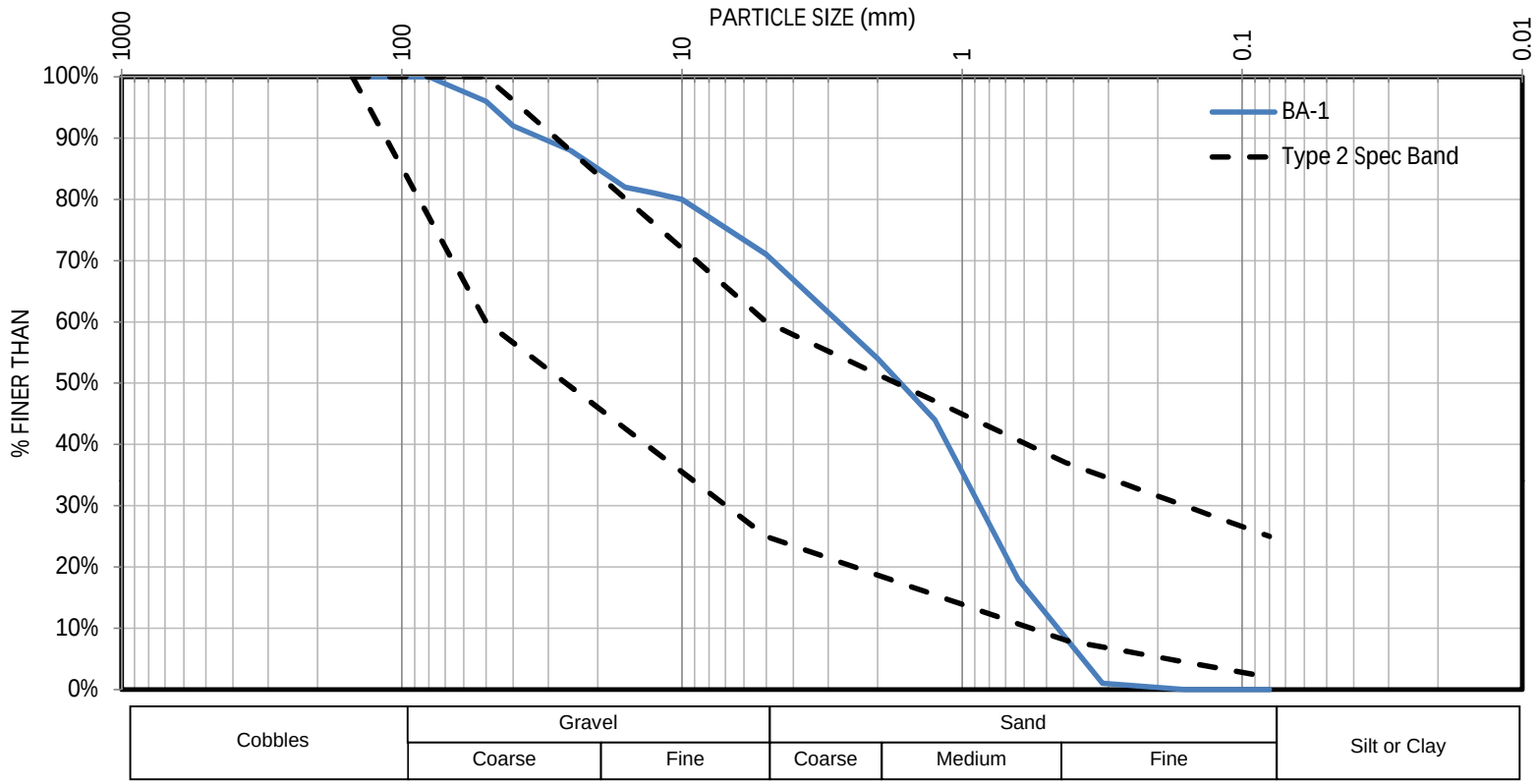


Figure 3-1

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 2 (TYPE 2 MATERIAL)

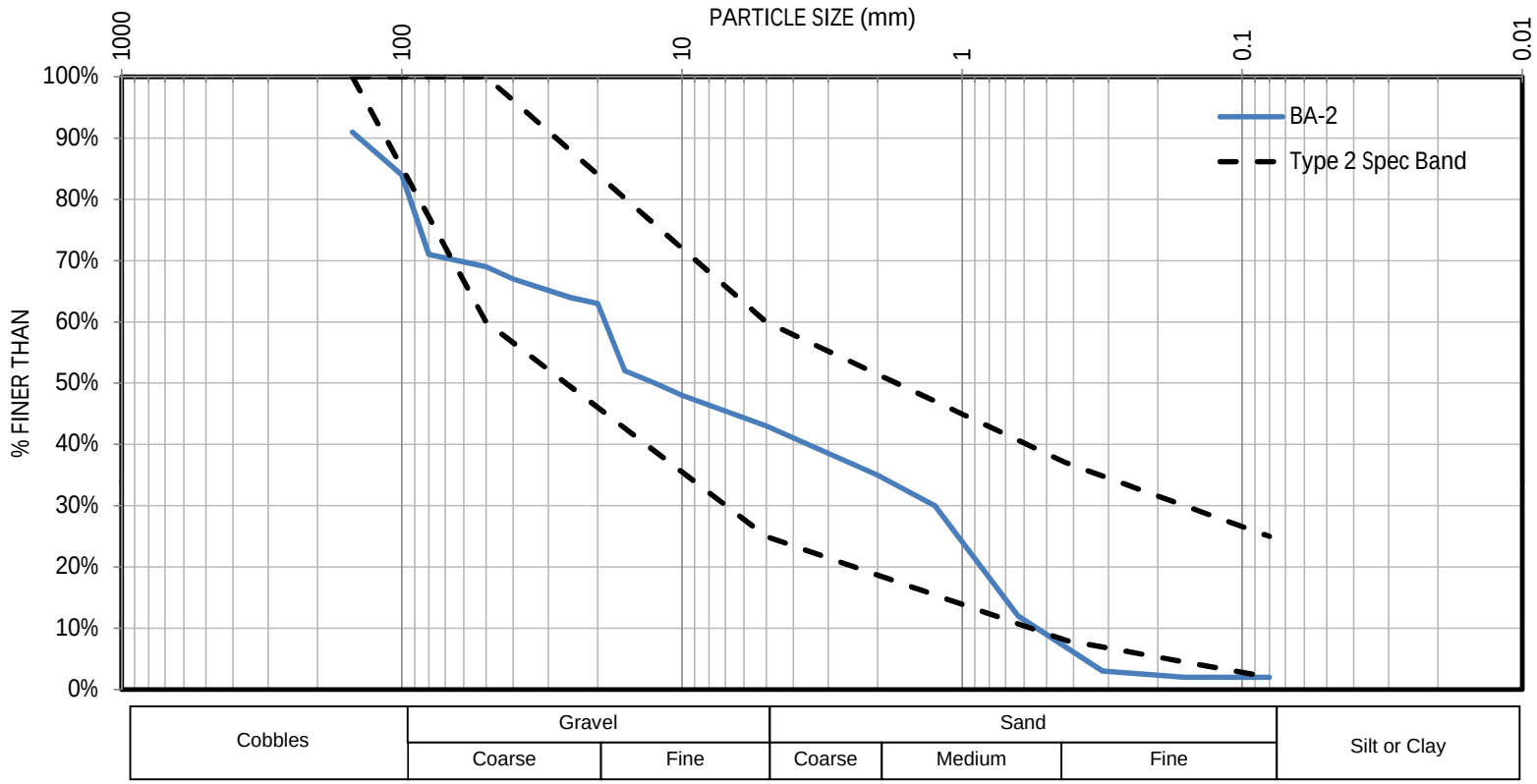


Figure 3-2

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 3 (TYPE 2 MATERIAL)

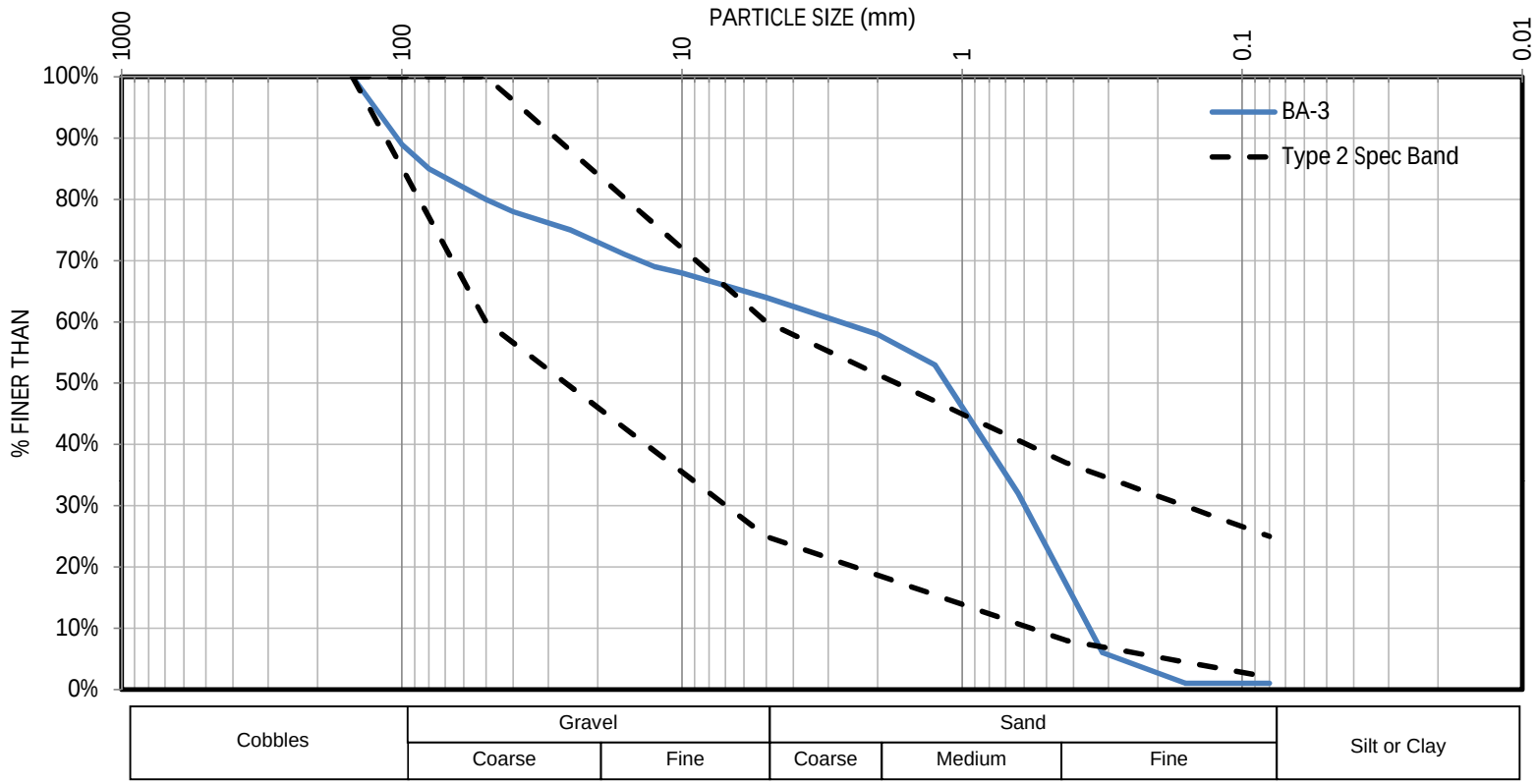


Figure 3-3

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 4 (TYPE 2 MATERIAL)

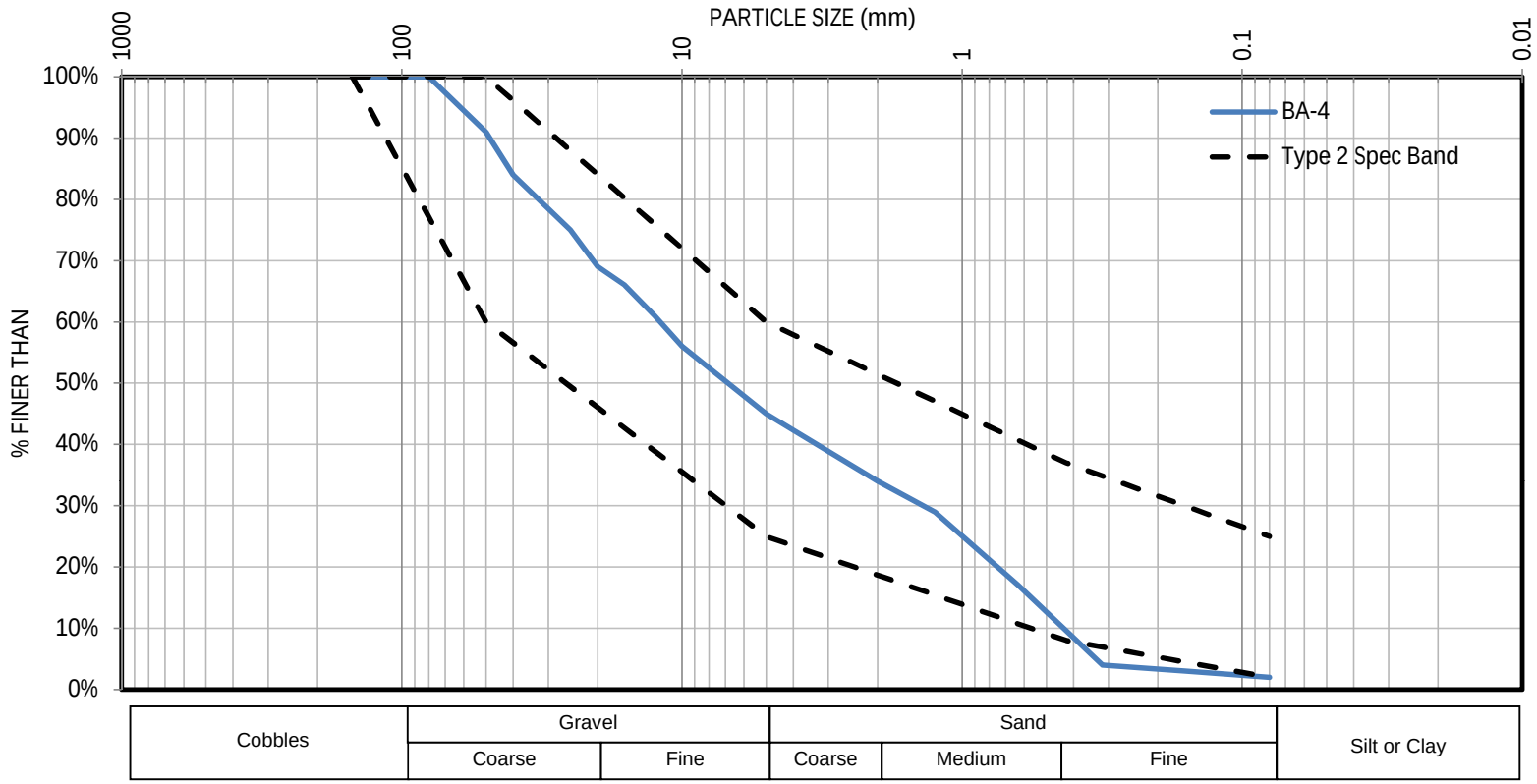


Figure 3-4

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 5 (TYPE 2 MATERIAL)

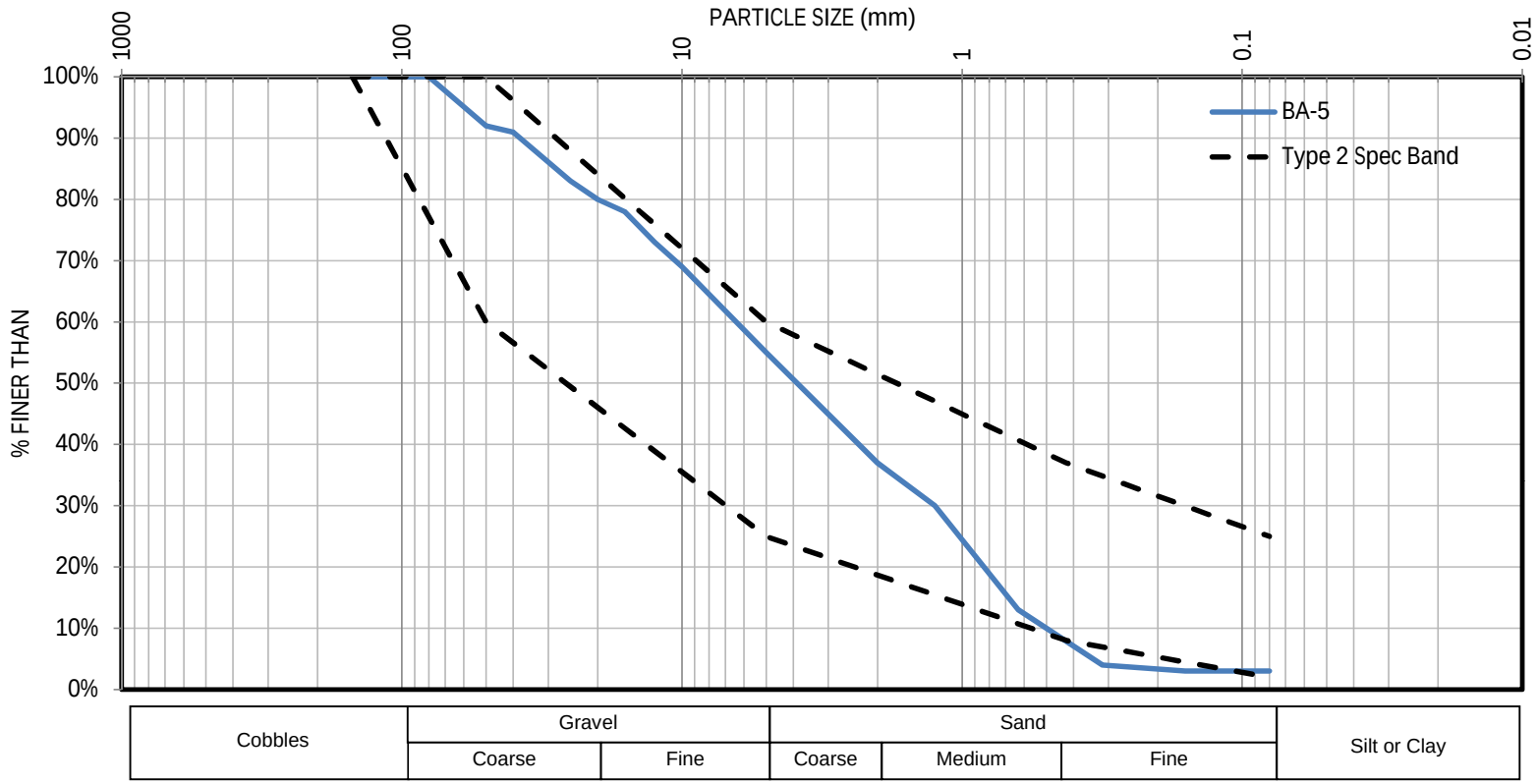


Figure 3-5

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 6 (TYPE 2 MATERIAL)

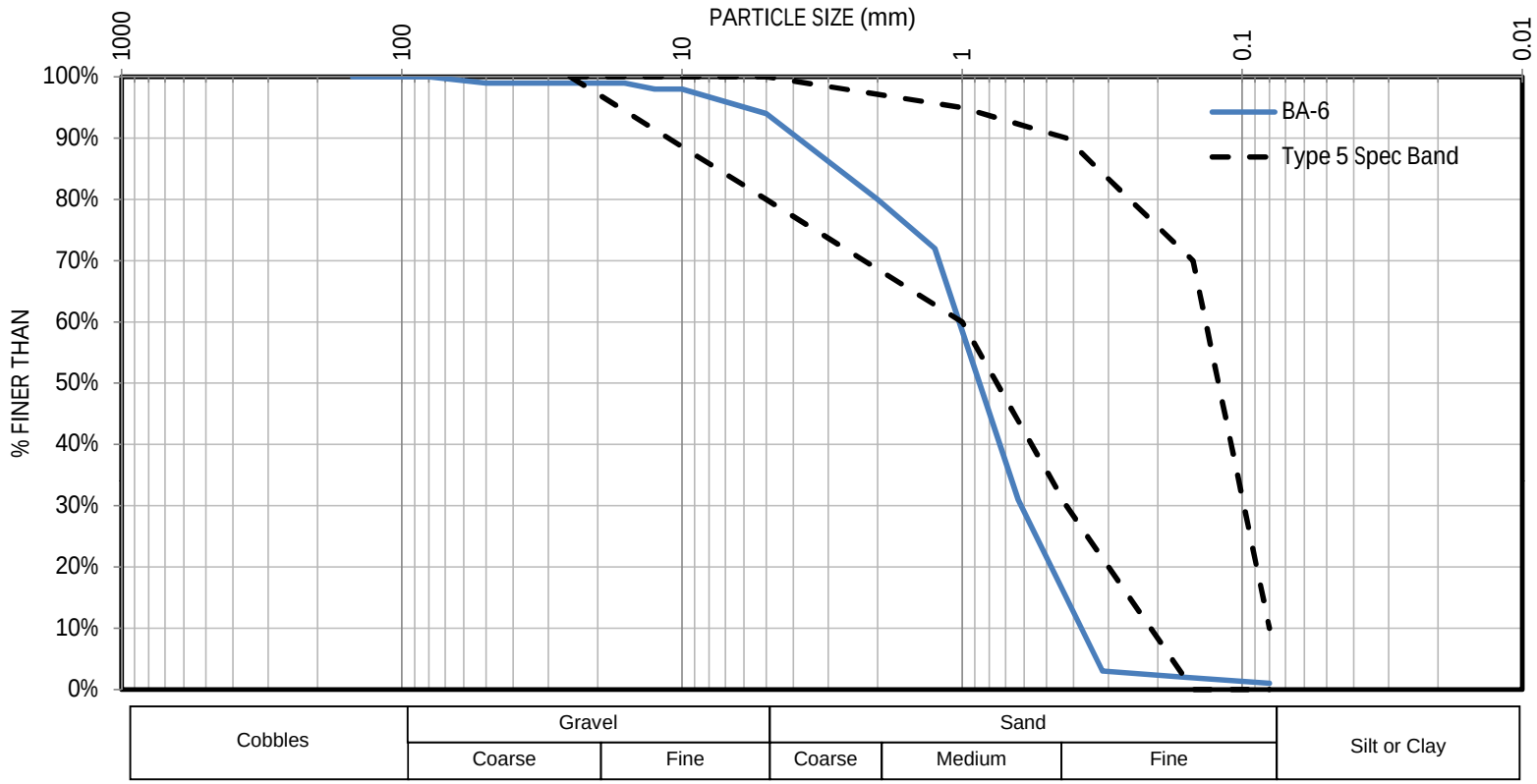


Figure 3-6

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 7 (TYPE 5 MATERIAL)

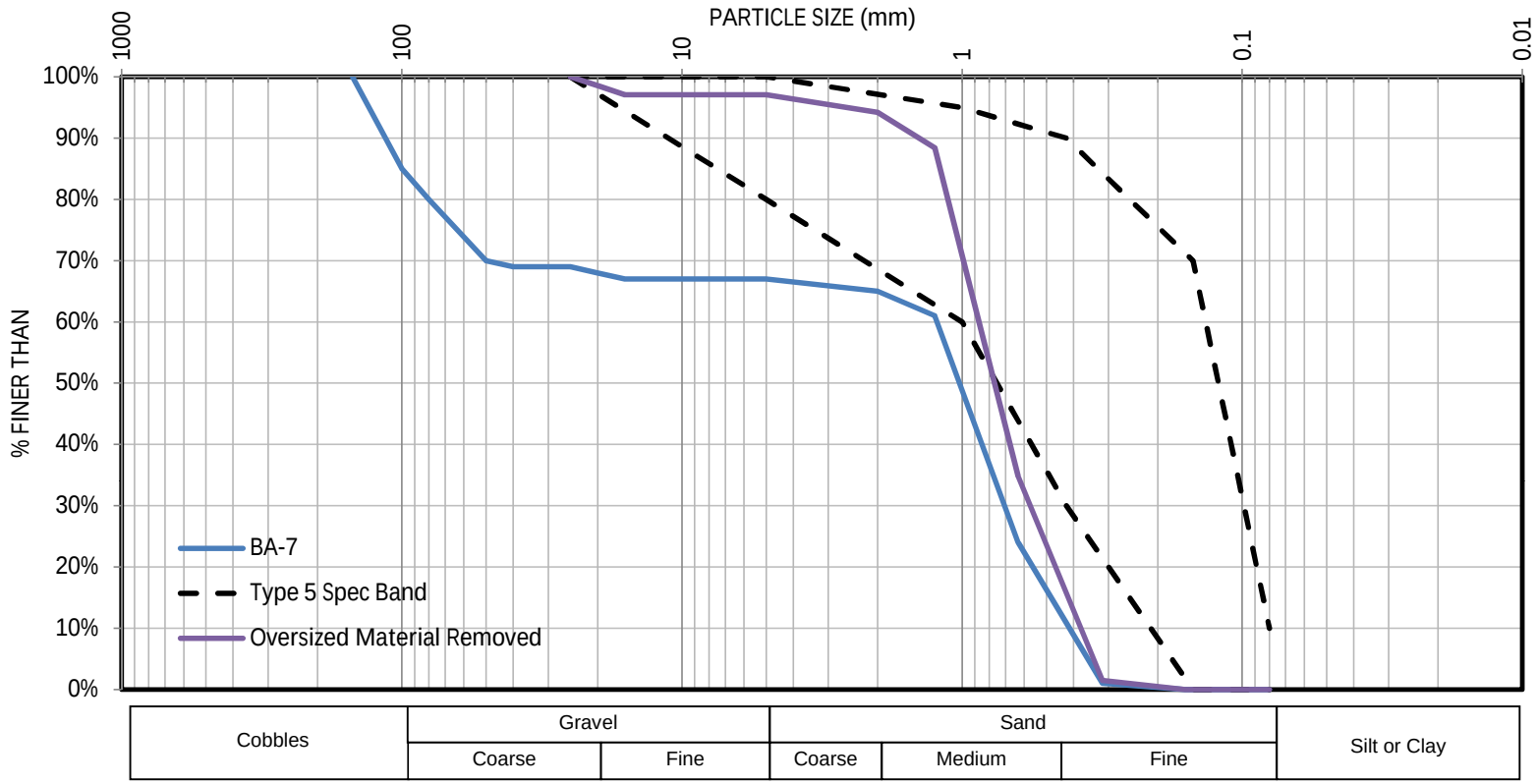


Figure 3-7

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 8 (TYPE 2 MATERIAL)

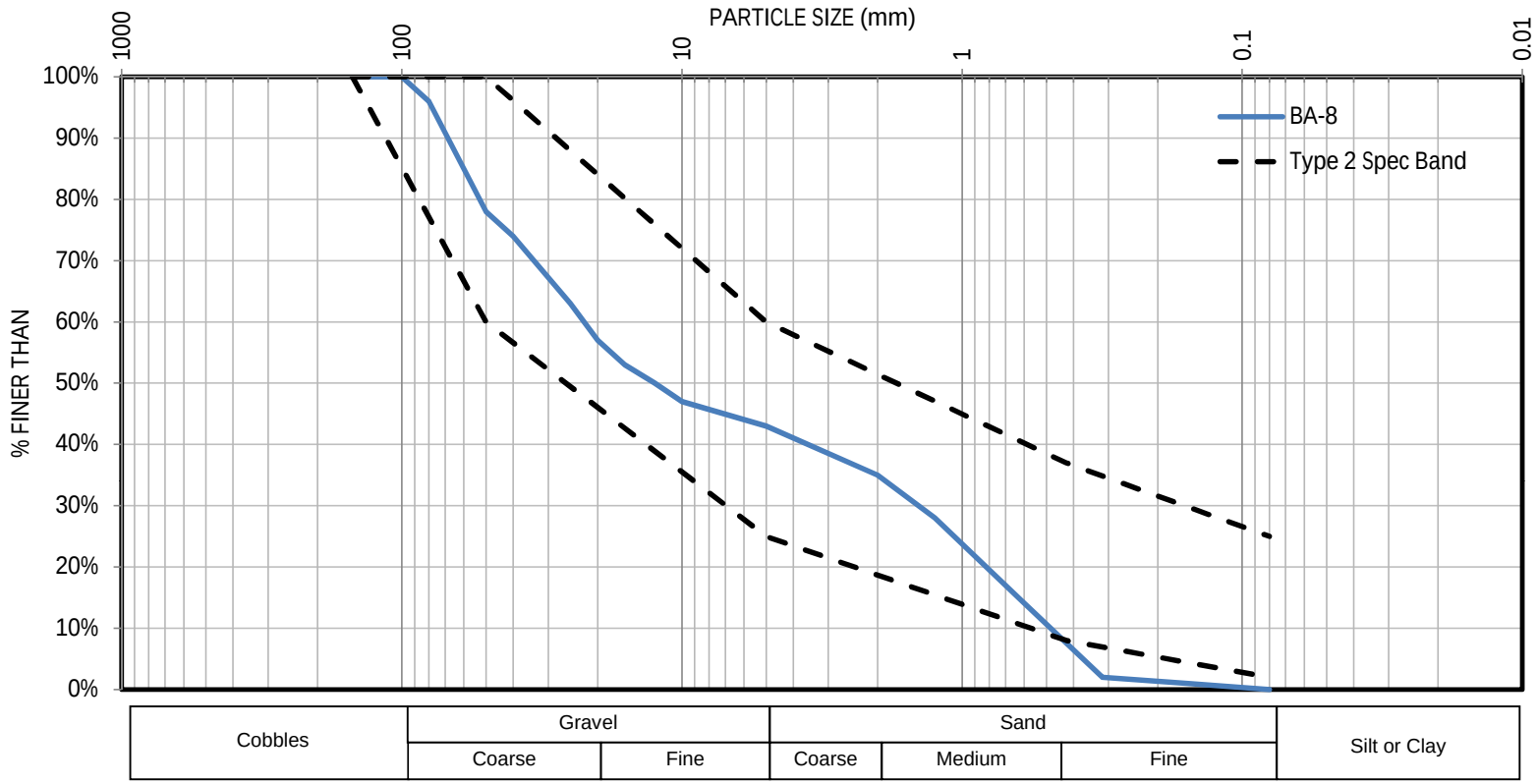


Figure 3-8

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 9 (TYPE 2 MATERIAL)

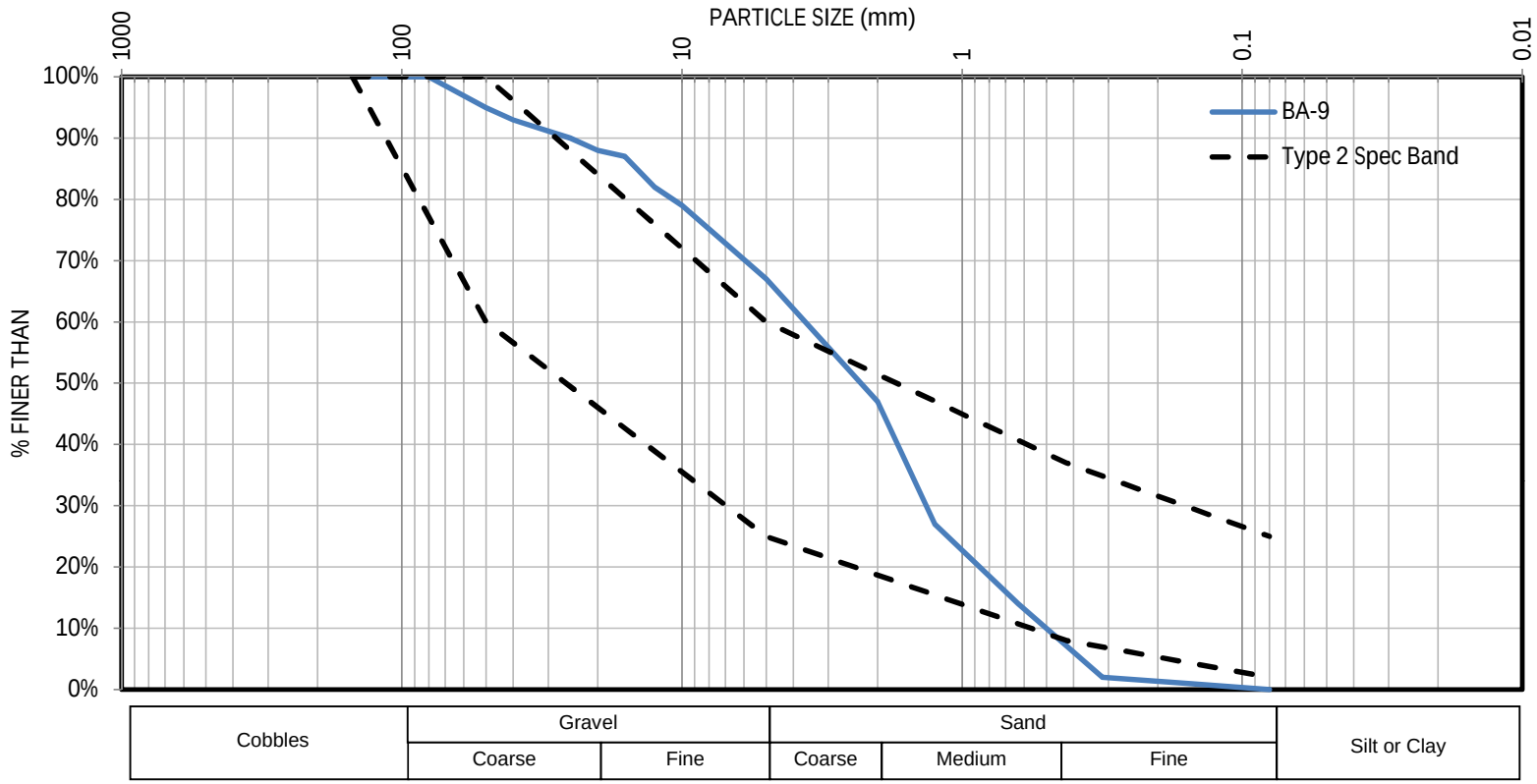


Figure 3-9

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 10 (TYPE 5 MATERIAL)

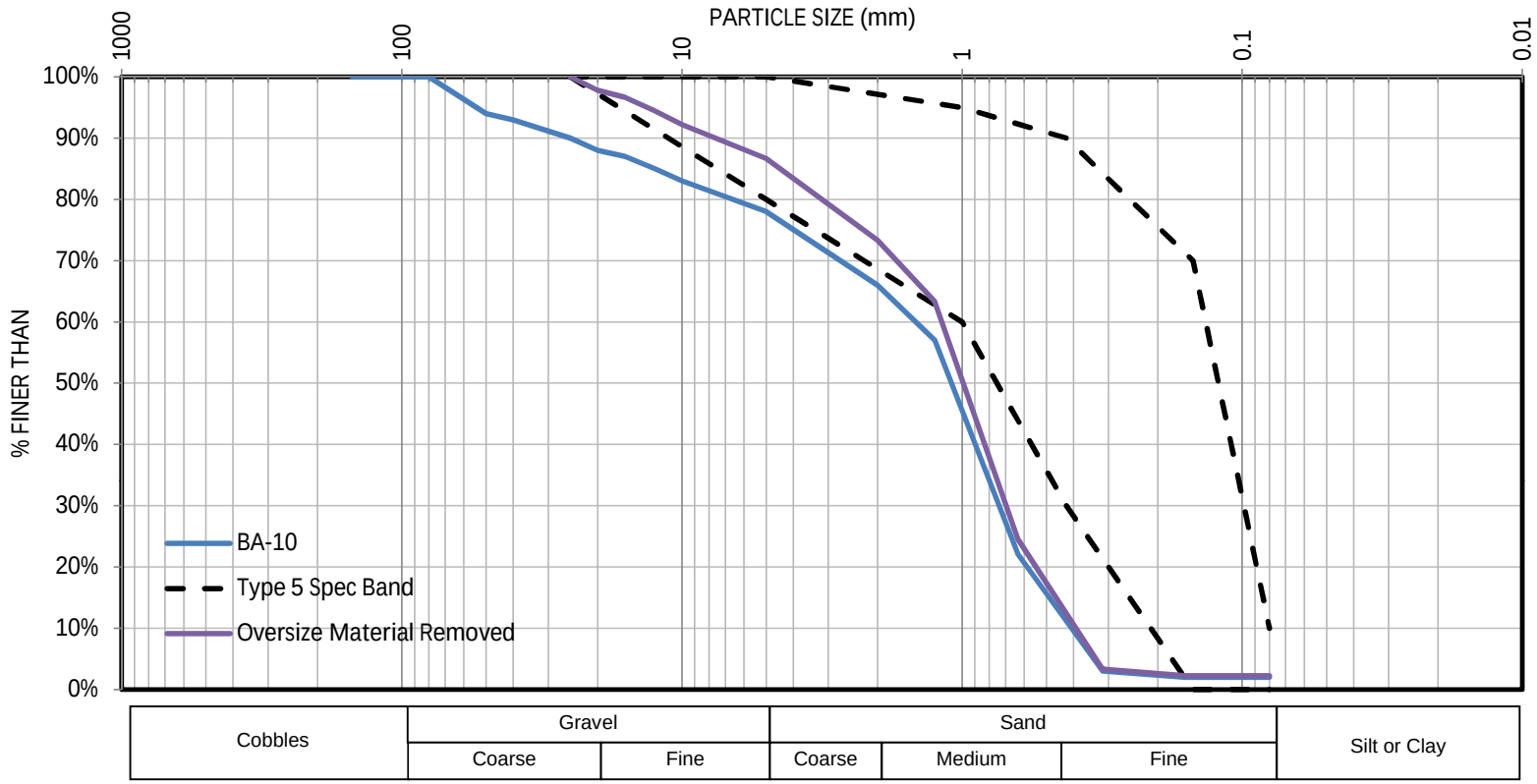


Figure 3-10

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 11 (TYPE 2 MATERIAL)

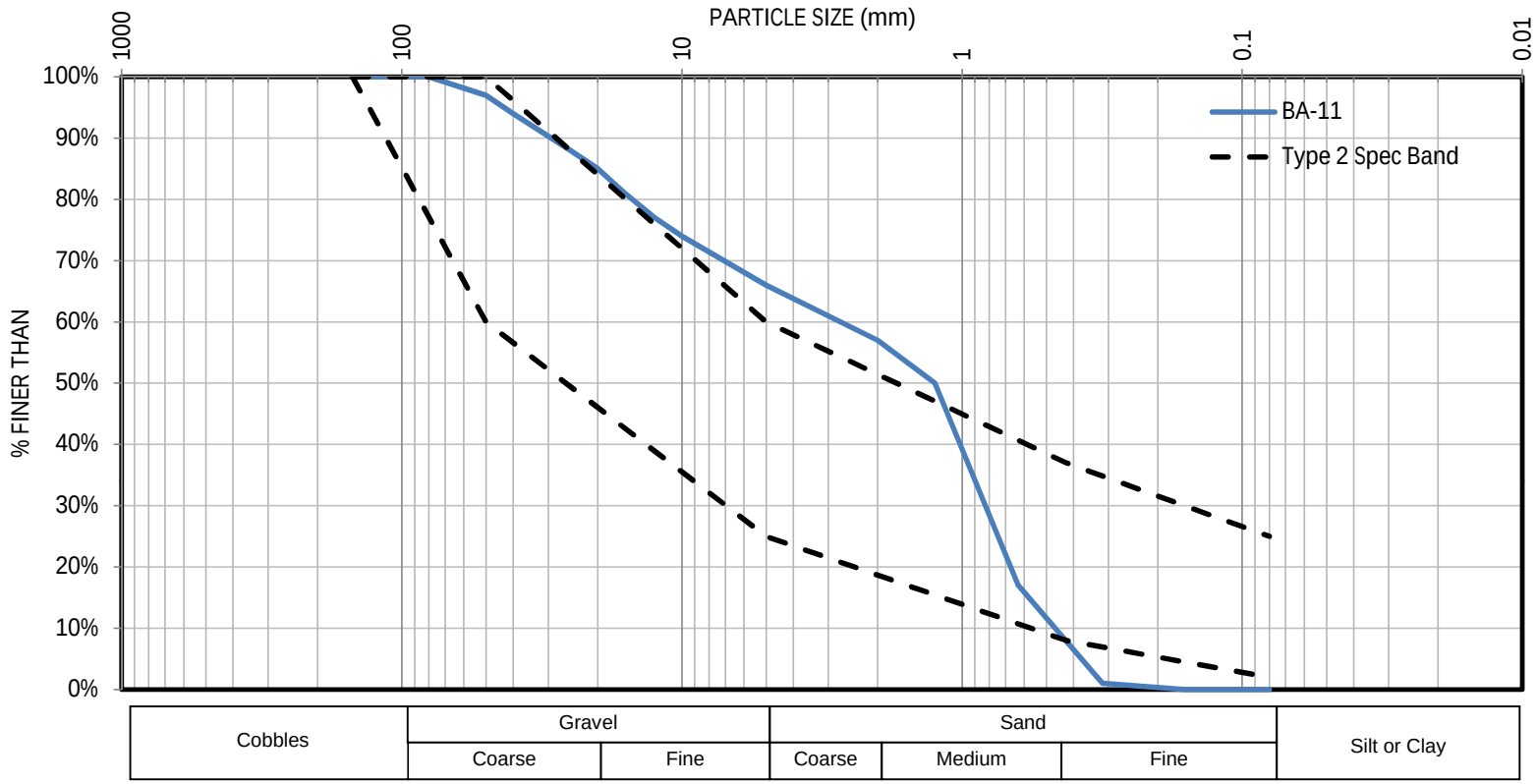


Figure 3-11

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 12 (TYPE 2 MATERIAL)

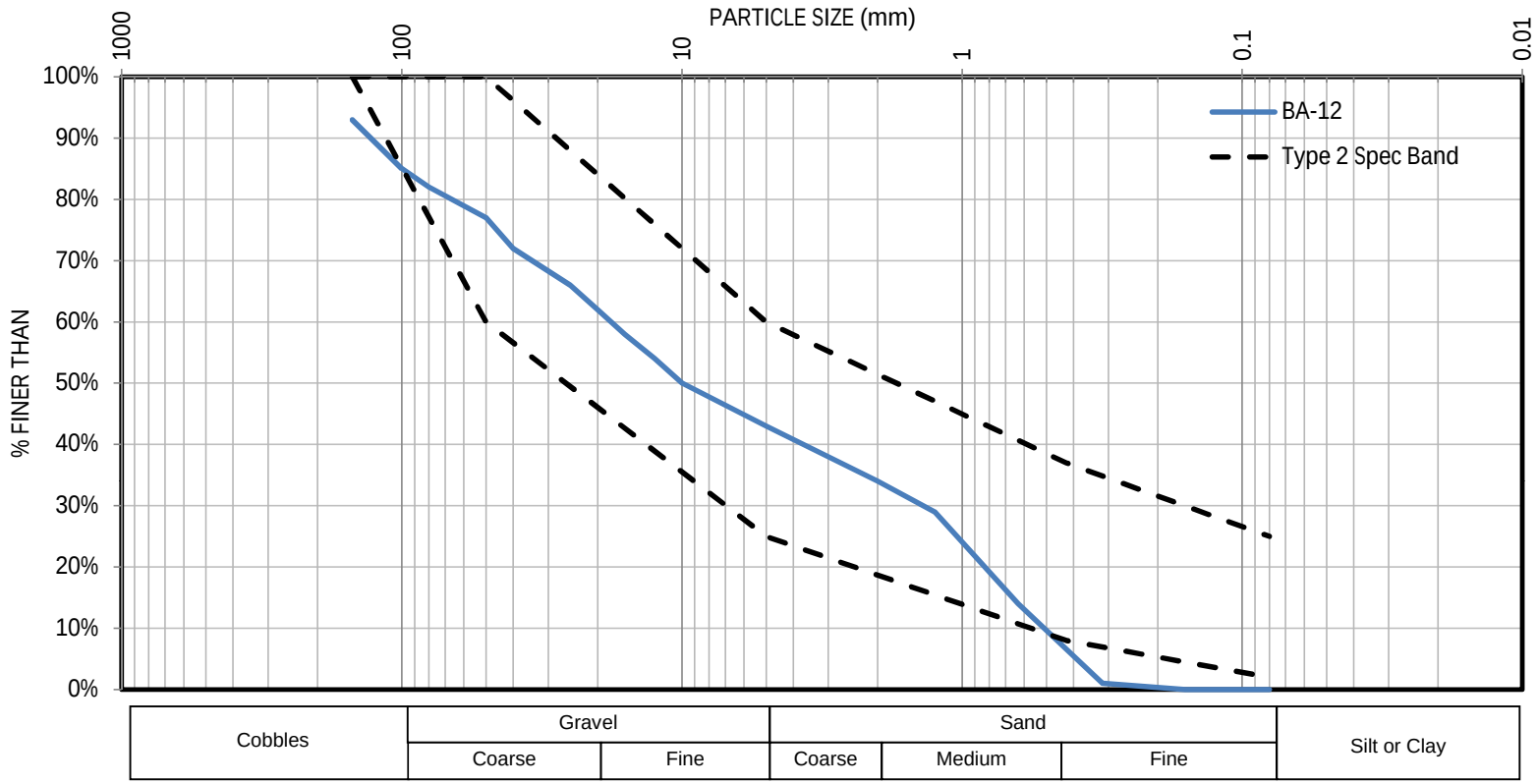


Figure 3-12

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 13 (TYPE 2 MATERIAL)

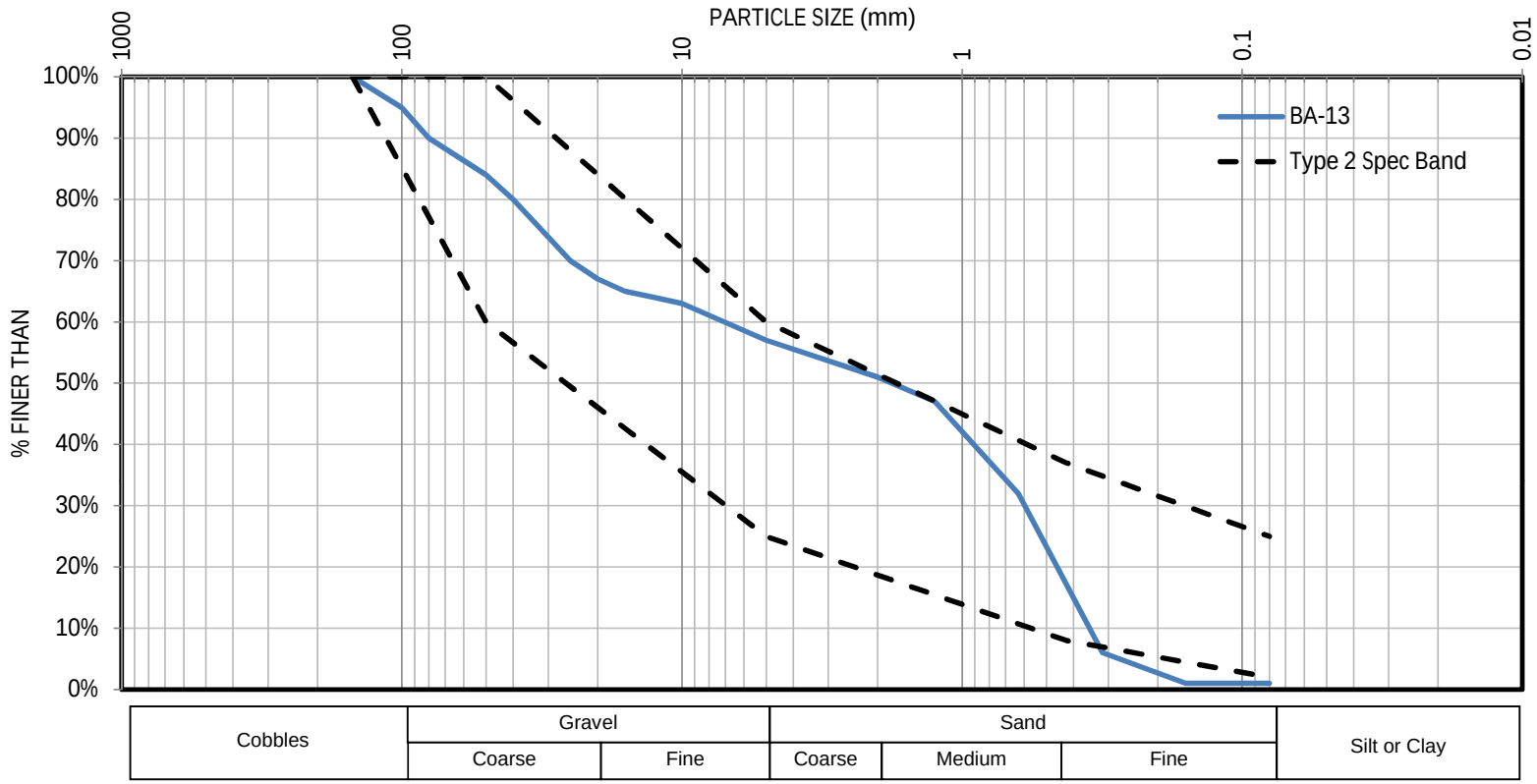


Figure 3-13

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 14 (TYPE 2 MATERIAL)

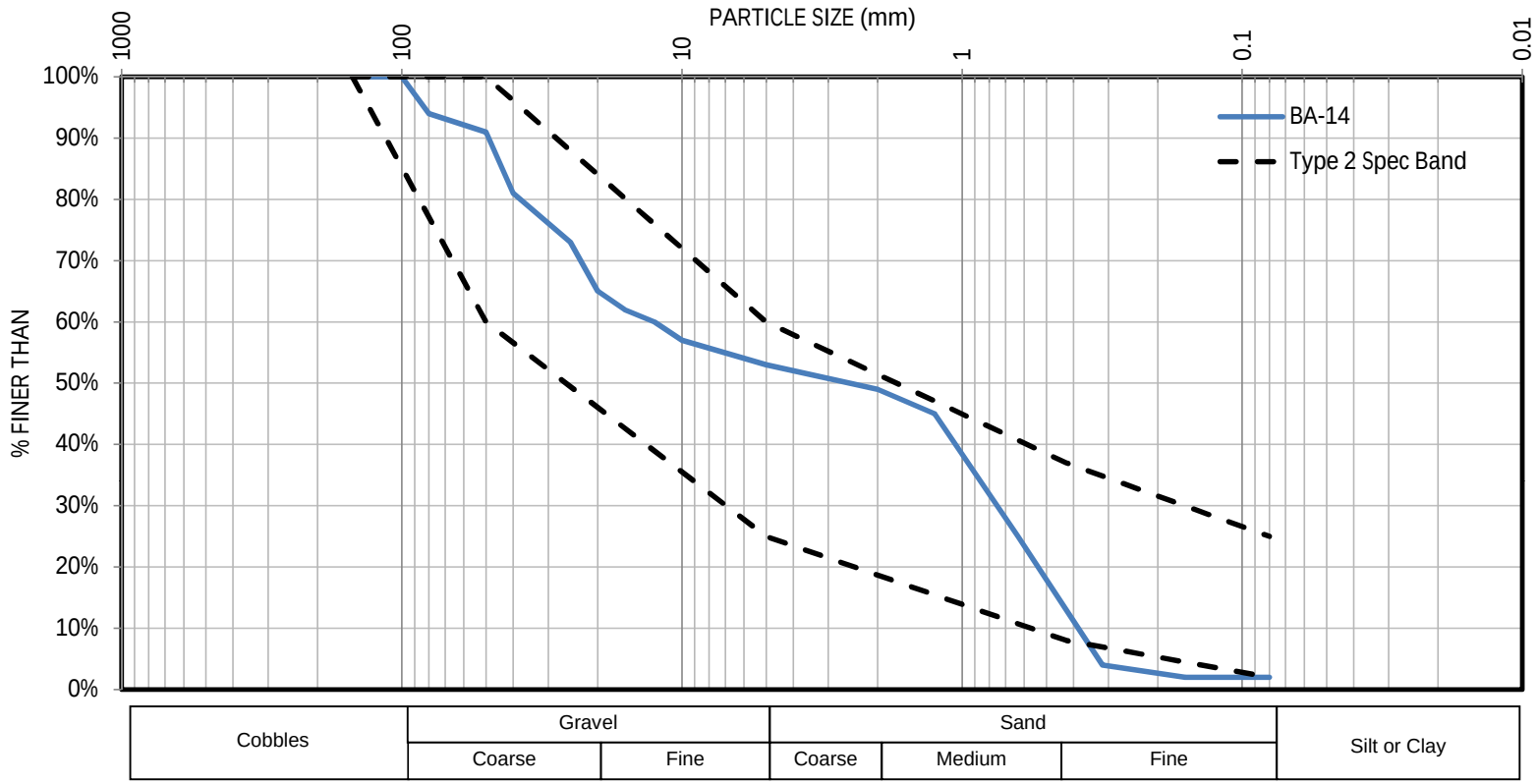


Figure 3-14

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 15 (TYPE 2 MATERIAL)

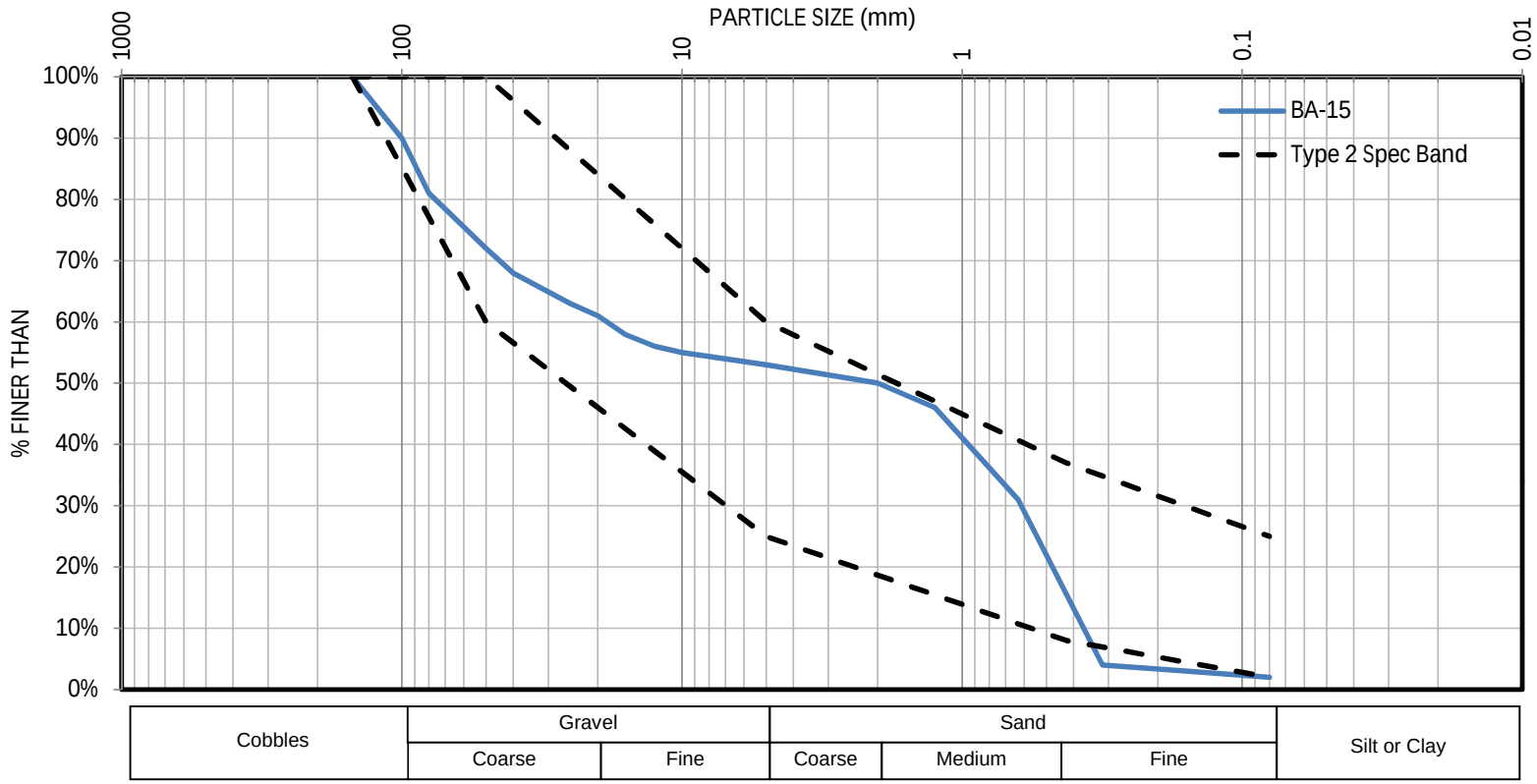


Figure 3-15

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 16 (TYPE 4 MATERIAL)

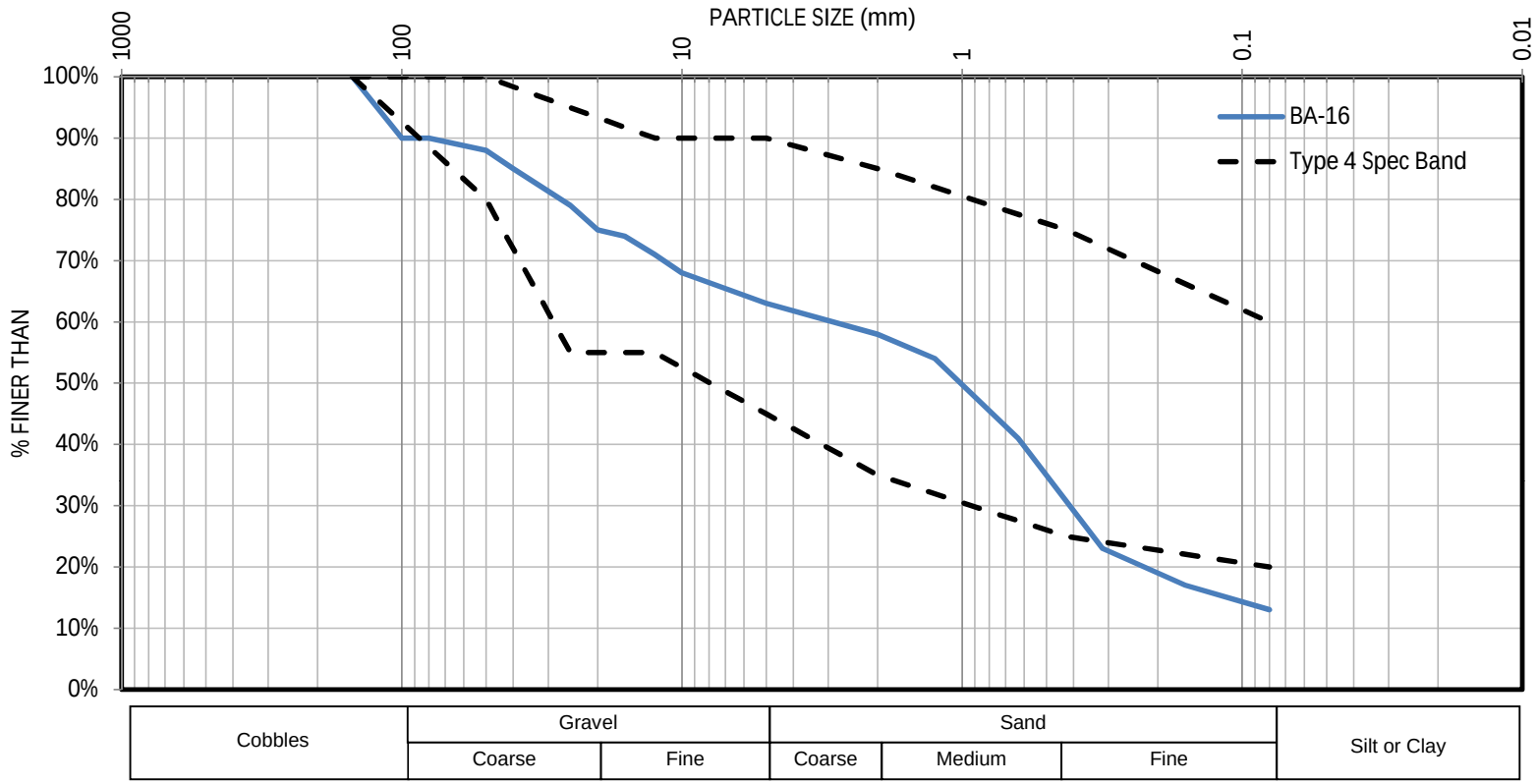


Figure 3-16

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 17 (TYPE 2 MATERIAL)

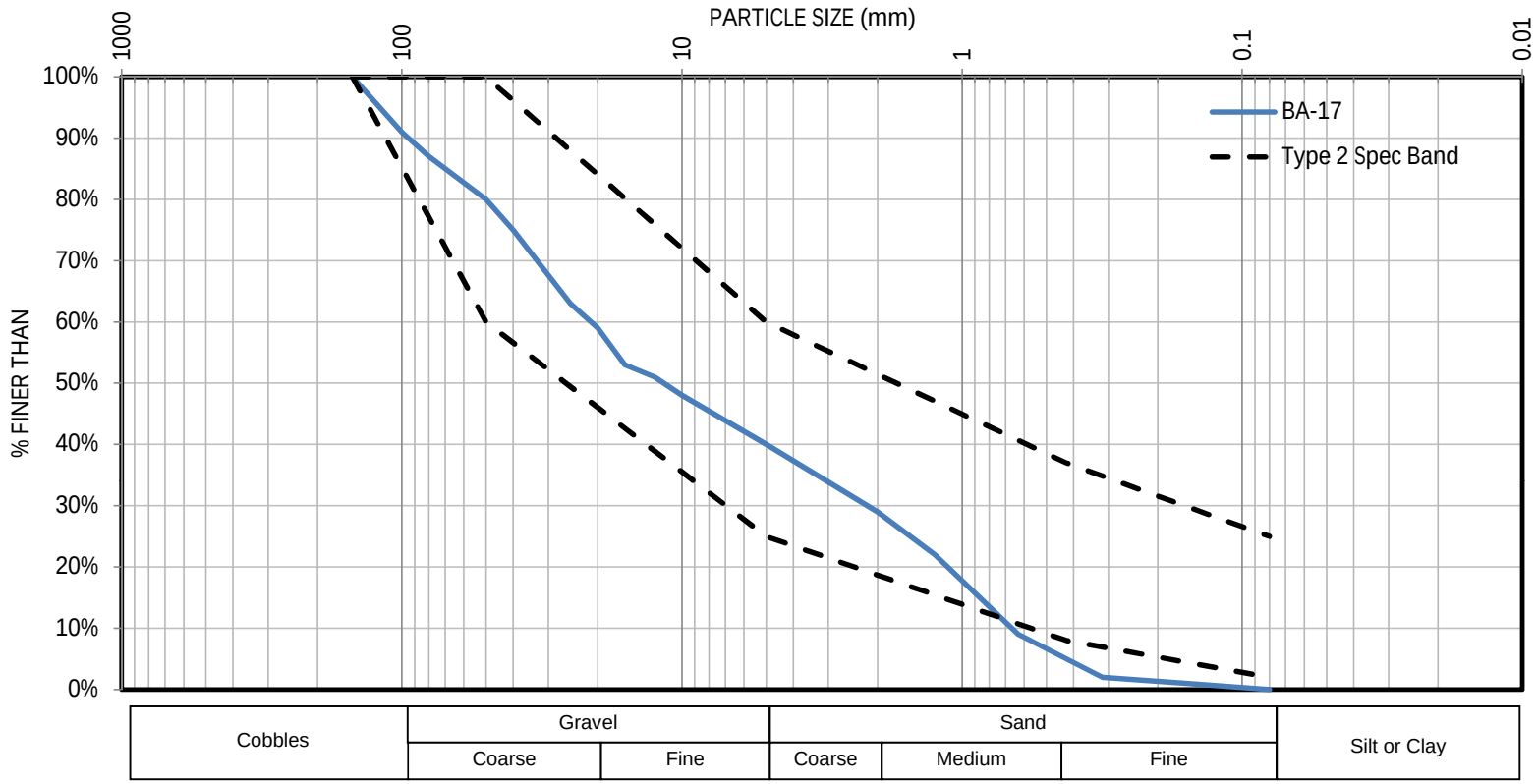


Figure 3-17

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 18 (TYPE 5 MATERIAL)

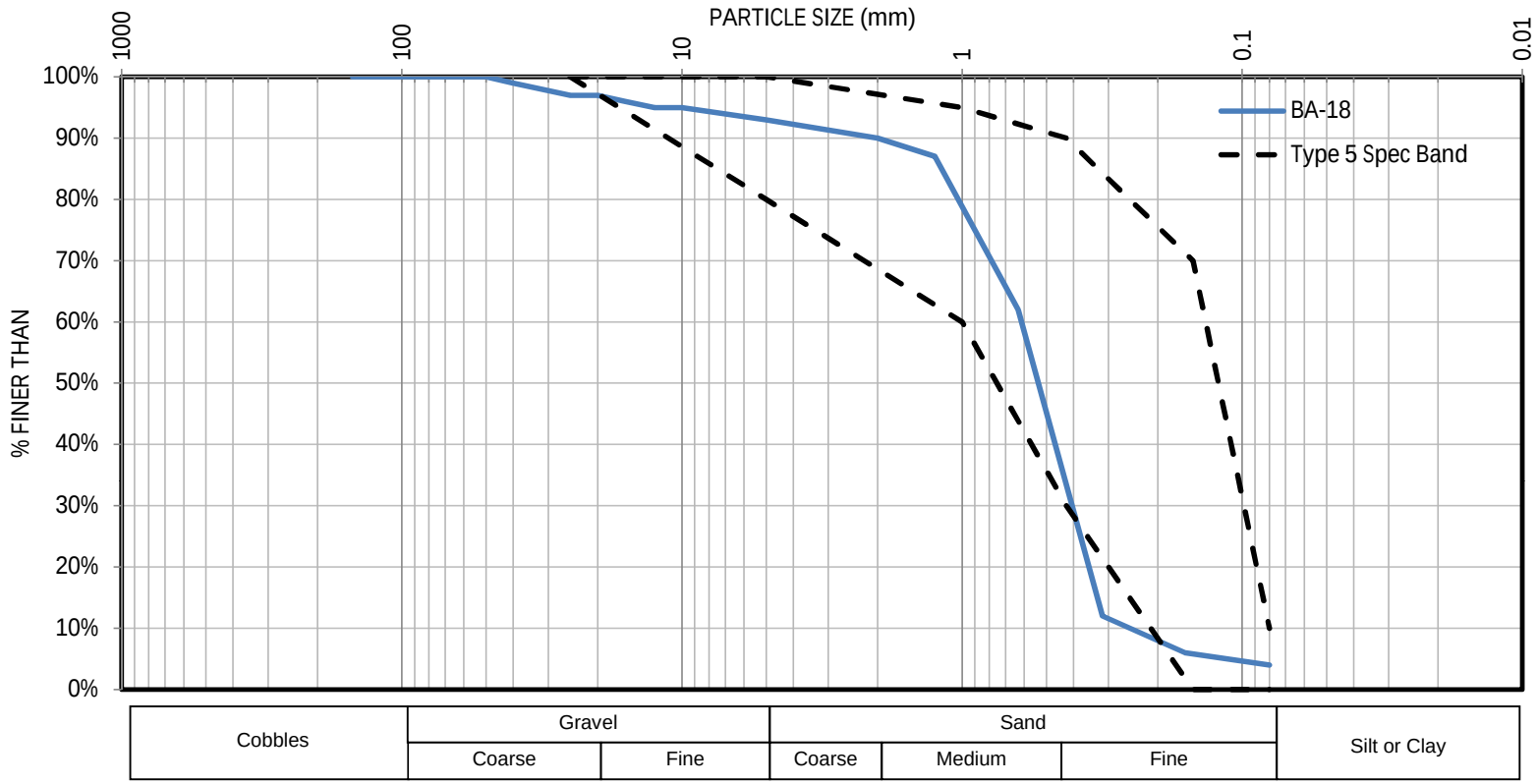


Figure 3-18

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 19 (TYPE 2 MATERIAL)

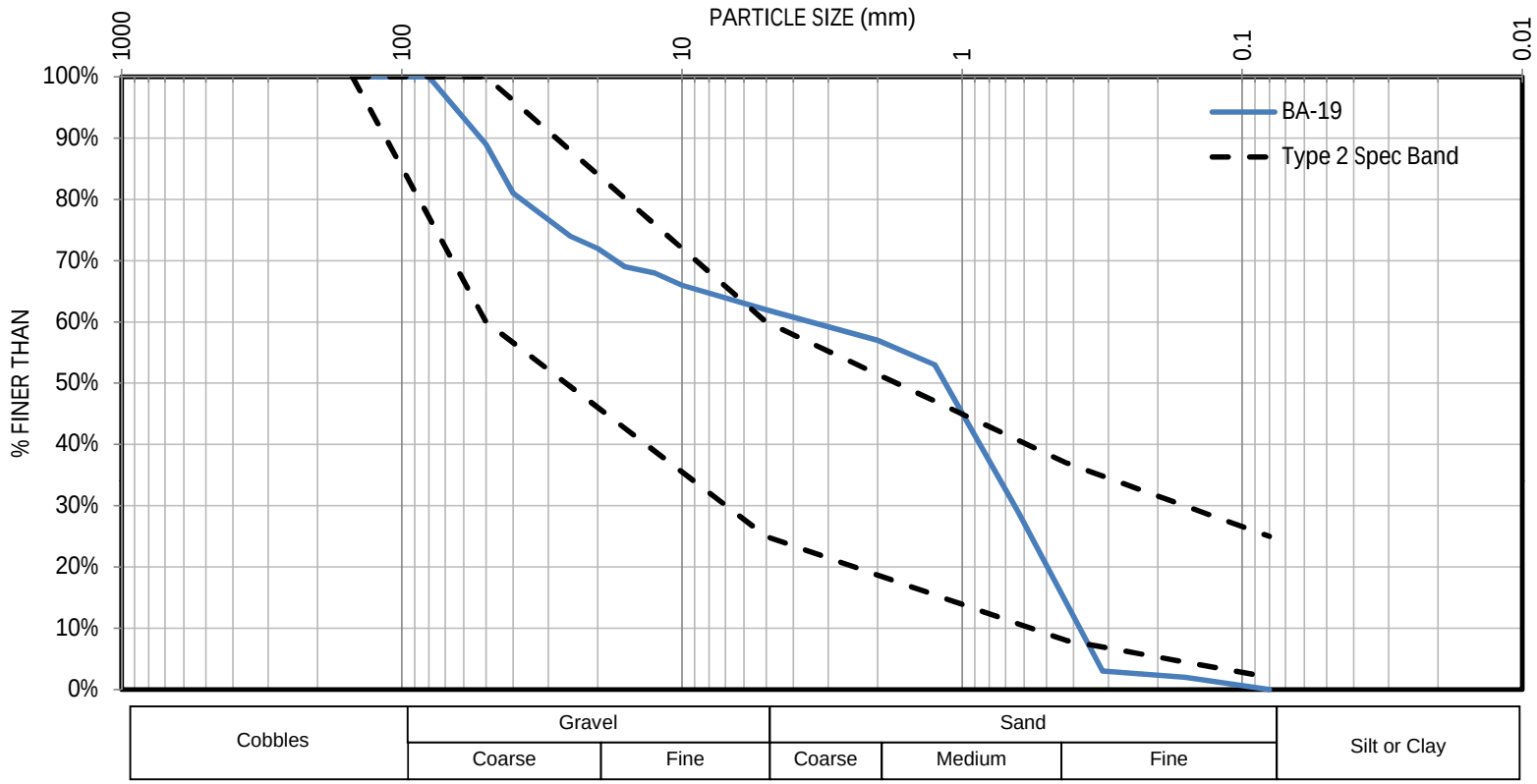


Figure 3-19

CAM - C MATHESON POINT DEW LINE SITE

GRAIN SIZE DISTRIBUTION CURVES - BORROW AREA 20 (TYPE 2 MATERIAL)

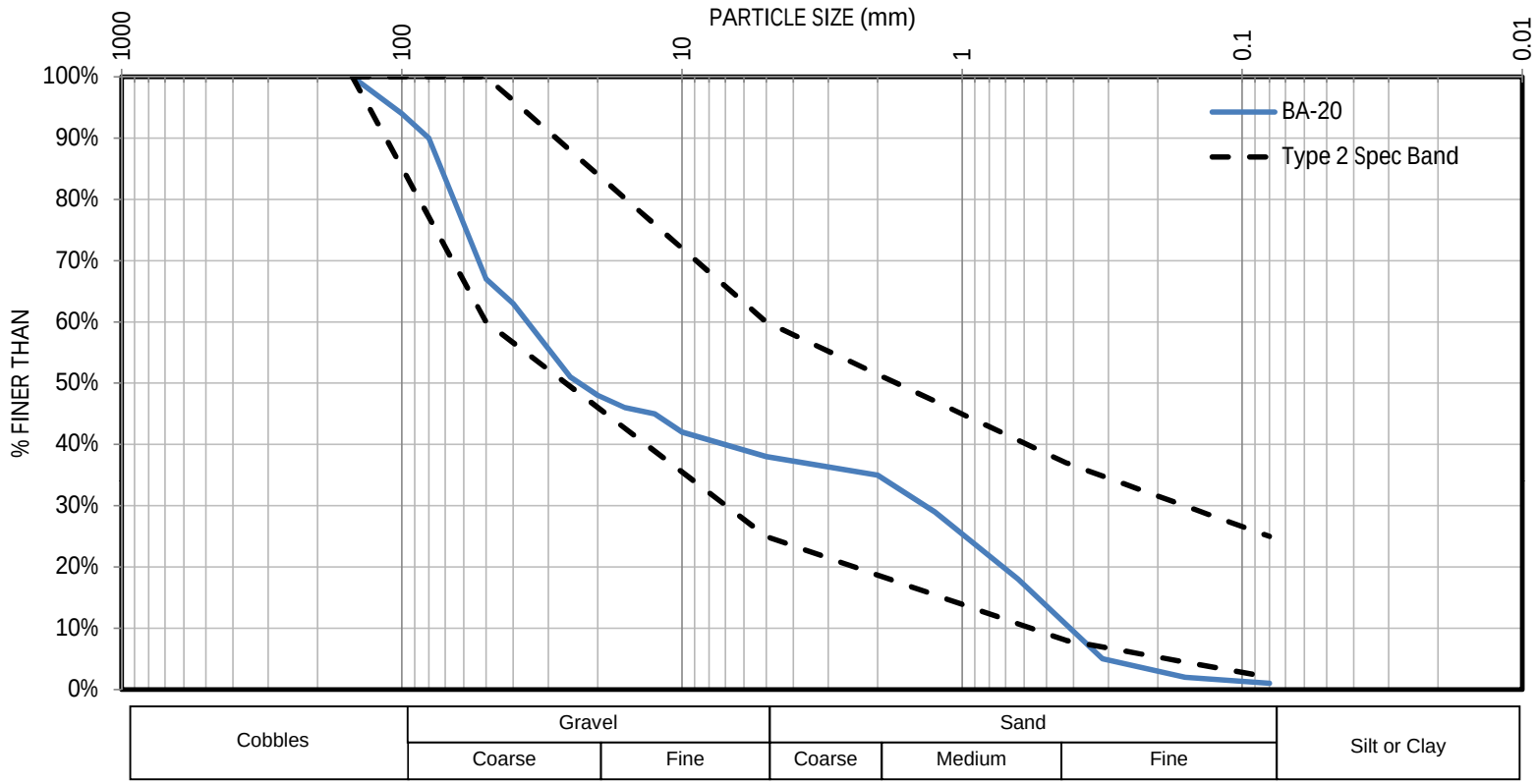


Figure 3-20

APPENDIX G
PHC LABORATORY ANALYTICAL RESULTS

Appendix G
CAM-C 2013 PHC Analytical Results

Sample #	Area	Depth (m)	Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylene (mg/kg)	m & p-Xylene (mg/kg)	o-Xylene (mg/kg)	F1 (mg/kg)	F1 minus BTEX (mg/kg)	F2 (mg/kg)	F3 (mg/kg)	F4 (mg/kg)	Total TPH (mg/kg or ppm)			
															Dominant TPH Type	TYPE A ppm	TYPE B (0-0.5 m) ppm	TYPE B (>0.5 m) ppm
TP13-24	Beach POL	0.15	31-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	29	29	3,900	<50	<50	TYPE B	<50	3,929	
TP13-24	Beach POL	0.7	31-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	200	200	8,700	<50	<50	TYPE B	<50		8,900
TP13-25	Beach POL Tanks and Pumphouse	0.2	31-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	780	<50	<50	TYPE B	<50	780	
TP13-25	Beach POL Tanks and Pumphouse	0.4	31-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	110	110	4,800	<50	<50	TYPE B	<50	4,910	
TP13-25	Beach POL Tanks and Pumphouse	0.9	31-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	170	170	8,100	<50	<50	TYPE B	<50		8,270
TP13-26	Beach POL Tanks and Pumphouse	0.4	31-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	39	39	3,000	<50	<50	TYPE B	<50	3,039	
TP13-26	Beach POL Tanks and Pumphouse	0.65	31-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	110	110	3,400	<50	<50	TYPE B	<50		3,510
TP13-26	Beach POL Tanks and Pumphouse	1.1	31-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	2,500	<50	<50	TYPE B	<50		2,500
TP13-53	Module Train	0.35	1-Aug-13	<0.0050	<0.020	0.023	<0.040	<0.040	0.020	190	190	3,200	500	<50	TYPE B	500	3,890	
TP13-10	Main Station - POL Tanks and Pumphou	0.6	29-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	92	92	4,500	500	<50	TYPE B	500		5,000
TP13-10	Main Station - POL Tanks and Pumphou	1.24	29-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	560	440	<50	TYPE B	440		1,000
TP13-10A	Main Station - POL Tanks and Pumphou	1.24	29-Jul-13	<0.0050	<0.020	<0.010	<0.040	<0.040	<0.020	<12	<12	880	700	<50	TYPE B	700		1,580
TP13-13	Main Station - POL Tanks and Pumphou	0.7	29-Jul-13	<0.0050	<0.020	<0.010	0.40	<0.040	0.40	610	610	7,600	640	<50	TYPE B	640		8,850