Public Works and Government Services Canada

Requisition No.: _____

Buy and Sell ID No.: _____

Specifications for

Title – Steamboat Maintenance Camp Remediation

Location – Km 537.9 Alaska Highway, BC

Project No. R.018393.009/010 Date July 12, 2018

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. M. BUCKLER
46307

July 13, 2018

APPROVED BY:

_____ _____
Regional Manager ES Date

_____ _____
Construction Safety Coordinator Date

TENDER:

_____ _____
Project Manager Date

Real Property Services Branch, Professional and Technical Services, Pacific Region
#219 – 800 Burrard Street, Vancouver, B.C. V6Z 0B9

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. Pre-mobilization Submittals will be paid in accordance with lump sum price established for all Preconstruction Meetings, final design, planning, health and safety, and other Submittals in accordance with the Contract or required and accepted by the Departmental Representative as in accordance with the Contract prior to mobilization to Site.

1.1.2. Mobilization will be paid in accordance with lump sum price established for mobilizing all necessary equipment, materials, supplies, facilities, and personnel associated with the Works to the Site.

1.1.3. Site Preparation will be paid in accordance with lump sum price established to prepare the Site for planned construction works. Includes clearing and grubbing, demolition, temporary removal of existing infrastructure, utility location, rerouting, and protection, and construction of temporary onsite access roads. Also includes removal of any incidental or generated material. Also includes Preconstruction Precondition Survey and Preconstruction As-Built Documents.

1.1.4. Site Facilities - Provision will be paid in accordance with lump sum price established to design, temporarily provide for duration of Work, and erect all infrastructure in accordance with the Contract. Includes temporary structures and facilities, environmental protection, stockpile areas, access, onsite roadways, temporary hoarding, security fencing, federal signage, office facilities, sanitary facilities, stormwater management infrastructure, lighting, and utilities.

1.1.5. Site Facilities - Operation will be paid in accordance with lump sum price established to operate and maintain all infrastructure between mobilization and demobilization. Measurement as recorded time by Departmental Representative. Includes temporary structures and facilities, environmental protection, stockpile areas, access, onsite roadways, temporary hoarding, security fencing, federal signage, office facilities, sanitary facilities, stormwater management infrastructure, lighting, and utilities. Also includes ongoing services including administration, overhead, project management, security, surveying, noise monitoring, vibration monitoring, utilities, project meetings, inspections, progress Submittals, traffic control, health and safety, Environmental Protection cleaning, and operation during inclement weather. Also, includes living out allowances, travel and room and board.

1.1.6. Standby Time will be paid in accordance with unit rate price established, for time when construction Work is unable to proceed, and that is directly attributable to any neglect or delay that occurs after the date of the Contract on the part of the Departmental Representative in providing any information or in doing any act that the Contract expressly requires the Departmental Representative. Measurement as recorded time by Departmental Representative. Includes machinery and labour standby costs. Does not include items covered by Site Facilities Operation. Standby Time may be pro-rated based on hours of

work. Make all efforts to minimize impacts due to delays caused by the Departmental Representative, including re-sequencing Work. Provide documentation of a sufficient description of the facts and circumstances of the occurrence to enable the Departmental Representative to determine whether or not the Standby Time is justified. Reviews, sampling, or other work conducted by the Departmental Representative with time allowances in accordance with the Contract will result in no increase to the Contract Amount nor Extension of Time for completion of the Work.

1.1.7. Contaminated Water Treatment - Provision will be paid in accordance with lump sum price established to design, temporarily provide for duration of Work, and erect all onsite ancillary tanks, storage containers, equipment and piping to collect, store, and sample contaminated or potentially Contaminated Water. Includes dewatering of Contaminated Water from excavation. Includes provision of onsite Water Treatment Plant. Includes provision of bulk storage tanks and loading facilities for offsite Water Treatment Plant.

1.1.8. Contaminated Water Treatment - Operation will be paid in accordance with the unit rate price established for volume of water treated to operate and maintain onsite Contaminated Water Treatment facilities. Measurement as recorded volume by certified flow meters. Includes all onsite ancillary tanks, storage containers, equipment and piping to collect, store, and sample contaminated or potentially Contaminated Water. Includes dewatering of Contaminated Water from excavation. Includes treating Non-Aqueous Phase Liquids. Includes operation of onsite Water Treatment Plant and discharge piping. Includes operation of bulk storage tanks and loading facilities for offsite Water Treatment Plant, and transport to offsite facility. Includes analytical testing to demonstrate compliance with Contract.

1.1.9. Temporary Sloping and Shoring will be paid in accordance with lump sum price established to design and provide temporary sloping and/or shoring required to excavate to Contaminated Material Extents according to Drawings. Includes backfilling and compaction within excavation any temporary slope material accepted by Qualified Professional and Departmental Representative as suitable for backfill.

1.1.10. Waste Oversize Debris Removal will be paid in accordance with unit rate price established for time to remove oversize material from excavation. Measurement as recorded time by Departmental Representative. Does not include Transport or Disposal of debris.

1.1.11. Excavation – Soil will be paid in accordance with unit rate price established for weight of material removed to excavate to Contaminated Material Extents according to Drawings. Includes all handling, loading, hauling, unloading and stockpiling. Material to be stockpiled within work area as directed by Departmental Representative. Does not include material excavated as part of Temporary Sloping and Shoring.

1.1.12. Excavation – Weathered Bedrock will be paid in accordance with unit rate price established for weight of material removed to excavate to Contaminated

Material Extents according to Drawings. Does not include material excavated as part of Temporary Sloping and Shoring.

1.1.13. Backfill – Owner Supplied will be paid in accordance with unit rate price established for weight of material supplied by PSPC from sources according to Drawings for Backfill for Excavation. Measurement to be paid based on weigh scale volumes entering the Site and verified by survey volume on final extents. Insitu volume is simple dimensions of excavation and includes exsitu bulking (expansion or swell) and insitu compaction (densifying) factors. Includes all handling, loading, hauling, unloading, placing, grading and compacting. Does not include material backfilled as part of Temporary Sloping and Shoring.

1.1.14. Backfill – Imported will be paid in accordance with unit rate price established per weight for material imported for Backfill for Excavation. Measurement to be paid based on weigh scale volumes entering the Site. Insitu volume is simple dimensions of excavation and includes exsitu bulking (expansion or swell) and insitu compaction (densifying) factors. Includes analytical testing and inspections to demonstrate compliance with Contract, provision, all handling, loading, hauling, unloading, placing, grading and compacting. Does not include material backfilled as part of Temporary Sloping and Shoring.

1.1.15. Transport - Contaminated Material: Hazardous Waste will be paid in accordance with unit rate price established for weight of Hazardous Waste material transported. Measurement as recorded on Treatment Facility or Disposal Facility weigh scale certified by Measurement Canada and results provided to Departmental Representative. Includes all handling, loading, hauling, unloading, interim storage, and final placement. If material is taken to a Treatment Facility Offsite before a Disposal Facility, payment includes transport to both Treatment Facility and Disposal Facility. Does not include material excavated as part of Temporary Sloping and Shoring and required to be disposed offsite due to unsuitability.

1.1.16. Transport - Contaminated Material: Waste Quality will be paid in accordance with unit rate price established for weight of Waste Quality material transported. Measurement as recorded on Treatment Facility or Disposal Facility weigh scale certified by Measurement Canada and results provided to Departmental Representative. Includes all handling, loading, hauling, unloading, interim storage, and final placement. If material is taken to a Treatment Facility Offsite before a Disposal Facility, payment includes transport to both Treatment Facility and Disposal Facility. Does not include material excavated as part of Temporary Sloping and Shoring and required to be disposed offsite due to unsuitability.

1.1.17. Transport - Non-Contaminated Material and Waste will be paid in accordance with unit rate price established for weight of material removed. Measurement as recorded on Landfill weigh scale certified by Measurement Canada and results provided to Departmental Representative. Includes all handling, loading, hauling, unloading, interim storage, and final placement. Does not include material excavated as part of Temporary Sloping and Shoring and required to be disposed offsite due to unsuitability.

1.1.18. Disposal - Contaminated Material: Hazardous Waste will be paid in accordance with unit rate price established for weight of Hazardous Waste material disposed. Measurement as recorded on Disposal Facility weigh scale certified by Measurement Canada and results provided to Departmental Representative on Certificates of Disposal. Contaminated Material Disposal includes Contaminated Material Treatment Offsite, as required by Disposal Facility. Does not include material excavated as part of Temporary Sloping and Shoring and required to be disposed offsite due to unsuitability.

1.1.19. Disposal - Contaminated Material: Waste Quality will be paid in accordance with unit rate price established for weight of Waste Quality material disposed. Measurement as recorded on Disposal Facility weigh scale certified by Measurement Canada and results provided to Departmental Representative on Certificates of Disposal. Contaminated Material Disposal includes Contaminated Material Treatment Offsite, as required by Disposal Facility. Does not include material excavated as part of Temporary Sloping and Shoring and required to be disposed offsite due to unsuitability.

1.1.20. Disposal - Non-Contaminated Material and Waste will be paid in accordance with unit rate price established for weight of material disposed. Measurement as recorded on Landfill facility weigh scale certified by Measurement Canada and results provided to Departmental Representative on Landfill Receipts. Does not include material excavated as part of Temporary Sloping and Shoring and required to be disposed offsite due to unsuitability

1.1.21. Bobcat with sweeper attachment with lump sum price established for sweeping weathered bedrock surface of excavation area and disposing as waste quality material in accordance with section 1.1.22.

1.1.22. Surface aggregate will be paid in accordance with unit rate price established for weight of material imported.

1.1.23. Crushed backfill at Mill Creek Gravel Pit (Km 552) will be paid in accordance with unit rate price established for transport, setup, weight of material crushed to meet backfill specifications and removal from the Mill Creek Pit.

1.1.24. Site Restoration will be paid in accordance with the lump sum price established to restore the Site to make suitable for post-Work use according to Drawings. Includes re-establishment of pre-existing infrastructure, final grading, topsoil reuse, revegetation, and deconstructing and removal from Site all temporary facilities and removal of any incidental or generated material.

1.1.25. Site Restoration Mill Creek Gravel Pit will be paid in accordance with the lump sum price established to restore the Site to make suitable for post-Work use. Includes re-establishment of pre-existing grading 3:1 slopes, and deconstructing and removal from Site all temporary facilities and removal of any incidental or generated material. The site should be contoured such that no ponding water will accumulate.

1.1.26. Move & Store Culverts from Mill Creek Pit to Site will be paid in accordance with the lump sum price established. It is anticipated that approximately 30 culverts will need to be moved.

1.1.27. Clearing and grubbing at Mill Creek Gravel Pit (Km 552) will be paid in accordance with the lump sum price established to remove vegetation prior to using material for backfill at the Site.

1.1.28. Provision of ORC will be paid will be paid in accordance with the lump sum price established for purchase, transport to the Site and application into the base of the excavation areas as instructed by the departmental representative.

1.1.29. A weigh scale will be paid in accordance with the lump sum price established for the duration of the project. This weigh scale will be utilized for all fill brought into the Site from the gravel pit and all material (including waste) removed from the Site for disposal. Material removed will be weighed at disposal facility for payment.

1.1.30. Demobilization will be paid in accordance with lump sum price established for demobilizing all equipment and personnel associated with the Works from the Site. Includes decontaminating all equipment prior to removal from Site.

1.1.31. Closeout Submittals will be paid in accordance with lump sum price established for Final Site Inspection (for Certificate of Completion purposes), Closeout Meetings, provision of final as-built documents and completion documents as directed by the Departmental Representative.

1.2. Definitions

1.2.1. Certificate of Completion: see General Conditions

1.2.2. Change Order: PSPC form issued by the Departmental Representative to the Contractor as per the relevant Contemplated Change Notice.

1.2.3. Confirmation Samples: soil and sediment samples collected from the base and walls of the excavation by the Departmental Representative to confirm that the remedial objectives for the Work have been met.

1.2.4. Contaminated Material: soil, sediment, and other solid material where substances occur at concentrations that: (i) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or (ii) exceed the levels specified in policies and regulations. Includes Hazardous Waste and Waste Quality. Does not include Non-Contaminated Material or Waste. Relevant regulations, unless otherwise in accordance with the Contract or as directed by the Departmental Representative, include:

1.2.4.1. For all sites: Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines and CCME Canada-Wide Standards.

1.2.4.2. For sites in BC, may include risk-based site-specific target levels for remediation objectives (ie CCME Tier 3): BC Hazardous Waste Regulation, BC Approved Water Quality Guidelines, BC Contaminated Sites Regulation.

1.2.5. Contaminated Material Extents: lateral and vertical extents of Contaminated Material to be remediated to meet remediation objectives. Extents on Drawings are approximate and may vary based on field observations or Confirmation

Samples. Does not include Topsoil, Overburden, or material excavated as part of Temporary Sloping and Shoring.

1.2.6. Contaminated Water: liquid material where substances occur at concentrations that: (i) are above background levels and pose, or are likely to pose, an immediate or long-term hazard to human health or the environment, or (ii) meet or exceed the levels specified in policies and regulations. Includes Hazardous Waste and water that is not suitable for aquatic life, irrigation, livestock or drinking water or any other water use specified in the BC Contaminated Sites Regulation, as applicable. Includes NonAqueous Phase Liquids (NAPL). Does not include Non-Contaminated Water or Sewage Wastewater. Relevant regulations, unless otherwise in accordance with the Contract or as directed by the Departmental Representative, include:

1.2.6.1. For all sites: Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines and CCME Canada-Wide Standards.

1.2.6.2. For sites in BC, may include risk-based site-specific target levels for remediation objectives (ie CCME Tier 3): BC Hazardous Waste Regulation, BC Contaminated Sites Regulation.

1.2.7. Contaminated Water Treatment Plant: a temporary onsite or existing offsite facility located in Canada that is designed, constructed and operated for the handling or processing of Contaminated Water in such a manner as to change the physical, chemical or biological character or composition of the water to lower than the site-specific remedial objective, Discharge Approval, and in compliance with all regulations.

1.2.8. Contemplated Change Notice: PSPC form issued by the Departmental Representative to the Contractor requesting Contractor to provide a quote, which may result in a Change Order.

1.2.9. Contract: see General Conditions.

1.2.10. Contract Amount: see General Conditions.

1.2.11. Contractor: see General Conditions.

1.2.12. Departmental Representative: see General Conditions.

1.2.13. Discharge Approval: permit, certificate, approval, license, or other required form of authorization issued by appropriate federal agency, province, territory, or municipality having jurisdiction and authorizing discharge.

1.2.14. Disposal Facility: a facility specifically used to introduce waste into the environment for the purpose of final burial.

1.2.15. 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.

1.2.16. Environmental Protection: prevention, control, mitigation, and restoration of pollution and habitat or environmental 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; vibrations; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.17. Environmental Protection Plan: plan developed by the Contractor to ensure Environmental Protection and prevent Environmental Pollution and Damage identifying all environmental risks and mitigation measures, including: personnel requirements, emergency contacts, Environmental Protection methods, procedures, and equipment, and emergency response including a Spill Control Plan.

1.2.18. Extension of Time: see General Conditions.

1.2.19. Extension of Time on Contracts: PSPC form requesting an Extension of Time.

1.2.20. Final Completion: see General Conditions.

1.2.21. Hazardous Waste: Contaminated Material which meets the regulatory definition of Hazardous Waste.

1.2.22. Land Treatment Facility: equivalent of Soil Treatment Facility.

1.2.23. Landfill Facility: an existing offsite facility located in Canada that is designed, constructed and operated to prevent any pollution from being caused by the facility outside the area of the facility from waste placed in or on land within the facility.

1.2.24. Materials Source Separation Program: consists of a series of ongoing activities to separate reusable and recyclable waste into categories from other types of waste at point of generation.

1.2.25. Non-Contaminated Material: soil, sediment, and other solid material excavated incidentally which meets:

1.2.25.1. For Sites in BC: the BC Contaminated Sites Regulation most stringent standard in Schedule 3.1.

1.2.25.2. For sites in Yukon: the Yukon Contaminated Sites Regulation most stringent of Schedule 1 and 2.

1.2.26. Non-Contaminated Water: liquids which are suitable for direct discharge to the environment, and which is not Contaminated Water or Sewage Wastewater. Includes surface runoff, stormwater, and groundwater which has not come into contact with Contaminated Material.

1.2.27. On Site Instruction: notices, instructions, or directions issued by the Departmental Representative to the Contractor.

1.2.28. On Site Notice: notice or other communication issued by the Contractor to the Departmental Representative.

1.2.29. Overburden: Non-Contaminated Material excavated incidentally above Contaminated Material Extents that is suitable as Backfill. Does not include Topsoil or material excavated as part of Temporary Sloping and Shoring.

1.2.30. Progress Payment: see General Conditions.

1.2.31. PSPC: Public Services and Procurement Canada. Representative of Canada with control of the Site.

1.2.32. Qualified Professional: a person working for the Contractor who is registered in relevant jurisdiction with his or her appropriate professional association, acts

under that professional association's code of ethics, and is subject to disciplinary action by that professional association, and through suitable education, experience, accreditation and knowledge can be reasonably relied on to provide advice within his or her area of expertise. Includes Geotechnical Engineers, Environmental Consultants, and Land Surveyors.

1.2.33. Quote: Contractor's cost estimate issued to the Departmental Representative as per the relevant Contemplated Change Notice via an On Site Notice.

1.2.34. Remediation by Excavation: complete excavation of Contaminated Material and incidental Non-Contaminated Material to the Site boundaries for the purpose of remediating the Site to meet numerical standards. Includes full treatment and disposal. Does not include risk assessment or risk management of material onsite. Does not include encapsulation or solidification in place.

1.2.35. Sewage Wastewater: liquid waste which is not suitable for direct discharge to the environment, and which must be either treated offsite or discharged to a sanitary sewer. Includes water from hand basin, shower, personal hygiene facilities, or other liquid waste from sanitary facilities.

1.2.36. Site: work area available to Contractor according to Drawings. Does not include shared or public areas, including common roads.

1.2.37. Subcontractor: see General Conditions.

1.2.38. Submit/Submittals: documents from the Contractor to the Departmental Representative as: required by Contract; stipulated in permit, certificate, approval, license, or any other form of authorization; by convention or industry practice. Submittals are final only after review and accepted in writing by Departmental Representative.

1.2.39. Substantial Performance: see General Conditions.

1.2.40. Superintendent: see General Conditions

1.2.41. Supplier: see General Conditions.

1.2.42. Survey by Departmental Representative: survey conducted by Departmental Representative, or by Departmental Representative's consultant or by Land Surveyor retained by Departmental Representative. Survey may be performed by physical measurement (eg tape measurer) or by survey equipment (eg Global Positioning System, total station). Contractor may perform independent survey using a Qualified Professional to confirm Survey by Departmental Representative.

1.2.43. Topsoil: Non-Contaminated Material excavated incidentally above Contaminated Material Extents that is a surface organic layer to facilitate vegetation growth. Does not include Overburden or material excavated as part of Temporary Sloping and Shoring.

1.2.44. Transfer/Interim Storage Facility: a facility specifically used to transfer or short term storage Contaminated Material during offsite transport.

1.2.45. Treatment Facility: a facility specifically used to treat Contaminated Material. May be Owner's (PSPC provided) or Offsite (Contractor provided). Owner's Soil Treatment Facility is located on property under PSPC control, but may be

located at a different location than where construction work occurs. Offsite Treatment Facility may treat soil, sediment, or water.

1.2.46. Waste: Non-Contaminated Material that is not soil. Includes cleared and grubbed vegetation, litter, rubbish, debris, cobbles, boulders, excess construction material, lumber, steel, plastic, concrete, and asphalt. Includes Topsoil and Overburden that is not re-used.

1.2.47. Waste Oversize Debris: Waste that is required to be excavated and is: larger than 1 cubic metre or larger than 2 metres in one dimension, cannot be removed with a typical excavator with bucket, and requires the use of special equipment (e.g., saws, hydraulic cutters, excavator hammers, vibratory pile extractors). Includes bedrock, boulders, pilings, pipes, building structures, and concrete foundations.

1.2.48. Waste Quality: soil or other material that is not suitable for industrial, commercial, urban park, residential, agricultural, wildlands or any other land use specified in the BC Contaminated Sites Regulation or Yukon Contaminated Sites Regulation, as applicable.

1.2.49. Waste Reduction Plan: a written report which addresses opportunities for reduction, reuse or recycling of materials.

1.2.50. Weigh Scale: Scale needs to be in working order at all times during the excavation and backfill work. The weigh scale measurements should be provided in tonnes and submitted to the departmental rep daily. All facilities required including generator, weigh scale shed and printer should be supplied by the contractor.

1.2.51. Work: see General Conditions.

1.2.52. Working Day: see General Conditions.

1.3. Action and Information Submittals

1.3.1. After hours work: at least 5 Working Days prior to commencing after hours work Submit a schedule showing requested dates, times, and reasons for after hours work. Approval will only be granted for reasons valid in the opinion of the Departmental Representative and if request can be reasonably accommodated by other contracts. See section 1.12 for hours of work.

1.4. Work Covered by Contract

1.4.1. Contractor must provide personnel with appropriate experience in remediating contaminated materials. Contractor to provide specialized material handling, health and safety, and environmental protection procedures.

1.4.2. Work to be performed under the Contract includes, but is not limited to, the following items, including all ancillary Work, covered further in the Contract: excavation and offsite disposal of contaminated material and backfilling.

1.4.3. Green Requirements:

1.4.3.1. Use only environmentally responsible green materials/products with no Volatile Organic Compounds (VOC) emissions or minimum VOC emissions of indoor off-gassing contaminants for improved indoor air quality – subject

of acceptance of Submittal of Materials Safety Data Sheet (MSDS) Product Data.

1.4.3.2. Use materials/products containing highest percentage of recycled and recovered materials practicable – consistent with maintaining cost effective satisfactory levels of competition.

1.4.3.3. Adhere to waste reduction requirement for reuse or recycling of waste materials, thus diverting materials from Landfill Facility.

1.4.4. Work not included in Contract comprises such work and services specifically listed as:

1.4.4.1. Not Used.

1.5. Location

1.5.1. The Site location is shown on the Drawings.

1.5.2. There is no civic street address or PIN for the Site.

1.6. Project/Site Conditions

1.6.1. Work at Site will involve Work with contaminated materials. Complete list of anticipated contaminants and concentration levels on the Site available separately in assessment report Figures.

1.6.2. Existing condition on the Site identified according to Drawings.

1.6.3. Utilities/services availability on Site

1.6.3.1. Electrical power is not available on Site.

1.6.3.2. Water is not available on Site.

1.6.3.3. Sanitary sewer is not available on Site.

1.6.3.4. Storm sewer is not available on Site.

1.6.3.5. Telecommunications is not available on Site.

1.7. Other Contracts

1.7.1. Other contracts are currently in progress at Site.

1.7.2. Other contracts are:

1.7.2.1. Environmental consultant.

1.7.2.2. Other site users as identified in the contract documents.

1.7.3. Further contracts may be awarded while this Contract is in progress.

1.7.4. Cooperate with other contractors in carrying out their respective works and carry out directions from Departmental Representative.

1.7.5. Coordinate Work with that of other contractors. If any part of Work under this Contract depends for its proper execution or result upon Work of another contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of this Work.

1.8. Products Supplied by the Departmental Representative

1.8.1. Not Used.

1.9. Contractor's Use of Site

1.9.1. Use of Site:
1.9.1.1. For the sole benefit of Canada.
1.9.1.2. Exclusive and only for completion of the execution of Work.
1.9.1.3. Assume responsibility for assigned premises for performance of this Work.
1.9.1.4. Be responsible for coordination of all Work activities onsite, including the Work of other contractors engaged by the Departmental Representative.
1.9.2. There are no pre-existing arrangements for encroachment on the neighbouring properties. Shoring designs accommodating no offsite encroachment, or arrangements for offsite encroachment, are the responsibility of the Contractor.
1.9.3. Perform Work in accordance with Contract. Ensure Work is carried out in accordance with schedule accepted by Departmental Representative.
1.9.4. Do not unreasonably encumber Site with material or equipment.
1.9.5. Accommodate common areas with other Site users, including roadways.
1.9.6. Segregate Contractor's work area from common areas to prevent unintentional multiple employer worksite, as required.

1.10. Time of Completion
1.10.1. Existing Permits are:
1.10.1.1. None.

1.11. Schedule Requirements
1.11.1. Work to be initiated: within 5 Working Days of Contract Award.
1.11.2. Pre-Mobilization Submittals: within 10 Working Days of Contract Award.
1.11.3. Mobilization: within 10 Working Days of Contract Award.
1.11.4. Site Works: Final Completion no later than 2018 Oct 01.
1.11.5. Offsite Treatment and Disposal Works: Final Completion no later than 2018 Dec 01.
1.11.6. Completion of the Work: no later than 2019 February 28th. Includes all final Submittals including as-built documents, the Certificate of Completion, and the Statutory Declaration at Final Completion.

1.12. Hours of Work
1.12.1. Restrictive as follows:
1.12.1.1. Working Day work hours are 07:00 to 19:00.
1.12.2. Obtain consent from Departmental Representative for all after hours Work, including weekends and holidays.
1.12.2.1. Proceed only as directed by the Departmental Representative.

1.13. Security Clearances
1.13.1. Not Used

2. PART 2 - PRODUCTS
2.1. Not Used
2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00

1.2. Definitions

1.2.1. See 01 11 00

1.3. Action and Informational Submittals

1.3.1. Utility Locations: at least 5 Working Days prior to commencing any subsurface disturbance, Submit drawings identifying all utilities on the Site. Update drawings as directed by the Departmental Representative.

1.3.2. Breakdown of Lump Sum Prices: at least 5 Working Days prior to submitting the first Progress Payment, Submit a breakdown of the Contract lump sum prices including labour, material and time, in detail as directed by the Departmental Representative and aggregating Contract Amount.

1.3.3. Daily Work Records: at the end of each shift Submit daily Work records, during onsite Work. Include:

1.3.3.1. Quantities for each Description of Work identified in the Unit Price Table and Change Orders.

1.3.3.2. Description of Work performed.

1.3.3.3. Current Site conditions.

1.3.3.4. General information including: date, time shift started and ended, Subcontractor(s) onsite, Health and Safety items, and Environmental Protection items.

1.3.3.5. Signature of Superintendent.

1.3.4. Cash Flow: with each Progress Payment, Submit a cash flow forecast. Include:

1.3.4.1. Calculation of planned cost versus actual cost and schedule forecasting and cash flow projections on a monthly basis, indicating anticipated value of future Progress Payments, for each Description of Work identified in the Unit Price Table.

1.3.5. Coordination Meeting Minutes and Drawings: at least 5 Working Days prior to relevant Work commencing, submit final meeting minutes and drawings from coordination with Subcontractors.

1.3.6. Quality Management Plan: within 10 Working Days after Contract award, submit a quality management plan. Include:

1.3.6.1. Details on planned review, inspection and testing to provide Quality Assurance and Quality Control for the Work

1.3.6.2. Subcontractors responsible for review, inspection and testing.

1.3.6.3. Schedule of submittals of review, inspection and testing results.

1.3.7. Review, Inspection, and Testing Results: within 5 Working Days of receipt, submit all results of reviews, inspection, and testing performed as part of the Work, including laboratory reports and sampling chains of custody.

1.4. Division of Specifications

1.4.1. This specification is subdivided into Divisions and Sections in accordance with the six digit National Master Specifications System.

1.4.2. A Division or Section may consist of the Work of more than one Subcontractor. Responsibility for determining which Subcontractor provides the labour, material, equipment and services required to complete the Work rests solely with the Contractor.

1.5. Documents Required

1.5.1. Maintain 1 copy each of the following posted at the job Site:

1.5.1.1. General Conditions.
1.5.1.2. Drawings.
1.5.1.3. Specifications.
1.5.1.4. Addenda or other modifications to Contract.
1.5.1.5. Change orders.
1.5.1.6. Copy of current Work schedule.
1.5.1.7. Reviewed and final Shop Drawings Submittals.
1.5.1.8. One set of record Shop Drawings and Specifications for “as-built” purposes.
1.5.1.9. Field and laboratory test reports.
1.5.1.10. Reviewed and accepted submissions.
1.5.1.11. Manufacturers’ installation and application instructions (as appropriate).
1.5.1.12. National Building Code of Canada (as appropriate).
1.5.1.13. Current construction standards of workmanship listed in technical Sections (as appropriate).
1.5.1.14. Health and Safety documents, including all daily toolbox meetings, Notice of Project, and utility clearances.
1.5.1.15. Environmental Protection Plan.
1.5.1.16. Quality Management Plan.
1.5.1.17. Final Meeting Minutes, Agendas and associated attachments.
1.5.1.18. Permits and other approvals.

1.6. Setting out of Work

1.6.1. Assume full responsibility for and execute complete layout of Work to locations, lines and elevations according to Drawings.

1.6.2. Provide devices needed to layout and construct Work.

1.6.3. Supply such services and devices in accordance with the Contract to facilitate Departmental Representative’s inspection of Work.

1.7. Acceptance of Substrates

1.7.1. Each trade will examine surfaces prepared by others and job conditions which may affect his work, and will report defects to the Departmental Representative. Commencement of Work will imply acceptance of prepared Work or substrate surfaces.

1.8. Works Coordination

1.8.1. Coordinate Work of Subcontractors.

1.8.1.1. Designate one person to be responsible for review of Contract and Shop Drawings and managing coordination of Work.

1.8.2. Convene meetings between Subcontractors whose Work interfaces and ensure awareness of areas and extent of interface required.

1.8.2.1. Provide each Subcontractor with complete Drawings and Specifications for Contract, to assist them in planning and carrying out their respective work.

1.8.2.2. Develop coordination drawings when required, illustrating potential interference between Work of various trades and distribute to affected parties.

1.8.2.3. Facilitate meeting and review coordination drawings. Ensure Subcontractors agree and sign off on coordination drawings.

1.8.2.4. Publish minutes of each meeting.

1.8.2.5. Submit a copy of coordination drawings and meeting minutes as directed by the Departmental Representative.

1.8.3. Submit Shop Drawings and order of prefabricated equipment or rebuilt components only after coordination meeting for such items has taken place.

1.8.4. Work coordination:

1.8.4.1. Ensure cooperation between trades in order to facilitate general progress of Work and avoid situations of spatial interference.

1.8.4.2. Ensure that each trade provides all other trades reasonable opportunity for Final Completion of Work and in such a way as to prevent unnecessary delays, cutting, patching and removal or replacement of completed Work.

1.8.4.3. Ensure disputes between Subcontractors are resolved.

1.8.5. Failure to coordinate work is responsibility of Contractor.

1.9. Approvals of Shop Drawings, Product Data and Samples

1.9.1. Submit as directed by the Departmental Representative the requested Shop Drawings, product data, MSDS sheets and samples in accordance with the Contract.

1.9.2. Allow sufficient time for the following:

1.9.2.1. Review of product data.

1.9.2.2. Acceptance of Shop Drawings.

1.9.2.3. Review of re-submission.

1.9.2.4. Ordering of accepted material and/or products.

1.10. Relics and Antiquities

1.10.1. See General Conditions

1.11. Additional Drawings

1.11.1. The Departmental Representative may furnish additional Drawings for clarification. These additional Drawings have the same meaning and intent as if they were included with Drawings referred to in the Contract.

1.11.2. Upon request, Departmental Representative may furnish up to a maximum of 2 sets of Drawings for use by the Contractor at no additional cost. Should more than 2 sets of documents be required the Departmental Representative will provide them at additional cost.

1.12. Record Keeping

1.12.1. On Site Instruction: Contractual correspondence from the Departmental Representative to the Contractor. Does not include Contemplated Change Notices, Change Orders, and Extension of Time on Contracts. Sequentially numbered On Site Instructions. Include cross references to applicable On Site Notifications. The status of the Contractor, including the function of Prime Contractor, must not change by reason of any On Site Instructions.

1.12.2. On Site Notifications: Contractual correspondence from Contractor to the Departmental Representative. Includes Submittals. Does not include Quotes, and Extension Of Time On Contracts. Must be sequentially numbered. Include cross references to applicable On Site Instructions. The status of the Contractor, including the function of Prime Contractor, must not change by reason of any On Site Notifications.

1.12.3. Maintain adequate records to support information provided to Departmental Representative.

1.12.4. Maintain asbestos waste shipment records or other Hazardous Waste Manifests for minimum of 3 years from date of shipment or longer period required by applicable law or regulation.

1.12.5. Maintain bills of ladings for minimum of 300 Working Days from date of shipment or longer period required by applicable law or regulation.

1.13. Change Documents

1.13.1. Change Documents do not relieve Contractor of any obligation.

1.13.2. Change Documents do not change the Contractor's responsibility for sequencing, methods and means.

1.13.3. Change Documents do not change by any reason the status of the Contractor, including the function of Prime Contractor or as supervisor.

1.13.4. Change Documents include:

1.13.4.1. Change Order: There may be a change to the Contract Amount by reason of any Change Order. No Extension of Time for completion of the Work by reason of any Change Order.

1.13.4.2. Contemplated Change Notice: No increase to the Contract Amount by reason of any Contemplated Change Notice. No Extension of Time for completion of the Work by reason of any Contemplated Change Notice.

1.13.4.3. Extension of Time on Contracts: No increase to the Contract Amount by reason of any Extension of Time on Contracts. There may be an Extension of Time for completion of the Work by reason of an Extension of Time on Contracts.

1.13.4.4. Quote: No increase to the Contract Amount by reason of any Quote. No Extension of Time for completion of the Work by reason of any Quote.

1.14. System of Measurement

1.14.1. The metric system of measurement (SI) will be employed on this Contract.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Preconstruction Meeting Minutes: within 2 Working Days of the Preconstruction Meeting, Submit meeting minutes.

1.3.2. Progress Meeting Minutes: within 2 Working Days of a Progress Meeting, Submit meeting minutes. Submit revised minutes within 2 Working Days of receiving comments by Departmental Representative.

1.3.3. Information for Progress Meetings: at least 2 Working Days prior to scheduled Progress Meetings, Submit all information in accordance with the Contract for Progress Meetings. Include:

1.3.3.1. Agenda for the proposed Progress Meeting.

1.3.3.2. Updated Project Schedule.

1.3.3.3. Copies of transport manifests and disposal receipts for all materials removed from Site.

1.3.3.4. Other information as directed by the Departmental Representative or relevant to agenda for upcoming progress meeting.

1.3.4. Final Site Inspection: within 2 Working Days of the Final Site Inspection, Submit meeting minutes.

1.3.5. Closeout Meetings: within 2 Working Days of the Closeout Meeting, Submit meeting minutes.

1.4. Administrative

1.4.1. Schedule and administer project meetings throughout the progress of the Work weekly and at the call of Departmental Representative.

1.4.2. Prepare agenda for meetings.

1.4.3. Submit written notice with agenda of each meeting 2 Working Days in advance of meeting date as directed by the Departmental Representative.

1.4.4. Provide physical space and make arrangements for meetings, or arrange for teleconference meetings, as directed by Departmental Representative

1.4.5. Preside at meetings.

1.4.6. Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

1.4.7. Maintain records of meeting minutes for a minimum of 2 years after Work is completed.

1.4.8. Representative of Contractor, Subcontractor(s) and Supplier(s) attending meetings must be qualified and authorized to act on behalf of party each represents.

1.5. Preconstruction Meeting

1.5.1. Within 5 working days after award of Contract, request a meeting of parties in Contract to discuss and resolve administrative procedures and responsibilities.
1.5.2. Departmental Representative, Contractor, Superintendent, major Subcontractor(s), field inspectors and supervisors must be in attendance.
1.5.3. Establish time and location of meeting subject to approval by Departmental Representative and notify parties concerned at least 3 Working Days before meeting.
1.5.4. Agenda to include:
1.5.4.1. Appointment of official representative of participants in the Work, including Contractor's Superintendent and Departmental Representative.
1.5.4.2. Schedule of Work.
1.5.4.3. Schedule of Submittals.
1.5.4.4. Requirements for temporary facilities.
1.5.4.5. Site security.
1.5.4.6. Change orders, procedures, approvals required, administrative requirements.
1.5.4.7. Monthly progress claims, administrative procedures, hold backs.
1.5.4.8. Appointment of inspection and testing agencies or firms.
1.5.4.9. List of Subcontractor(s) and contact information.

1.6. Progress Meetings

1.6.1. During course of Work schedule progress meetings weekly subject to approval by Departmental Representative.
1.6.2. Contractor, Superintendent, major Subcontractor(s) involved in Work, and Departmental Representative are to be in attendance.
1.6.3. Agenda to include:
1.6.3.1. Review and acceptance of minutes of previous meeting.
1.6.3.2. Review health and safety, including incidents, near misses, and corrective measures.
1.6.3.3. Review Environmental Protection, including incidents, near misses, and corrective measures.
1.6.3.4. Review contractual compliance.
1.6.3.5. Review regulatory compliance.
1.6.3.6. Review communications, problems or concerns with community.
1.6.3.7. Review of Work progress since previous meeting.
1.6.3.8. Field observations, problems, conflicts.
1.6.3.9. Updated progress schedule detailing activities planned over next 2 week period. Include review of progress with respect to previously established dates for starting and stopping various stages of Work.
1.6.3.10. Problems which impede construction schedule.

1.6.3.11. Corrective measures and procedures to regain projected schedule.
1.6.3.12. Revision to construction schedule.
1.6.3.13. Progress schedule, during succeeding Work period.
1.6.3.14. Review submittal schedules: expedite as required.
1.6.3.15. Maintenance of quality standards.
1.6.3.16. Quantities of material transported, treated, and disposed.
1.6.3.17. Review proposed changes for effect on construction schedule and on Final Completion date.
1.6.3.18. Other business.
1.6.4. Submit draft Progress Meeting Minutes for review and comment by Departmental Representative. Incorporate comments into final Progress Meeting Minutes.

1.7. Toolbox Meetings

1.7.1. During the course of the Work, schedule daily toolbox meetings at the start of each Work shift. Multiple meetings are required if the Contractor works multiple shifts within a 24-hour period.
1.7.2. All on Site workers to attend, including Contractor, Superintendent, major Subcontractor(s), and environmental consultants. Departmental Representative may attend.
1.7.3. Agenda to include:
1.7.3.1. Planned Work activities and environmental considerations for that shift.
1.7.3.2. Coordination activities required between Contractor, Subcontractor(s), Departmental Representative, and other contractor(s) including environmental consultant.
1.7.3.3. Health and Safety items.
1.7.3.4. Environmental Protection items.

1.8. Final Site Inspection

1.8.1. Within 5 Working Days of completion of Site Works but prior to Demobilization, request a meeting on Site to review the Site.
1.8.2. Departmental Representative, Contractor, Superintendent, major Subcontractor(s), field inspectors and supervisors must be in attendance.
1.8.3. Establish time and location of meeting subject to approval by Departmental Representative and notify parties concerned at least 5 Working Days before meeting.
1.8.4. Agenda to include:
1.8.4.1. Inspect removal of all temporary equipment, materials, supplies, and facilities.
1.8.4.2. Inspect final surface grades.
1.8.4.3. Inspect final vegetation.
1.8.4.4. Inspect permanent facilities for performance and damage.
1.8.4.5. Document all damage, deficiencies, missing items, and non-conformance.

1.8.5. If required, and in the opinion of the Departmental Representative, perform another Final Site Inspection after resolving all documented damage, deficiencies, missing items, and non-conformance.

1.9. Closeout Meeting

1.9.1. Within 10 Working Days of completion of the Work, request a meeting to review the project.

1.9.2. Departmental Representative, Contractor, Superintendent, major Subcontractor(s), field inspectors and supervisors must be in attendance.

1.9.3. Establish time and location of meeting subject to approval by Departmental Representative and notify parties concerned at least 3 Working Days before meeting.

1.9.4. Agenda to include:

1.9.4.1. Review Certificate of Completion.

1.9.4.2. Review final payment.

1.9.4.3. Identify lessons learned.

1.9.4.4. Perform Contractor Performance Evaluation Report Form.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Master Plan: within 10 Working Days after Contract award, Submit a Master Plan (baseline schedule).

1.3.2. Schedule of Interruption of Services: at least 5 Working Days prior to any shutdown or closure of active utilities or facilities. Submit a schedule identifying type of service and dates of shutdown or closure.

1.3.3. Project Schedule and Updates: with Progress Payment, Submit a Project Schedule updated as appropriate. Progress Payment submission is incomplete without an updated Project Schedule acceptable to Departmental Representative.

1.4. Requirements

1.4.1. Ensure Master Plan and detailed Project Schedules are practical and remain within specified Contract duration.

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

1.4.3. Limit activity durations to maximum of approximately 10 Working Days, to allow for progress reporting.

1.4.4. Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

1.4.5. Include Work sequencing description and schedule:

1.4.5.1. Work Sequencing description must describe sequence, methods and means to perform each major task.

1.4.5.2. Work Sequencing schedule must show on a Gantt chart, start, end and dependencies of each major task and also indicates Work to be performed in sequence and in parallel.

1.4.5.3. Major tasks includes all items identified on Unit Price Table.

1.5. Master Plan

1.5.1. Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

1.5.2. Departmental Representative will review and return revised schedules within 5 Working Days.

1.5.3. Revise impractical schedule and resubmit within 5 Working Days.

1.5.4. Accepted revised schedule will become Master Plan and be used as baseline for updates.

1.6. Project Schedule

1.6.1. Develop detailed Project Schedule derived from Master Plan.

1.6.2. Ensure detailed Project Schedule includes as a minimum milestone and activity types as follows:

1.6.2.1. Dates of commencement and completion of Work for each Description of Work identified on the Unit Price Table.

1.6.2.2. Dates of Submittals including Shop Drawings, product data, MSDS sheets and samples.

1.6.2.3. Dates of inspection and testing.

1.6.2.4. Final Completion date within the time period in accordance with the Contract, including Amendments.

1.7. Project Schedule Reporting

1.7.1. Update Project Schedule on monthly basis reflecting activity changes and completions, as well as activities in progress.

1.7.2. Include as part of Project Schedule, 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.

1.8. Project Meetings

1.8.1. 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.

1.8.2. Weather related delays with their remedial measures will be discussed and negotiated.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00

1.3. Action and Informational Submittals

1.3.1. Shop Drawings: at least 5 Working Days prior to commencing applicable Work, Submit Shop Drawings signed by a Qualified Professional.

1.4. General

1.4.1. Submission details to be commensurate for type of Work and Site conditions. Details depend on Work performed and Contractor's sequence, methods and means.

1.4.2. This section specifies general requirements and procedures for the Contractor’s Submittals of Shop Drawings, product data, samples and other submittals in accordance with the Contract to Departmental Representative. Additional specific requirements for Submittals are identified in individual technical sections.

1.4.3. Present Shop Drawings, product data and samples in SI Metric units.

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

1.4.5. Contractor’s responsibility for errors and omissions in Submittals is not relieved by the Departmental Representative’s review of Submittals.

1.4.6. Notify Departmental Representative in writing at time of Submittals, identifying deviations from requirements of Contract and stating reasons for deviations.

1.4.7. Contractor’s responsibility for deviations in Submittals from requirements of Contract is not relieved by the Departmental Representative’s review of Submittals unless Departmental Representative gives written acceptance of specific deviations.

1.4.8. Make any changes in Submittals which Departmental Representative requires to be in accordance with the Contract and resubmit as directed by the Departmental Representative.

1.4.9. Notify Departmental Representative in writing, when resubmitting, of any revisions other than those directed by the Departmental Representative.

1.4.10. Do not proceed with Work until relevant Submittals are finalized and have been accepted.

1.4.11. Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to Submit in ample time is responsibility of Contractor.

1.4.12. 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. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
1.4.13. Verify field measurements and affected adjacent Work are coordinated.
1.4.14. Adjustments made on Submittals by the Departmental Representative will not result in an increase the Contract Amount nor an Extension of Time for completion of the Work. If adjustments result in an increase to the Contract Amount or an Extension of Time for completion of the Work, notify Departmental Representative and receive approval prior to proceeding with Work.
1.4.15. Keep one final copy of each Submittal onsite.

1.5. Submission Requirements
1.5.1. Coordinate each submission with the requirements of the Work and the Contract. Individual submissions will not be reviewed until:
1.5.1.1. Submissions are complete.
1.5.1.2. All related information is available.
1.5.2. Allow 10 working days for Departmental Representative's review of each submission, unless otherwise specified.
1.5.3. All Submittals are to be sent to Departmental Representative in duplicate as a hardcopy and in electronic format compatible with Departmental Representative's software.
1.5.4. Accompany Submittals with On Site Notification:
1.5.4.1. Date.
1.5.4.2. Project title and number.
1.5.4.3. Contractor's name and address.
1.5.4.4. Identification and quantity of each Shop Drawing, product data and sample.
1.5.4.5. Other pertinent data.
1.5.5. Submissions must include:
1.5.5.1. Date and revision dates.
1.5.5.2. Project title and number.
1.5.5.3. Name and address of:
1.5.5.3.1. Subcontractor.
1.5.5.3.2. Supplier.
1.5.5.3.3. Manufacturer.
1.5.5.4. Signature of Superintendent, certifying approval of Submittals, verification of field measurements and in accordance with the Contract.
1.5.5.5. Qualified Professional to sign and seal Submittals in accordance with the Contract. Submittals to include at a minimum 1 hard copy of original ink sealed document. After Departmental Representative's review, distribute copies.

1.5.5.6. Details of appropriate portions of Work as applicable.

1.6. Shop Drawings

1.6.1. Shop Drawings are designs, drawings, figures, diagrams, illustrations, schedules, performance charts, brochures and other data intended to illustrate details of a portion of the Work which are provided by the Qualified Professional of record.
1.6.2. Maximum sheet size: ANSI E (864 x 1118 mm).
1.6.3. Submit, as directed by the Departmental Representative, electronic and 2 hard copies of Shop Drawings for each requirement requested in the specification sections and/or as directed by the Departmental Representative.
1.6.4. Cross-reference Shop Drawing information to applicable portions of the Contract.
1.6.5. Qualified Professional to sign and seal each individual Shop Drawing.
1.6.6. Qualified Professional to sign and seal final Shop Drawings and submit as directed by the Departmental Representative upon Final Completion of the construction project. Final Shop Drawings are prepared by a Qualified Professional to reflect design changes made during the construction of the Remediation by Excavation project. Final Shop Drawings are intended to incorporate addenda, change orders and other significant design changes, but not necessarily Site directions.
1.6.7. Shop Drawings must include:
1.6.7.1. The original date of issue.
1.6.7.2. The dates of all applicable revisions.
1.6.7.3. The project title.
1.6.7.4. The project address.
1.6.7.5. The project number.
1.6.7.6. Wherever applicable, the name(s) of the: Contractor, Subcontractor(s), Supplier(s), manufacturers, and separate detailers.
1.6.7.7. The sequence number for each Shop Drawing.
1.6.7.8. Identifications of all products and materials.
1.6.7.9. Relation to adjacent structures or materials.
1.6.7.10. Clearly identified field dimensions.
1.6.7.11. Applicable standards.

1.7. Shop Drawings Review

1.7.1. Departmental Representative's review of Shop Drawings only to determine if Shop Drawings are consistent with the general intent of the Contract and are in accordance with the Contract.
1.7.2. This review will not mean that Departmental Representative approves the detail design inherent in the Shop Drawings, responsibility for which will remain with Contractor submitting same.
1.7.3. This review will not relieve the Contractor of responsibility for errors or omissions in the Shop Drawings or of responsibility for meeting all requirements of the Contract.

1.7.4. Without restricting the generality of the foregoing, be responsible for:
1.7.4.1. Dimensions to be confirmed and correlated at the Site.
1.7.4.2. Information that pertains solely to fabrication processes or to techniques of construction and installation.
1.7.4.3. Coordination of the Work of all sub-trades.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. List of Signs and Devices: within 10 Working Days after Contract award and prior to mobilization to Site Submit a list of signs and other devices required for the project.

1.4. Protection of Public Traffic

1.4.1. Comply with requirements of Acts, Regulations and By-Laws in force for regulation of traffic or use of roadways upon or over which it is necessary to carry out Work or haul materials or equipment.

1.4.2. Comply with current version of BC Ministry of Transportation Traffic Control Manual for Work on Roadways.

1.4.3. Provide and maintain road access and egress to property fronting Site and in other areas in accordance with the Contract, except where other means of road access exist that are accepted.

1.5. Informational and Warning Devices

1.5.1. Provide and maintain signs, flashing warning lights, and other devices required to indicate construction activities or other temporary and unusual conditions resulting from Work which requires road user response.

1.5.2. Supply and erect signs, delineators, barricades and miscellaneous warning devices to comply with current version of BC Ministry of Transportation and Infrastructure Traffic Control Manual for Work on Roadways, or equivalent.

1.5.3. Place signs and other devices in locations recommended in current version of BC Ministry of Transportation and Infrastructure Traffic Control Manual for Work on Roadways, or equivalent.

1.5.4. Meet with Departmental Representative prior to commencement of Work to prepare list of signs and other devices required for project. If situation onsite changes, revise list for approval.

1.5.5. Continually maintain traffic control devices in use:

1.5.5.1. Check signs daily for legibility, damage, suitability and location. Clean, repair or replace to ensure clarity and reflectance.

1.5.5.2. Remove or cover signs which do not apply to conditions existing from day to day.

1.6. Control of Public Traffic

1.6.1. Provide competent flag personnel, trained in accordance with, and properly equipped to, current version of BC Ministry of Transportation Traffic Control Manual for Work on Roadways for situations as follows:

1.6.1.1. When public traffic is required to pass working vehicles or equipment that block all or part of travelled roadway.

1.6.1.2. In situations where complete protection for workers, working equipment and public traffic is not provided by other traffic control devices.

1.7. Operational Requirements

1.7.1. Maintain existing conditions for traffic throughout period of Contract except that, when required for construction in accordance with the Contract and when measures have been taken in accordance with the Contract and accepted by Departmental Representative to protect and control public traffic, existing conditions for traffic to be restricted as follows:

1.7.1.1. Maintain existing conditions for traffic crossing right-of-way.

1.7.1.2. Maintain access to on-site salt shed in coordination with departmental rep.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Contaminated Material and Non-Contaminated Material Management Plan: within 10 Working Days after Contract award and prior to mobilization to Site, Submit plan detailing management of Contaminated Material and Non-Contaminated Material. Include:

1.3.1.1. Sequence, methods and means to ensure different categories of waste are segregated.

1.3.1.2. Sequence, methods and means to transport and store Contaminated Material and Non-Contaminated Material onsite.

1.3.1.3. Sequence, methods and means to transport Contaminated Material and Non-Contaminated Material offsite. Include name, vehicle type, and licenses of transporters. For all transfer stations and interim storage facilities include name of facility; location of facility; copy of valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the facility; and evidence of compliance with municipal zoning and bylaws of facility.

1.3.1.4. Sequence, methods and means to treat Contaminated Material offsite. Include details on treatment process, disposition of contaminants, and written confirmation from facility owner acknowledging suitability of facility for material to be treated. For all offsite Treatment Facilities include name of facility; location of facility; copy of valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the facility; and evidence of compliance with municipal zoning and bylaws of facility.

1.3.1.5. Sequence, methods and means to dispose Contaminated Material and Non-Contaminated Material offsite. Include details on disposal process and written confirmation from facility owner acknowledging suitability of facility for material to be disposed. For all Disposal Facilities include name of facility; location of facility; copy of valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the facility; and evidence of compliance with municipal zoning and bylaws of facility.

1.3.2. Contaminated Water Treatment Provision Plan: within 10 Working Days after Contract award and prior to mobilization to Site, Submit design, operation procedures, manufacturers' instructions, and monitoring and sampling plan of

onsite Contaminated Water Treatment. Includes onsite infrastructure for onsite or offsite Water Treatment Plant.

1.3.3. Onsite Contaminated Water Treatment Plant Initial Testing: within 5 Working Days of conducting initial operations testing, and prior to operating or discharge, Submit results of initial operations test.

1.3.4. Onsite Contaminated Water Treatment Plant Operational Testing: within 5 Working Days of sampling Submit sampling results of operational (recurrent) testing.

1.3.5. Transport Manifests: within 5 Working Days of offsite transport, Submit documentation verifying that material has been transported appropriately. Include:

1.3.5.1. Method of transport.

1.3.5.2. Name of transport company.

1.3.5.3. Weigh scale receipt including location, date, and weight of loading, as appropriate.

1.3.5.4. Weigh scale receipt including location, date, and weight of unloading.

1.3.6. Certificate of Treatment: within 30 Working Days of treatment at Treatment Facility, Submit documentation verifying that materials have been treated by Contractor. Include:

1.3.6.1. Issued by the Treatment Facility.

1.3.6.2. On company letterhead.

1.3.6.3. Name and location of facility where the material is being treated.

1.3.6.4. Date and weight for each shipment received and total weight received at the offsite facility.

1.3.6.5. Date and weight for each treatment event and total weight treated at the offsite facility.

1.3.6.6. Treatment methodology.

1.3.6.7. Laboratory certificates demonstrating treatment objectives were met.

1.3.6.8. Disposition of treated material.

1.3.6.9. Signed by identified authorized treatment company representative.

1.3.7. Certificate of Disposal: within 30 Working Days of disposal at Disposal Facility, Submit documentation verifying that materials have been disposed by Contractor. Include:

1.3.7.1. Issued by the Disposal Facility.

1.3.7.2. On company letterhead.

1.3.7.3. Name and location of facility where the material is being disposed.

1.3.7.4. Date and weight for each shipment received and total weight received at the Disposal Facility.

1.3.7.5. Identification of acceptance of final ownership of material.

1.3.7.6. Signed by identified authorized disposal company representative.

1.4. Sequencing and Scheduling

1.4.1. Commence Work involving contact with Contaminated or potentially Contaminated Material or Wastewater after all applicable Environmental

Protection procedures (including those identified in Contaminated Material and Non-Contaminated Material Management Plan and Environmental Protection Plan) and facilities (including those identified in Site Layout) are operational and accepted by Departmental Representative.

1.4.2. Plan work sequencing and traffic patterns to prevent contamination of clean areas due to traffic or debris.

1.5. Equipment Decontamination Facility

1.5.1. Prior to commencing Work involving equipment contact with potentially Contaminated Material, construct equipment decontamination facilities to accommodate the largest potentially contaminated equipment onsite.

1.5.2. Collect and contain equipment decontamination wastewater and sediment. Transfer collected wastewater and sediment to treatment facilities accepted by Departmental Representative.

1.6. Personnel Decontamination Facility

1.6.1. Provide an area or areas close to the workers' changing facilities to enable workers and other personnel leaving areas such as exclusion area to remove deleterious and contaminated materials from boots, clothing and skin surfaces.

1.6.2. Be responsible for ensuring that all materials, chemicals, protective clothing, wash water and deleterious materials are collected, treated and disposed of in accordance with applicable environmental standards and regulations.

1.6.3. Personnel Decontamination Facility to be available for use by persons other than the Contractor's workers and Subcontractors, including federal employees, other contractor(s), and environmental agencies. Provide use of facilities to other persons.

1.7. Drum Staging Pad

1.7.1. Provide, maintain, and operate drum staging pad as required.

1.7.2. Construct drum staging pad with sump capable of collecting leachate and rain runoff. Place impermeable liner that contours over top of berm, and collects leachate and runoff from staging pad which is conducted solely to sump on staging pad. Leachate is Contaminated Water.

1.8. Soil Stockpiling

1.8.1. Provide, maintain, and operate temporary storage/stockpiling facilities as per Contractor's Site Layout.

1.8.2. Segregate Contaminated Material from Non-Contaminated Material into separate stockpiles to prevent cross-contamination.

1.8.3. Prevent precipitation from infiltrating or from directly running off stockpiled materials. Cover stockpiled materials with an impermeable cover during periods of Work stoppage including at end of each Working Day and as directed by the Departmental Representative.

1.8.4. Securely fasten covers over stockpiled material until material is loaded for offsite transport.
1.8.5. Store excavated Non-Contaminated Material only on non-contaminated surface areas. Ensure no contact between excavated Non-Contaminated Material and drainage of Contaminated Water or Contaminated Material.
1.8.6. Store excavated Contaminated Material in temporary stockpiles.
1.8.6.1. Install impermeable liner (eg asphalt or minimum 20 mil (0.5mm) polyethylene) below proposed stockpile locations to prevent contact between stockpile material and ground.
1.8.6.2. Cover stockpiled material when not being worked or sampled to prevent release of airborne dust, vapours, or odours, and to prevent saturation and leachate generation from material.
1.8.6.3. Prevent Non-Contaminated Water, including surface runoff water, from coming into contact with Contaminated Material stockpiles.
1.8.7. Segregate Contaminated Material into different treatment/disposal streams, including at a minimum:
1.8.7.1. Hazardous Waste
1.8.7.2. Waste Quality
1.8.8. Segregate different suspect material in discrete stockpiles to facilitate ex-situ characterization as directed by the Departmental Representative.
1.8.9. Assist Departmental Representative in collection of stockpile samples for exsitu characterization, if necessary. Ex-situ characterization may take up to 7 Working Days, not counting the day the sample is collected. No Standby Time charges or increases to Contract Amount or Extension of Time for completion of the Work can be incurred for Confirmation Samples results provided within 7 Working Days, not counting the day the sample is collected.
1.8.10. Do not remove Contaminated Material from stockpiles until exsitu characterization completed and as directed by Departmental Representative.

1.9. Disposal Facility

1.9.1. At minimum, perform following steps during equipment decontamination: mechanically remove packed dirt, grit, and debris by scraping and brushing without using steam or high-pressure water to reduce amount of water needed and to reduce amount of contaminated rinsate generated.
1.9.2. If required, as directed by the Departmental Representative, use high-pressure, low-volume, hot water or steam supplemented by detergents or solvents as appropriate. Pay particular attention to tire treads, equipment tracks, springs, joints, sprockets, and undercarriages. Scrub surfaces with long handle scrub brushes and cleaning agent. Rinse off and collect cleaning agent. Air dry equipment in clean area before removing from Site or travelling on clean areas. Perform assessment as directed by the Departmental Representative to determine effectiveness of decontamination.

1.9.2.1. Take appropriate measures necessary to minimize drift of mist and spray during decontamination including provision of wind screens.

1.9.2.2. Collect decontamination wastewater and sediment which accumulate in decontamination location. Treat collected wastewater as Contaminated Water. Manage decontamination sediment as Hazardous Waste.

1.9.3. In the opinion of the Departmental Representative, each piece of equipment must be inspected by the Departmental Representative after decontamination and prior to travel on clean areas or demobilization from Site. Perform additional decontamination as required in the opinion of the Departmental Representative.

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

1.10. Progress Decontamination

1.10.1. Decontaminate equipment after working in potentially contaminated Work areas and prior to subsequent Work or travel on clean areas.

1.11. Final Decontamination

1.11.1. Perform final decontamination of construction facilities, equipment, and materials which may have come in contact with potentially Contaminated Material prior to demobilization from Site.

1.12. Drums

1.12.1. Storage of liquid waste: 200 L steel drums meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.

1.12.2. Storage of solid waste: 200 L steel drums meeting Transportation and Dangerous Goods Act, closable lids, complete with labels for marking contents and date filled.

1.13. Contaminated Water Management

1.13.1. Collect Contaminated Water that has, or potentially has, come into contact with Contaminated Material including excavation and stockpile areas, or is otherwise potentially contaminated from Work activities.

1.13.2. Transport and treat collected Contaminated Water at Contaminated Water Treatment Plant.

1.14. Contaminated Water Transport

1.14.1. Assume ownership of, and be responsible for Contaminated Water once it is loaded on a vehicle for transport offsite or once it enters the Contaminated Water Treatment Plant.

1.15. Onsite Contaminated Water Treatment Plant

1.15.1. Onsite Contaminated Water Treatment: at Contractor's discretion, treat at Treatment Facility onsite provided by Contractor and accepted by the Departmental Representative.

1.15.2. Design Requirements:

1.15.2.1. Design and Operating Criteria: design Contaminated Water Treatment Plant capable of treating Contaminated Water generated from dewatering excavations and Work areas to meet Discharge Approval requirements, capable of removing oil, suspended solids, particulates, and asbestos fibers, and filter water through 5-micron particulate filter prior to discharge.

1.15.2.2. Ensure that discharges from Site are in compliance with applicable permit requirements and limitations.

1.15.2.3. Design piping to transfer liquid/solid mixtures generated by dewatering operations which require treatment to Contaminated Water Treatment Plant.

1.15.2.4. Design Contaminated Water Treatment Plant capable of receiving liquid/solid mixtures and not causing delay to dewatering operations.

1.15.2.5. Piping: 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 Contaminated Water.

1.15.3. Installation:

1.15.3.1. Prepare Site for Contaminated Water Treatment Plant.

1.15.3.2. Install component systems in accordance with installation procedures and as required.

1.15.3.3. Following installation of system, implement initial operation test in accordance with procedures developed by Contractor and submit results as directed by the Departmental Representative.

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

1.15.4. Initial Testing: determine performance of Contaminated Water Treatment Plant provided by Contractor as follows prior to commencing excavation:

1.15.4.1. Test run with potable water to ensure it is operating currently and no leaks are occurring.

1.15.4.2. Performance verification (contaminant removal) of Contaminated Water treated, stored, tested, assessed, and accepted by Departmental Representative prior to discharge.

1.15.4.3. Provide access for independent collection of treated stored water samples by the Departmental Representative.

1.15.5. Operational Testing:

1.15.5.1. Operate Contaminated Water Treatment Plant using experienced, qualified personnel and in accordance with manufacturer's instructions and procedures as Submittals by Contractor.

1.15.5.2. Collect, analyze, and assess samples as required by a Qualified Professional.

1.15.5.3. Provide access for independent collection of samples by the Departmental Representative.
1.15.5.4. On basis of analytical results by Contractor or Departmental Representative obtained from samples collected at the discharge point, make system modifications required for effluent to satisfy effluent criteria, or continue with normal dewatering operations as directed by the Departmental Representative.
1.15.6. Decommissioning/Dismantling:
1.15.6.1. Decontaminate and remove salvageable components of Contaminated Water Treatment Plant including treatment system, pumps, piping, and electrical equipment.
1.15.6.2. Dispose of non-salvageable equipment and materials at Disposal Facility accepted by the Departmental Representative. Decontaminate salvageable equipment as required prior to demobilization from Site.
1.15.7. Discharge to environment: obtain Discharge Approval from authority having jurisdiction.

1.16. Offsite Contaminated Water Treatment Plant
1.16.1. Offsite Contaminated Water Treatment: at Contractor's discretion, treat at Treatment Facility offsite provided by Contractor and accepted by the Departmental Representative.
1.16.2. Offsite Treatment Facility must:
1.16.2.1. Be an existing offsite facility located in Canada or the United States.
1.16.2.2. Be designed, constructed and operated for the handling or processing of waste in such a manner as to change the physical, chemical or biological character or composition of Contaminated Water. Treatment includes bioremediation and filtering. Treatment does not include blending, mixing, or dilution.
1.16.2.3. Hold a valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the treatment of relevant Contaminated Material.
1.16.2.4. Comply with applicable municipal zoning, bylaws, and other applicable requirements.
1.16.3. Facility Authority:
1.16.3.1. For facilities within provincial or territorial jurisdiction: the relevant provincial or territorial ministry.
1.16.3.2. For facilities on First Nations reserve land in Canada not subject to the First Nation Land Management regime: Indigenous and Northern Affairs Canada.
1.16.3.3. For facilities on First Nations reserve land in Canada subject to the First Nation Land Management regime: the relevant First Nation Council. In addition, a Qualified Professional must certify that the facility is appropriate for the relevant Contaminated Material.
1.16.3.4. For facilities in the United States of America: either or both of the Environmental Protection Agency and the relevant State, as appropriate.

1.16.4. Treat material as soon as practical and within 100 Working Days of leaving Site or as required by Contract unless otherwise accepted by Departmental Representative.

1.17. Contaminated Material Management

1.17.1. Remove all Contaminated Material within Work areas in accordance with the Contract and as directed by the Departmental Representative.

1.17.2. Minimize generation of Contaminated Material to greatest extent practicable. Take necessary precautions to avoid mixing during excavation, handling, loading, stockpiling, and transport of Non-Contaminated Material with Contaminated Material, and Waste Quality with Hazardous Waste.

1.17.3. Segregate, excavate, handle, stockpile, load, unload, haul, interim storage, treat, and dispose Contaminated Material separately into the following classifications in accordance with the Contract or as directed by the Departmental Representative based on insitu results, field observations, field measurements, and/or ex-situ characterization:

1.17.3.1. Hazardous Waste

1.17.3.2. Waste Quality

1.17.4. Handle, stockpile, load, unload, haul, and interim store Contaminated Material from the Site separately from material from other sites.

1.17.5. Treat and dispose Contaminated Material from the Site separately from material from other sites to greatest extent practicable as acceptable to the Departmental Representative.

1.17.6. Material characterization additional to information provided in Contract required by transport, Treatment Facility or Disposal Facility responsibility of Contractor.

1.18. Offsite Contaminated Material Deposition

1.18.1. Treat Contaminated Material offsite as follows, otherwise in accordance with the Contract, or as directed by the Departmental Representative:

1.18.1.1. Hazardous Waste: May be treated at a Treatment Facility prior to disposal at a Disposal Facility. Whether Treatment is required is dependent on Contractor's methods and means to meet Transport, Disposal, Regulatory or other requirements, and is not a project requirement.

1.18.1.2. May be treated at a Treatment Facility prior to disposal at a Disposal Facility. Whether Treatment is required is dependent on Contractor's methods and means to meet Transport, Disposal, Regulatory or other requirements, and is not a project requirement.

1.18.1.3. Dispose of Contaminated Material offsite as follows, otherwise in accordance with the Contract, or as directed by the Departmental Representative:

1.19. Contaminated Material Transport – Owner's Soil Treatment Facility

1.19.1. Assume ownership of, and be responsible for, Contaminated Material once it is loaded on a vehicle for transport.

1.19.2. Transport material as soon as practical. Do not unreasonably stockpile material onsite.
1.19.3. Cover material while being transported to prevent release of airborne dust, vapours, or odours, and to prevent saturation and leachate generation from material.
1.19.4. Excess water in soil or sediment must not be allowed to flow out of vehicle during transport.
1.19.5. Stabilize soil and sediment as necessary.
1.19.6. All vehicles, vessels and operators must be appropriately licensed and equipped to transport Hazardous Waste soil and sediment.
1.19.7. Transport material to location shown on Drawings.
1.19.8. Manifest estimated volumes of all material transported from Site to Owner's Soil Treatment Facility. Submit all manifests as directed by the Departmental Representative.
1.19.9. Ownership and responsibility of Contaminated Material reverts to PSPC after transport ends and soil has been placed in Owner's Soil Treatment Facility.

1.20. Contaminated Material Transport – Offsite

1.20.1. Assume ownership of, and be responsible for, Contaminated Material once it is loaded on a vehicle for transport.
1.20.2. Transport material as soon as practical. Do not unreasonably stockpile material onsite.
1.20.3. Cover material while being transported to prevent release of airborne dust, vapours, or odours, and to prevent saturation and leachate generation from material.
1.20.4. Excess water in material must not be allowed to flow out of vehicle during transport.
1.20.5. Stabilize material as necessary.
1.20.6. All vehicles, vessels and operators must be appropriately licensed and equipped to transport Contaminated Material.
1.20.7. Manifest and correlate quantities of all material transported from Site documenting quantity removed from Site, movement, transfer stations, interim storage and treatment, and weight of material at final Disposal Facility. Submit all manifests, as directed by the Departmental Representative.
1.20.8. Material transported with discrepancies in manifests must be resolved as required by regulations and as acceptable to the Departmental Representative. Discrepancies include:
1.20.8.1. No manifest or an incomplete manifest.
1.20.8.2. The material transported does not match the description in the manifest.
1.20.8.3. The amount transported differs by more than 5% in the manifest.
1.20.8.4. The material transported is in a hazardous condition.
1.20.9. Transfer/Interim Storage Facility must:
1.20.9.1. Be an existing offsite facility located in Canada or the United States.

1.20.9.2. Be designed, constructed and operated for the transfer or interim storage of Contaminated Material.
1.20.9.3. Hold a valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the transfer or interim storage of relevant Contaminated Material.
1.20.9.4. Comply with applicable municipal zoning, bylaws, and other applicable requirements.
1.20.10. Facility Authority:
1.20.10.1. For facilities within provincial or territorial jurisdiction: the relevant provincial or territorial ministry.
1.20.10.2. For facilities on First Nations reserve land in Canada not subject to the First Nation Land Management regime: Indigenous and Northern Affairs Canada.
1.20.10.3. For facilities on First Nations reserve land in Canada subject to the First Nation Land Management regime: the relevant First Nation Council. In addition, a Qualified Professional must certify that the facility is appropriate for the relevant Contaminated Material.
1.20.11. For facilities in the United States of America: either or both of the Environmental Protection Agency and the relevant State, as appropriate.

1.21. Contaminated Material Treatment – Offsite

1.21.1. Assume ownership of, and be responsible for, Contaminated Material treated offsite.
1.21.2. Contaminated Material Treatment - Offsite: treat at Treatment Facility provided by Contractor and accepted by the Departmental Representative.
1.21.3. Offsite Treatment Facility must:
1.21.3.1. Be an existing offsite facility located in Canada or the United States.
1.21.3.2. Be designed, constructed and operated for the handling or processing of waste in such a manner as to change the physical, chemical or biological character or composition of Contaminated Material. Treatment includes bioremediation, thermal desorption, and incineration. Treatment does not include blending, mixing, or dilution.
1.21.3.3. Hold a valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the treatment of relevant Contaminated Material.
1.21.3.4. Comply with applicable municipal zoning, bylaws, and other applicable requirements.
1.21.4. Facility Authority:
1.21.4.1. For facilities within provincial or territorial jurisdiction: the relevant provincial or territorial ministry.
1.21.4.2. For facilities on First Nations reserve land in Canada not subject to the First Nation Land Management regime: Indigenous and Northern Affairs Canada.
1.21.4.3. For facilities on First Nations reserve land in Canada subject to the First Nation Land Management regime: the relevant First Nation Council. In

addition, a Qualified Professional must certify that the facility is appropriate for the relevant Contaminated Material.

1.21.4.4. For facilities in the United States of America: either or both of the Environmental Protection Agency and the relevant State, as appropriate.

1.21.5. Treat material as soon as practical and within 100 Working Days of leaving Site or as required by Contract unless otherwise accepted by Departmental Representative.

1.21.6. Material sent to an offsite Treatment Facility must subsequently be disposed of at a Disposal Facility after treatment

1.21.7. If proposed Treatment Facility is not acceptable to Departmental Representative, provide an alternate Treatment Facility that is acceptable.

1.21.8. Submit Certificates of Treatment for all Contaminated material treated offsite.

1.22. Contaminated Material Disposal

1.22.1. Assume ownership of, and be responsible for, Contaminated Material disposed.

1.22.2. Contaminated Material Disposal: dispose Contaminated Material, including offsite treated Contaminated Material that may no longer be contaminated, at Disposal Facility provided by Contractor and accepted by the Departmental Representative.

1.22.3. Disposal Facility must:

1.22.3.1. Be an existing offsite facility located in Canada.

1.22.3.2. Be designed, constructed and operated to prevent any pollution from being caused by the facility outside the area of the facility from waste placed in or on land within the facility.

1.22.3.3. Hold a valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the disposal of relevant Contaminated Material.

1.22.3.4. Comply with applicable municipal zoning, bylaws, and other applicable requirements.

1.22.4. Facility Authority:

1.22.4.1. For facilities within provincial or territorial jurisdiction: the relevant provincial or territorial ministry.

1.22.4.2. For facilities on First Nations reserve land in Canada not subject to the First Nation Land Management regime: Indigenous and Northern Affairs Canada.

1.22.4.3. For facilities on First Nations reserve land in Canada subject to the First Nation Land Management regime: the relevant First Nation Council. In addition, a Qualified Professional must certify that the facility is appropriate for the relevant Contaminated Material.

1.22.4.4. For facilities in the United States of America: either or both of the Environmental Protection Agency and the relevant State, as appropriate.

1.22.5. Dispose material as soon as practical and within 100 Working Days of leaving Site or as required by Contract unless otherwise accepted by Departmental Representative.

1.22.6. Material sent to a Disposal Facility must be permanently stored at that facility.

1.22.7. If proposed Disposal Facility is not acceptable to Departmental Representative, provide an alternate Disposal Facility that is acceptable.
1.22.8. Submit Certificates of Disposal for all Contaminated Material disposed offsite.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used

END OF SECTION

1. PART 1 – GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Submit to Departmental Representative submittals listed for review.
1.3.2. Work affected by Submittal must not proceed until review is complete.
1.3.3. Submit the following:
1.3.3.1. Health and Safety Plan.
1.3.3.2. Copies of reports or directions issued by federal and provincial health and safety inspectors.
1.3.3.3. Copies of incident and accident reports.
1.3.3.4. Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
1.3.3.5. Emergency Procedures.
1.3.3.6. Notice of Project
1.3.4. The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 Working Days after receipt of the plan.
1.3.5. If changes are required, revise the plan as appropriate and resubmit to Departmental Representative within 5 Working Days.
1.3.6. Submittal of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It will not:
1.3.6.1. Be construed to imply approval by the Departmental Representative.
1.3.6.2. Be interpreted as a warranty of being complete, accurate and legislatively compliant.
1.3.6.3. Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.4. References

1.4.1. Government of Canada:
1.4.1.1. Canada Labour Code - Part II
1.4.1.2. Canada Occupational Health and Safety Regulations
1.4.2. National Building Code of Canada (NBC):
1.4.2.1. Part 8, Safety Measures at Construction and Demolition Sites.
1.4.3. Canadian Standards Association (CSA) as amended:
1.4.3.1. CSA Z797-2009 Code of Practice for Access Scaffold

1.4.3.2. CSA S269.1-1975 (R2003) Falsework for Construction Purposes
1.4.3.3. CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures
1.4.4. National Fire Code of Canada 2010 (as amended):
1.4.4.1. Part 5 – Hazardous Processes and Operations and Division B as applicable and required.
1.4.4.2. FCC No. 302, Standard for Welding and Cutting
1.4.5. American National Standards Institute (ANSI):
1.4.5.1. ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems
1.4.6. Province of British Columbia:
1.4.6.1. Workers Compensation Act Part 3-Occupational Health and Safety
1.4.6.2. Occupational Health and Safety Regulation

1.5. Regulatory Requirements

1.5.1. Comply with codes, acts, bylaws, standards and regulations applicable to the performance of the Work in accordance with the Contract to ensure safe operations at Site.
1.5.2. In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.6. Worker's Coverage

1.6.1. Comply fully with the relevant Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the Final Completion of the Work.
1.6.2. Maintain Workers coverage as required by relevant acts and regulations during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.7. Compliance with Regulations

1.7.1. PSPC may terminate the Contract without liability to PSPC where the Contractor, in the opinion of PSPC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.
1.7.2. It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the Work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.8. Responsibility

1.8.1. Assume responsibility as the Prime Contractor for Work under this contract.

1.8.1.1. Be responsible for health and safety of persons onsite, safety of property onsite and for protection of persons adjacent to Site and environment to extent that they may be affected by conduct of Work.
1.8.1.2. Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable Federal, Provincial, Territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9. Health and Safety Coordinator
1.9.1. The Health and Safety Coordinator must:
1.9.1.1. Be responsible for completing all health and safety training, and ensuring that personnel that do not successfully complete the required training are not permitted to enter the Site to perform Work.
1.9.1.2. Be responsible for implementing, daily enforcing, and monitoring the site-specific Health and Safety Plan.
1.9.1.3. Be on Site during execution of Work.
1.9.1.4. Provide emergency first aid attendant and support truck for the duration of the project.

1.10. General Conditions
1.10.1. Provide safety barricades and lights around Site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.
1.10.2. Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site:
1.10.2.1. Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

1.11. Project/Site Conditions
1.11.1. Work at Site will involve contact with contaminants identified in Specifications and environmental reports.

1.12. Work Permits
1.12.1. Obtain specialty permits related to project before start of Work.

1.13. Filing of Notice
1.13.1. The Prime Contractor is to complete and submit a Notice of Project as required by Provincial or Territorial authorities.
1.13.2. Provide copies of all notices to the Departmental Representative.

1.14. Health and Safety Plan
1.14.1. Conduct a site-specific hazard assessment based on review of Contract, required Work, and project Site. Identify any known and potential health risks and safety hazards.

1.14.2. Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
1.14.2.1. Primary requirements:
1.14.2.1.1. Contractor's safety policy.
1.14.2.1.2. Identification of applicable compliance obligations.
1.14.2.1.3. Definition of responsibilities for project safety/organization chart for project.
1.14.2.1.4. General safety rules for project.
1.14.2.1.5. Job-specific safe work procedures.
1.14.2.1.6. Inspection policy and procedures.
1.14.2.1.7. Incident reporting and investigation policy and procedures.
1.14.2.1.8. Occupational Health and Safety Committee/Representative procedures.
1.14.2.1.9. Occupational Health and Safety meetings.
1.14.2.1.10. Occupational Health and Safety communications and record keeping procedures.
1.14.2.2. Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the Work.
1.14.2.3. List hazardous materials to be brought onsite as required by Work.
1.14.2.4. Indicate Engineering and administrative control measures to be implemented at the Site for managing identified risks and hazards.
1.14.2.5. Identify personal protective equipment (PPE) to be used by workers.
1.14.2.6. Identify personnel and alternates responsible for site safety and health.
1.14.2.7. Identify personnel training requirements and training plan, including site orientation for new workers.
1.14.3. Develop the plan in collaboration with all subcontractors. Ensure that work/activities of Subcontractors are included in the hazard assessment and are reflected in the plan.
1.14.4. Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.
1.14.5. Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PSPC) will not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract Documents.

1.15. Emergency Procedures
1.15.1. List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (ie names/telephone numbers) of:
1.15.1.1. Designated personnel from own company.
1.15.1.2. Regulatory agencies applicable to Work and as per legislated regulations.
1.15.1.3. Local emergency resources.
1.15.1.4. Departmental Representative and site staff.

1.15.2. Include the following provisions in the emergency procedures:
1.15.2.1. Notify workers and the first-aid attendant, of the nature and location of the emergency.
1.15.2.2. Evacuate all workers safely.
1.15.2.3. Check and confirm the safe evacuation of all workers.
1.15.2.4. Notify the fire department or other emergency responders.
1.15.2.5. Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.
1.15.2.6. Notify Departmental Representative and Site staff.
1.15.3. Provide written rescue/evacuation procedures as required for, but not limited to:
1.15.3.1. Work at high angles.
1.15.3.2. Work in confined spaces or where there is a risk of entrapment.
1.15.3.3. Work with hazardous substances.
1.15.3.4. Underground work.
1.15.3.5. Work on, over, under and adjacent to water.
1.15.3.6. Workplaces where there are persons who require physical assistance to be moved.
1.15.4. Design and mark emergency exit routes to provide quick and unimpeded exit.
1.15.5. Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

1.16. Hazardous Products
1.16.1. 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 (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.
1.16.2. Where use of hazardous and toxic products cannot be avoided:
1.16.2.1. Notify Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as required.
1.16.2.2. As required, in conjunction with Departmental Representative, schedule to carry out Work during "off hours" when tenants have left the building.
1.16.2.3. Provide adequate means of ventilation as required.

1.17. Unforeseen Hazards
1.17.1. Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the Work, immediately stop Work and advise the Departmental Representative verbally and in writing.

1.18. Posted Documents
1.18.1. Post legible versions of the following documents onsite:
1.18.1.1. Health and Safety Plan.
1.18.1.2. Sequence of Work.
1.18.1.3. Emergency procedures.

1.18.1.4. Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
1.18.1.5. Notice of Project.
1.18.1.6. Floor plans or site plans.
1.18.1.7. Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
1.18.1.8. Workplace Hazardous Materials Information System (WHMIS) documents.
1.18.1.9. Material Safety Data Sheets (MSDS).
1.18.1.10. List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.
1.18.2. Post all Material Safety Data Sheets (MSDS) onsite, in a common area, visible to all workers and in locations accessible to tenants when Work of this Contract includes construction activities adjacent to occupied areas.
1.18.3. Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as accepted by the Departmental Representative.

1.19. Meetings

1.19.1. Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.
1.19.2. Ensure all site personnel attend a daily health and safety toolbox meeting at the beginning of each shift, which must include:
1.19.2.1. Sign-in of all attendees.
1.19.2.2. Planned Work activities and environmental considerations for that shift.
1.19.2.3. Hazards associated with these Work activities, including environmental hazards (eg potential for hypothermia, heat exhaustion, heat stroke).
1.19.2.4. Appropriate job-specific safe work procedures.
1.19.2.5. Required personal protective equipment (PPE).
1.19.2.6. Appropriate emergency procedures.
1.19.2.7. Review recent accidents on Site, including near misses.
1.19.3. Retain records of all health and safety meetings onsite during Work, and retain as corporate records for a minimum of 7 years after Work is completed.

1.20. Correction of Non-Compliance

1.20.1. Immediately address health and safety non-compliance issues identified by the Departmental Representative.
1.20.2. Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.
1.20.3. The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".
1.20.4. Correct non-compliance.

1.21. Hazardous Occurrence Investigation and Reporting

1.21.1. Hazard Includes:

1.21.1.1. Any source of potential damage, harm or adverse effects on life, health, property or environment at work. It refers to any biological, chemical, ergonomic, physical, psychosocial and safety factor that is reasonably likely to cause harm or damage to humans, other organisms, or the environment in the absence of its control. Sometimes a hazard is referred to as being the actual harm or the health effect it caused rather than the hazard. For example the disease tuberculosis might be called a hazard by some but in general the tuberculosis-causing bacteria would be considered the “hazard” or “hazardous biological agent”. Exposure to tuberculosis would be the hazardous incident. For types of Hazards refer to Annex 3 of the Standard on Hazard Prevention Program.

1.21.2. Hazardous Occurrence includes:

1.21.2.1. An event occurring at a PSPC managed building or worksite, or through the course of an employee's work that results in, or has the potential to result in, a fatality, injury, illness, exposure to a hazardous substance or property damage or an escapement of a hazardous material. For the purpose of investigating, recording and reporting hazardous occurrences, the following are included under this term: disabling injuries, minor injuries and near- misses.

1.21.3. Hazardous Occurrence Investigation and Reporting Procedures:

1.21.3.1. Includes information regarding the person involved and the basic circumstances surrounding the hazardous occurrence.

1.21.3.2. Provides a detailed and thorough description of the hazardous occurrence and the sequence of events.

1.21.3.3. Indicates corrective measures that have been taken since the occurrence.

1.21.3.4. Requires the appointment of a qualified investigator.

1.21.3.5. Provides recommendations for additional corrective measures, if required.

1.21.4. Fatal or Serious Accidents Procedures:

1.21.4.1. Call emergency number to advise the police organization having jurisdiction to secure the scene and investigate the matter.

1.21.4.2. Advise the Departmental Representative of the fatality or serious accident within 1 hour.

1.21.4.3. No investigation will be conducted at the scene until the police service having jurisdiction has released the scene.

1.21.4.4. Unless authorized to do so, do not allow anyone to remove or in any way interfere with or disturb any wreckage, article or thing related to the incident except to the extent necessary to: save a life, prevent injury or relieve human suffering in the vicinity; maintain an essential public service; or prevent unnecessary damage to or loss of property.

1.22. Utility Clearance

1.22.1. The Contractor is solely responsible for utility clearance.

1.22.2. The Contractor will not reply upon Drawings or other information provided with utility locations.

1.23. Personal Protective Equipment Program

1.23.1. Submit Personal Protective Equipment (PPE) program addressing:

1.23.1.1. Donning and doffing procedures.

1.23.1.2. PPE selection based upon Site hazards.

1.23.1.3. PPE use and limitations of equipment.

1.23.1.4. Work mission duration, PPE maintenance and storage.

1.23.1.5. PPE decontamination and disposal.

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

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

1.23.1.8. Medical surveillance requirements for personnel assigned to work at Site.

1.23.1.9. 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.

1.23.1.10. Site control measures employed at Site including site map, site work zones, use of 'buddy system', site communications including site security, alerting means for emergencies, standard operating procedures or safe work practices, and identification of nearest medical assistance.

1.23.1.11. Decontamination procedures for both personnel and equipment.

1.23.1.12. Emergency response requirements addressing: pre-emergency planning, personnel roles, lines of authority and communication, emergency recognition and prevention, safe distances and places of refuge, site security and control, evacuation routes and procedures, decontamination procedures not covered under decontamination section, emergency medical treatment and first aid, emergency alerting and response procedures, critique of response and follow-up, PPE and emergency equipment, site topography, layout, prevailing weather conditions, and procedures for reporting incidents to local, provincial, or federal agencies.

1.23.1.13. Written respiratory protection program for project activities.

1.23.1.14. Procedures dealing with heat and/or cold stress.

1.23.1.15. Spill containment program if drummed waste material is generated, excavated, stored, or managed onsite.

1.24. Offsite Contingency and Emergency Response Plan

1.24.1. Prior to commencing Work involving handling of hazardous materials, develop offsite Contingency and Emergency Response Plan.

1.24.2. Plan must provide immediate response to serious site occurrence such as explosion, fire, or migration of significant quantities of toxic or hazardous material from Site.

1.25. Personnel Health, Safety, and Hygiene

1.25.1. Training: ensure personnel entering Site are trained in accordance with specified personnel training requirements. Training session must be completed by Health and Safety Officer.

1.25.2. Levels of Protection: establish levels of protection for each Work area based on planned activity and location of activity.

1.25.3. Personal Protective Equipment:

1.25.3.1. Furnish site personnel with appropriate PPE.

1.25.3.2. Unless identified otherwise in site-specific health and safety plan, minimum PPE to include: industrial protective headwear, high-visibility safety apparel, and protective footwear.

1.25.3.3. Ensure that safety equipment and protective clothing is kept clean and maintained.

1.25.4. Develop protective equipment usage procedures and ensure that procedures are strictly followed by site personnel; include following procedures as minimum:

1.25.4.1. Ensure industrial protective headwear is of appropriate CSA Standard and meets other appropriate standards.

1.25.4.2. Ensure high-visibility safety apparel is of appropriate CSA Standard and meets other appropriate standards.

1.25.4.3. Ensure protective footwear is of appropriate CSA Standard and meets other appropriate standards.

1.25.4.4. Dispose of or decontaminate PPE worn onsite at end of each workday.

1.25.4.5. Decontaminate reusable PPE before reissuing.

1.25.4.6. Ensure site personnel have passed respirator fit test prior to entering potentially volatile contaminated work areas, as appropriate.

1.25.4.7. Ensure facial hair does not interfere with proper respirator fit.

1.25.5. Respiratory Protection:

1.25.5.1. 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.

1.25.5.2. Develop, implement, and maintain respirator program.

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

1.25.5.4. Ensure levels of protection as listed have been chosen consistent with site-specific potential airborne hazards associated with major contaminants identified onsite.

1.25.5.5. In absence of additional air monitoring information or substance identification, retain an industrial hygiene specialist to determine minimum levels of respiratory protection required.

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

1.25.5.7. Ensure appropriate respiratory protection during Work activities. As a minimum requirement, ensure that persons entering potentially contaminated work areas are supplied with and use appropriate respiratory protection.

1.25.6. Heat Stress/Cold Stress: implement heat stress or cold stress monitoring program as applicable and include in site-specific Health and Safety Plan.
1.25.7. Personnel Hygiene and Personnel Decontamination Procedures. Provide minimum as follows:
1.25.7.1. Suitable containers for storage and disposal of used disposable PPE.
1.25.7.2. Potable water and suitable sanitation facility.
1.25.8. Emergency and First-Aid Equipment:
1.25.8.1. Locate and maintain emergency and first-aid equipment in appropriate location onsite including first-aid kit to accommodate number of site personnel; portable emergency eye wash; two 9 kg ABC type dry chemical fire extinguishers.
1.25.9. Site Communications:
1.25.9.1. Post emergency numbers near site telephones.
1.25.9.2. Ensure personnel use of "buddy" system and develop hand signal system appropriate for site activities.
1.25.9.3. Provide employee alarm system to notify employees of site emergency situations or to stop Work activities if necessary.
1.25.9.4. Furnish selected personnel with 2-way radios.
1.25.9.5. Safety Meetings: conduct mandatory daily safety meetings for personnel, and additionally as required by special or Work-related conditions; include refresher training for existing equipment and protocols, review ongoing safety issues and protocols, and examine new site conditions as encountered. Hold additional safety meetings on as-needed basis.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Environmental Protection Plan: within 10 Working Days after Contract award and prior to mobilization to Site, Submit a plan detailing protection of the environment. Include:

1.3.1.1. Comprehensive overview of known or potential environmental issues to be addressed during Work.

1.3.1.2. Identify requirements that plan complies with. Includes: permits, certificates, approvals, or any other form of authorizations; other federal, provincial, or municipal requirements; and in accordance with the Contract.

1.3.1.3. Names and qualifications of persons responsible for ensuring adherence to Environmental Protection Plan.

1.3.1.4. Names and qualifications of persons responsible for manifesting material to be removed from Site.

1.3.1.5. Names and qualifications of persons responsible for training Site personnel.

1.3.1.6. Description of Environmental Protection personnel training program.

1.3.1.7. Work Area Plan showing proposed activity in each portion of areas, such as exclusion zone(s), decontamination zone(s) and clean zone(s), and identifying areas of limited use or non-use. Ensure plan includes measures for marking limits of use areas and methods for protection of features to be preserved within authorized Work areas. Drawings showing locations of proposed temporary excavations or embankments for haul roads, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials onsite.

1.3.1.8. Contamination Prevention Plan identifying hazardous, deleterious or regulated substances to be used onsite; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with federal, provincial, and municipal laws and regulations for storage and handling of these materials.

1.3.1.9. Spill Control Plan including procedures, instructions, and reports to be used in event of spill of hazardous, deleterious or regulated substances. Identify locations and contents of spill kits.

1.3.1.10. Communications Plan identifying emergency contact list and conditions for implementing emergency contact. Emergency contact to include: Contractor emergency response team including Superintendent; Departmental Representative and alternate, and other contractor(s) and individuals as

directed by the Departmental Representative; and federal, provincial, and municipal emergency contacts.

1.3.1.11. Air Pollution Control Plan detailing provisions to assure that contaminants, dust, debris, materials, and trash, are contained onsite. Include procedures, in accordance with the Contract, if air pollution does not comply with appropriate levels, there are public complaints, or if onsite or offsite damage occurs.

1.3.1.12. Non-Contaminated Material Disposal Plan identifying methods and locations for solid waste disposal including clearing waste. Include name, location, provincial or territorial authorizations, and evidence of compliance with municipal zoning and bylaws of Landfill Facility.

1.3.1.13. Wastewater Management Plan identifying methods and procedures for management and discharge of Contaminated and Non-Contaminated Water including surface waters and wastewater which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of groundwater, disinfection water, hydrostatic test water, and water used in flushing of lines. Include method of treatment and disposal.

1.3.1.14. Solid Waste and Wastewater Disposal Plan identifying methods and locations for solid waste disposal including clearing waste. Include name, location, provincial or territorial authorizations, and evidence of compliance with Municipal zoning and bylaws of Disposal Facility and/or copy of municipal permit to discharge to sewer system.

1.3.1.15. Erosion and Sediment Control Plan identifying type and location of erosion and sediment controls to be provided including monitoring and reporting requirements to assure that control measures are in compliance with erosion and sediment control plan, federal, provincial, and municipal laws and regulations.

1.3.2. Pollution Control Procedures Modification: immediately when pollution control procedures are inadequate, as directed by the Departmental Representative, Submit modified procedures to resolve problem.

1.3.3. Pollution Control Remediation: immediately when soil, sediment or water contaminated by Contractor's activities are inadequate as directed by the Departmental Representative, Submit remediation procedures.

1.3.4. Dust and Particulate Control Procedures Modification: immediately when dust and particulate control measures are inadequate as directed by the Departmental Representative, Submit modified procedures to resolve problem.

1.4. Fires

1.4.1. Fires and burning of rubbish onsite not permitted.

1.5. Cleaning

1.5.1. Maintain cleanliness of Work and surrounding Site to comply with federal, provincial, and municipal fire and safety laws, ordinances, codes, and regulations applicable to the performance of the Work.

1.5.2. Coordinate cleaning operations with disposal operations to prevent accumulation of dust, dirt, debris, rubbish, and waste materials.
1.5.3. Ensure cleanup of the Work areas each day after Final Completion of Work.

1.6. Site Clearing and Plant Protection
1.6.1. Minimize stripping of Topsoil and vegetation.
1.6.2. Restrict tree and plant removal to areas in accordance with the Contract or as directed by the Departmental Representative. Protect all other trees and plants onsite and offsite.
1.6.3. Salvage all trees and plants to be removed in accordance with the Contract or as directed by the Departmental Representative.
1.6.4. Wrap salvaged trees in burlap, trees and shrubs adjacent to construction Work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.
1.6.5. Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage. Avoid unnecessary traffic, dumping and storage of materials over root zones.

1.7. Vibration
1.7.1. Maintain acceptable vibration levels not injurious to public health or safety, to the environment, to onsite or offsite property, or to any part of Work completed or under construction.

1.8. Noise
1.8.1. Maintain acceptable noise levels not injurious to public health or safety or to the environment.

1.9. Maintenance of Public Roads
1.9.1. Prevent tracking or spilling of debris or material onto public roads.
1.9.2. Immediately sweep or scrape up debris or material on public roads.
1.9.3. Clean public roads within a 200 m radius of the Site entrance at least once per shift.

1.10. Pollution Control
1.10.1. Pollution includes spills or other releases from Contractor’s activities that could potentially contaminate soil, sediment, water, and atmosphere from discharge of hazardous, deleterious or regulated substances, including from equipment and material handling.
1.10.2. Provide sequence, methods and means, and facilities to prevent spills or releases.
1.10.2.1. Maintain temporary erosion and pollution control features.
1.10.2.2. Do not store fuel onsite other than tanks forming part of the equipment.
1.10.2.3. Control emissions from equipment and plant to meet applicable authorities' emission requirements.

1.10.2.4. Contractor to regularly inspect all machinery on the Site to ensure it is in good repair and free of leaks.
1.10.3. Inadequate procedures:
1.10.3.1. Stop relevant Work if procedures are inadequate to prevent spills or other releases, or when monitoring indicates that release equals or exceeds regulated or levels in accordance with the Contract.
1.10.3.2. Submit procedures proposed to resolve problem.
1.10.3.3. Make necessary changes to operations prior to resuming excavation, handling, processing, or other Work that can cause spills or other releases.
1.10.3.4. Departmental Representative can stop relevant Work at any time when Contractor's Work procedures are inadequate to prevent spills or other releases, or when monitoring indicates that release equals or exceeds regulated quantities or levels in accordance with the Contract. Do not proceed with stopped Work until corrections accepted by Departmental Representative.
1.10.4. Be prepared to intercept, cleanup, and dispose of spills or other releases that can occur whether on land or water.
1.10.5. Spill kits and containment are to be maintained onsite and ready for deployment in the event of spills, leaks, or other releases.
1.10.5.1. Spill kits are to include sufficient quantities of absorbent material, containers, booms, shovels and other tools, and personal protective equipment.
1.10.5.2. Spill response materials must be compatible with type of equipment being used or type of material being handled.
1.10.5.3. Spill kits are to be in close proximity to machinery.
1.10.5.4. During the Work there are to be trained and qualified personnel available that are ready to deploy spill kits when necessary.
1.10.6. Take immediate action using available resources to contain and mitigate effects on environment and persons from spill or release.
1.10.7. Promptly report spills and releases potentially causing damage to environment to:
1.10.7.1. Authority having jurisdiction or interest in spill or other release including conservation authority, water supply authorities, drainage authority, road authority, and fire department.
1.10.7.2. Contractor emergency response team including Superintendent.
1.10.7.3. Departmental Representative and other contractor(s) and individuals as directed by the Departmental Representative.
1.10.8. Departmental Representative can collect samples for chemical analyses prior to, during, and upon Final Completion of Work to monitor potential pollution caused by Contractor’s activities. Assist Departmental Representative in collection of samples.
1.10.9. Remediation of soil, sediment or water contaminated by Contractor’s activities.
1.10.9.1. Remediate all soil, sediment or water contaminated by Contractor’s activities associated with the Work onsite and offsite.

1.10.9.2. Remediation includes excavation, pumping, testing, transport, treatment and disposal as appropriate for the type of contamination incurred, and at a minimum in accordance with the Contract.
1.10.9.3. Submit procedures for remediating soil, sediment or water contaminated by Contractor's activities.
1.10.9.4. Remediate as directed by the Departmental Representative.
1.10.9.5. Contractor is responsible for any additional investigation, testing, and assessments required as acceptable to the Departmental Representative.

1.11. Dust and Particulate Control

1.11.1. Execute Work by methods to minimize raising dust from construction operations.
1.11.2. Prevent fugitive dust from the Site from interfering with onsite and offsite uses.
1.11.3. Prevent dust from spreading to neighbouring properties.
1.11.4. Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads, excavations, and stockpiles.
1.11.5. Implement and maintain dust and particulate control measures immediately as directed by the Departmental Representative during Work and in accordance with regulations and in accordance with the Contract.
1.11.6. Provide positive means to prevent airborne dust from dispersing into atmosphere. Use fresh (non-saline) water for dust and particulate control.
1.11.7. As minimum, use appropriate covers on vehicles, including trucks, barges, and trains, hauling fine or dusty material. Use watertight vehicles to haul wet materials.
1.11.8. Inadequate procedures:
1.11.8.1. Stop relevant Work if dust and particulate control is not sufficient for controlling dusts and particulates into atmosphere, or when monitoring indicates that dust or particulate levels equal or exceed regulated or levels in accordance with the Contract.
1.11.8.2. Submit procedures proposed to resolve problem.
1.11.8.3. Make necessary changes to operations prior to resuming excavation, handling, processing, or other Work that can cause release of dusts or particulates.
1.11.8.4. Departmental Representative can stop relevant Work at any time when Contractor's Work procedures are inadequate to prevent release of dusts or particulates, or when monitoring indicates that dust or particulate levels equal or exceed regulated or levels in accordance with the Contract. Do not proceed with stopped Work until corrections accepted by Departmental Representative.

1.12. Non-Contaminated Material removal

1.12.1. Remove all Non-Contaminated Material within Work areas in accordance with the Contract and as directed by the Departmental Representative.
1.12.2. Remove surplus materials and temporary facilities from Site.
1.12.3. Dispose of waste offsite.
1.12.4. Do not burn or bury any waste onsite.
1.12.5. Do not discharge wastes into streams or waterways.
1.12.6. Do not dispose of volatile or hazardous materials such as mineral spirits, oil, or paint thinner in storm or sanitary drains.

1.13. Sewage Wastewater

1.13.1. Store Sewage Wastewater from toilet facilities with wastewater from handbasins, and/or showers, for ultimate disposal.
1.13.2. Provide, operate, and maintain Sewage Wastewater storage tanks to store Sewage Wastewater.
1.13.3. Transport and dispose of Sewage Wastewater at a Disposal Facility, or discharge to municipal sanitary sewer system in compliance with Municipal requirements, as accepted by Departmental Representative.
1.13.4. Discharges: comply with applicable discharge limitations and requirements; do not discharge Sewage Wastewater to Site sewer systems that do not conform to or are in violation of such limitations or requirements; and obtain approval prior to discharge of Sewage Wastewater.

1.14. Wastewater Control

1.14.1. Dewater various parts of Work including, without limitation, excavations, structures, foundations, and Work areas.
1.14.2. Employ construction methods, plant procedures, and precautions that ensure Work, including excavations, are stable, free from disturbance, and dry.
1.14.3. Direct surface waters that have not contacted potentially Contaminated Materials to surface drainage systems.
1.14.4. Control surface drainage including ensuring that gutters are kept open, wastewater is not allowed across or over pavements or sidewalks except through accepted pipes or properly constructed troughs, and runoff from unstabilized areas is intercepted and diverted to suitable outlet.

1.15. Non-Contaminated Water Disposal

1.15.1. Dispose of Non-Contaminated Water in manner not injurious to public health or safety, to the environment, to onsite or offsite property, or to any part of Work completed or under construction.
1.15.2. Control disposal or runoff of Non-Contaminated Water containing suspended materials or other harmful substances in accordance with local authority requirements.

1.15.3. Ensure pumped Non-Contaminated Water into waterways, sewer or drainage systems is free of suspended materials. Provide flocculation tanks, settling basins, or other treatment facilities to remove suspended solids or other materials before discharging to storm sewers, watercourses or drainage areas

1.15.4. Obtain permits to discharge Non-Contaminated Water to environment or Municipal sewers.

1.15.5. Do not discharge water which may have come in contact with potentially Contaminated Material or otherwise be Contaminated directly offsite to the environment or to municipal sewers.

1.16. Erosion and Sediment Control

1.16.1. 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.

1.16.2. Minimize amount of bare soil or sediment exposed at one time. Stabilize disturbed soil or sediment as quickly as practical. Strip vegetation, regrade, or otherwise develop 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 the Departmental Representative.

1.16.3. Provide and maintain temporary erosion and sediment control measures.

1.16.3.1. Temporary erosion and sediment control measures are required to prevent erosion and migration of silt, mud, sediment, and other debris offsite or to other areas of Site where damage might result, or that might otherwise be required by laws and regulations.

1.16.3.2. Temporary erosion and sediment control measures include: silt fences, hay or straw bales, ditches, geotextiles, drains, berms, terracing, riprap, temporary drainage piping, vegetative cover, dikes, mulching, sediment traps, detention and retention basins, grading, planting, retaining walls, culverts, pipes, guardrails, temporary roads, and other measures appropriate to specific condition.

1.16.3.3. Temporary improvements must remain in place and in operation as necessary or until otherwise directed by the Departmental Representative.

1.16.3.4. Place silt fences and/or hay or straw bales in ditches to prevent sediment from escaping from ditch terminations.

1.16.3.5. Do not construct bale barriers and silt fence in flowing streams or in swales.

1.16.3.6. Check erosion and sediment control measures weekly after each rainfall; during prolonged rainfall check daily.

1.16.3.7. Bales and/or silt fence can be removed at beginning of Working Day, replace at end of Working Day.

1.16.3.8. Repair damaged bales, end runs, and undercutting beneath bales.

1.16.3.9. Unless directed by the Departmental Representative, remove temporary erosion and sediment control devices upon Final Completion of Work.

Temporary erosion and sediment control devices once removed become property of Contractor.

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

1.16.5. Construct fill areas to prevent erosion.

1.16.6. Do not disturb existing embankments or embankment protection in accordance with the Contract.

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

1.16.8. If soil, sediment and debris from Site accumulate in low areas, storm sewers, roadways, gutters, ditches, or other areas where it is undesirable, remove accumulation and restore area to original condition, as directed by the Departmental Representative.

1.17. Work In or Adjacent to Waterways

1.17.1. Approvals and Practices

1.17.1.1. Obtain Discharge Approval prior to commencing work which may impact waterways.

1.17.1.2. As required, comply with Fisheries Act Authorization and other relevant authorizations and in accordance with the Contract.

1.17.1.3. Follow practices described in Fisheries and Oceans Canada (September 1993) Land Development Guidelines for the Protection of Aquatic Habitat.

1.17.1.4. Follow practices described in BC Ministry of Environment (March 2004) Standards and Best Practices for Instream Works.

1.17.2. Timing

1.17.2.1. Time work in water to respect timing windows to protect fish, including their eggs, juveniles, spawning adults and/or the organisms upon which they feed.

1.17.2.2. Minimize duration of in-water work.

1.17.2.3. Conduct instream work during periods of low flow, or at low tide, to further reduce the risk to fish and their habitat or to allow work in water to be isolated from flows.

1.17.2.4. Schedule work to avoid wet, windy and rainy periods that may increase erosion and sedimentation.

1.17.3. Site Selection

1.17.3.1. Design and plan activities and works in wetland and waterbody such that loss or disturbance to aquatic habitat is minimized and sensitive spawning habitats are avoided.

1.17.3.2. Design and construct approaches to wetland and waterbody such that they are perpendicular to the watercourse to minimize loss or disturbance to riparian vegetation.

1.17.3.3. Avoid building structures on meander bends, braided streams, alluvial fans, active floodplains or any other area that is inherently unstable and may result in erosion and scouring of the stream bed or the built structures.

1.17.3.4. Undertake all instream activities in isolation of open or flowing water to maintain the natural flow of water downstream and avoid introducing sediment into the watercourse.

1.17.4. Contaminant and Spill Management

1.17.4.1. Plan activities near water such that materials such as paint, primers, blasting abrasives, rust solvents, degreasers, grout, poured concrete or other chemicals do not enter the watercourse.

1.17.4.2. Develop a response plan and implement immediately in the event of a sediment release or spill of a deleterious substance and keep an emergency spill kit on site.

1.17.4.3. Ensure that building material used in a watercourse has been handled and treated in a manner to prevent the release or leaching of substances into the water that may be deleterious to fish.

1.17.5. Erosion and Sediment Control

1.17.5.1. Develop and implement an Erosion and Sediment Control Plan for the site that minimizes risk of sedimentation of the wetland or waterbody during all phases of the project. Maintain erosion and sediment control measures until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the wetland or waterbody or settling basin and runoff water is clear.

1.17.6. Erosion and Sediment Control Plan includes:

1.17.6.1. Installation of effective erosion and sediment control measures before starting work to prevent sediment from entering the water body.

1.17.6.2. Measures for managing water flowing onto the site, as well as water being pumped/diverted from the site such that sediment is filtered out prior to the water entering a waterbody. This includes pumping/diversion of water to a vegetated area, construction of a settling basin or other filtration system.

1.17.6.3. Site isolation measures (e.g., silt boom or silt curtain) for containing suspended sediment where in-water work is required (e.g., dredging, underwater cable installation).

1.17.6.4. Measures for containing and stabilizing waste material (e.g., dredging spoils, construction waste and materials, commercial logging waste, uprooted or cut aquatic plants, accumulated debris) above the high water mark of nearby waterbodies to prevent re-entry.

1.17.6.5. Regular inspection and maintenance of erosion and sediment control measures and structures during the course of construction.

1.17.6.6. Repairs to erosion and sediment control measures and structures if damage occurs.

1.17.6.7. Removal of non-biodegradable erosion and sediment control materials once site is stabilized.

1.17.7. Bank Re-vegetation and Stabilization

1.17.7.1. Clearing of riparian vegetation should be kept to a minimum: use existing trails, roads or cut lines wherever possible to avoid disturbance to the riparian vegetation and prevent soil compaction.

1.17.7.2. To greatest extent practicable, prune or top the vegetation instead of grubbing/uprooting.
1.17.7.3. Minimize the removal of natural woody debris, rocks, sand or other materials from the banks.
1.17.7.4. Immediately stabilize banks disturbed by any activity associated with the project to prevent erosion and/or sedimentation, preferably through re-vegetation with native species suitable for the site.
1.17.7.5. If replacement rock reinforcement/armouring is required to stabilize eroding or exposed areas, then ensure that appropriately-sized, clean rock is used; and that rock is installed at a similar slope to maintain a uniform bank alignment.
1.17.7.6. Remove all construction materials from site upon project completion.
1.17.8. Aquatic Life Protection
1.17.8.1. Ensure that all in-water activities, or associated in-water structures, do not interfere with aquatic life passage, constrict the channel width, or reduce flows.
1.17.8.2. Retain a qualified environmental professional to ensure applicable permits for relocating fish are obtained and to capture any fish trapped within an isolated/enclosed area at the work site and safely relocate them to an appropriate location in the same waters. Fish may need to be relocated again, should flooding occur on the site.
1.17.8.3. Screen any water intakes or outlet pipes to prevent entrainment or impingement of fish. Entrainment occurs when a fish is drawn into a water intake and cannot escape. Impingement occurs when an entrapped fish is held in contact with the intake screen and is unable to free itself.
1.17.8.4. Avoid using explosives in or near water. Use of explosives in or near water produces shock waves that can damage a fish swim bladder and rupture internal organs. Blasting vibrations may also kill or damage fish eggs or larvae.
1.17.9. Operation of Machinery
1.17.9.1. Ensure that machinery arrives on site in a clean condition and is maintained free of fluid leaks, invasive species and noxious weeds.
1.17.9.2. Whenever possible, operate machinery on land above the high water mark, on ice, or from a floating barge in a manner that minimizes disturbance to the banks and bed of the waterbody.
1.17.9.3. Limit machinery fording of the watercourse to a one-time event (i.e., over and back), and only if no alternative crossing method is available. If repeated crossings of the watercourse are required, construct a temporary crossing structure.
1.17.9.4. Use temporary crossing structures or other practices to cross streams or waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. For fording equipment without a temporary crossing structure, use stream bank and bed protection methods (e.g., swamp mats, pads) if minor rutting is likely to occur during fording.

1.17.9.5. Wash, refuel and service machinery and store fuel and other materials for the machinery in such a way as to prevent any deleterious substances from entering the water.

1.18. Noncompliance

1.18.1. Departmental Representative will inform Contractor in writing of observed noncompliance with federal, provincial or municipal environmental laws, regulations, permits, or other environmental procedure violations.

1.18.2. After receipt of notice, inform the Departmental Representative of the proposed corrective action. Corrective action will be subject to acceptance of Departmental Representative.

1.18.2.1. Do not take action until after receipt of written acceptance.

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

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Permits: at least 10 Working Days prior to mobilization to Site, Submit copies of all permits, certificates, approvals, or any other form of authorizations and all reporting required.

1.4. Laws, Regulations, Permits

1.4.1. Generally, provincial, territorial and municipal laws, regulations, bylaws and other requirements do not apply on federal lands, activities or undertakings. Soil and other materials that are removed from federal lands may become subject to provincial, territorial or municipal laws and regulations.

1.4.2. Provincial, territorial or municipal standards may be used in relation to federal lands only as guidelines for the purpose of establishing remediation goals and objectives. The term "standards" is used in this part in order to maintain consistency in terminology throughout this document, and does not imply that standards contained in provincial, territorial or municipal laws and regulations apply on Federal lands, activities or undertakings.

1.4.3. Comply with certificates, licenses and other permits enforced at the location concerned required by regulatory federal, provincial, territorial or municipal authorities to complete the Work that have already been obtained.

1.4.4. Obtain and pay for certificates, licenses and other permits enforced at the location concerned required by regulatory federal, provincial, territorial or municipal authorities to complete the Work that have not already been obtained or that are required to be amended.

1.4.5. Provide applicable authorities with plans and information required for issue of acceptance certificates.

1.4.6. Furnish inspection certificates in evidence that the Work installed conforms with the requirements of the authority having jurisdiction.

1.5. Codes, Bylaws, Standards

1.5.1. Meet or exceed requirements of Contract, standards, and codes applicable to the performance of the Work and referenced documents.

1.5.2. In any case of conflict or discrepancy, the most stringent requirements will apply.

1.5.3. Perform Work in accordance with the National Building Code of Canada (NBC), and other requirements or codes in accordance with the Contract, construction

standards and/or any other code or bylaw applicable to the performance of the Work.

1.5.4. Certificates, licenses and other permits enforced at the location concerned required by regulatory federal, provincial, territorial or municipal authorities to complete the Work: see 01 11 00.

1.5.5. Comply with all attachments, references, and reports relevant to Work, including environmental protection.

1.6. Smoking Environment

1.6.1. Smoking on the Site is not permitted.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Inspection and Test Reports: within 5 Working Days of receipt, Submit 2 copies of inspection and test reports to Departmental Representative.

1.4. Quality of Work

1.4.1. Ensure that quality workmanship is performed through use of skilled tradesmen, under supervision of qualified journeyman, or Qualified Professional.

1.4.2. Meet or exceed standards set out in the National Building Code of Canada as applicable for workmanship, erection methods and procedures.

1.4.3. In cases of dispute, perform Work to standard or quality in accordance with any decisions by the Departmental Representative.

1.4.4. Follow Departmental Representative's directions to meet the Quality of Work in accordance with the Contract at no increase to the Contract Amount and no increase to Extension of Time for completion of the Work. Quality of Work includes addressing comments on Submittals, modifying environmental procedures, and preventing or remediating contaminated material spills.

1.5. Quality Management

1.5.1. Be responsible for all Quality Assurance and Quality Control during the performance of the Work.

1.5.2. Quality Assurance and Quality Control includes monitoring, inspecting, testing, documenting and reporting the means, methods, materials, workmanship, processes, and products of all aspects of the Work, including design, construction, and management as necessary to ensure conformance with the Contract.

1.5.3. Assist Departmental Representative in quality audit inspections and submit all indicated information within 5 Working Days of collection or as directed.

1.6. Inspection

1.6.1. Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Site, allow access to such Work whenever it is in progress. Work at locations other than Site includes offsite Transportation (eg transfer stations), Treatment, and Disposal Facilities.

1.6.2. Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative directions, or law of Site.

1.6.3. 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.
1.6.4. Departmental Representative will order 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.

1.7. Independent Inspection Agencies
1.7.1. Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work. Cost of such services will be borne by Departmental Representative.
1.7.2. Provide equipment required for executing inspection and testing by appointed agencies.
1.7.3. Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
1.7.4. 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 reinspection.

1.8. Access to Work
1.8.1. Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
1.8.2. Co-operate to provide reasonable facilities for such access.

1.9. Procedures
1.9.1. Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
1.9.2. Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
1.9.3. Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.10. Procedures
1.10.1. 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.
1.10.2. Make good other Contractor's work damaged by such removals or replacements promptly.

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

1.11. Reports

1.11.1. Provide copies of inspection and test reports to subcontractor of work being inspected or tested.

1.12. Tests and Mix Designs

1.12.1. Furnish test results and mix designs as requested.

1.12.2. Test results must be signed by Qualified Professional.

1.12.3. The Departmental Representative may require, and pay for, additional inspection and testing services not included above.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Site Layout: within 10 Working Days after Contract award and prior to mobilization to Site, Submit Site Layout drawings showing existing conditions and facilities, construction facilities and temporary controls provided by Contractor. Include:

1.3.1.1. Equipment and personnel decontamination areas.

1.3.1.2. Means of ingress, egress and temporary traffic control.

1.3.1.3. Equipment and material staging areas.

1.3.1.4. Stockpile areas and construction details, including base preparation and water control features.

1.3.1.5. Exclusion areas, contaminant handling areas, and other areas identified in Contractor's site-specific Health and Safety Plan and Environmental Protection Plan.

1.3.1.6. Grading, including contours, required to construct temporary facilities.

1.3.1.7. Location of all temporary facilities including: Contaminated Water Treatment Plant, truck wash and decontamination units, office trailers, modular camp structures, parking, storage, environmental monitoring stations, above ground and underground utilities, and temporary facilities and roads.

1.3.2. Signs: at least 5 Working Days prior to posting, Submit any signs viewable by public.

1.4. Utilities

1.4.1. Utilities not identified as being available on Site must be supplied at the Contractor’s expense. Provide supplied utilities for entire work force, including Subcontractors and Departmental Representative and their consultants.

1.5. Fire Protection

1.5.1. Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

1.6. Access and Delivery

1.6.1. Only the designated entrance in accordance with the Contract may be used for access to Site.

1.6.1.1. Maintain for duration of Contract.

1.6.1.2. Make good damage resulting from Contractor’s use.

1.6.2. Use of the Site will be granted to the Contractor through the Departmental Representative.

1.7. Installation and Removal

1.7.1. Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation. Provide temporary utilities controls in order to execute work expeditiously.

1.7.2. Identify areas which have to be graveled or otherwise treated to prevent tracking of mud.

1.7.3. Indicate use of supplemental or other staging area.

1.7.4. Provide construction facilities in order to execute work expeditiously.

1.7.5. Provide temporary utilities in order to execute Work expeditiously.

1.7.6. Remove from Site all such Work after use.

1.8. Site Storage/Loading

1.8.1. Confine work and operations of employees in accordance with the Contract. Do not unreasonably encumber premises with products.

1.8.2. Storage space must be limited to the Site.

1.8.3. Do not load or permit to load any part of Work with weight or force that will endanger Work.

1.9. Construction Parking

1.9.1. Parking of private vehicles will not be permitted on Site.

1.9.2. Provide and maintain adequate access to project site.

1.10. Security

1.10.1. Be responsible security of site and contents of site after working hours and during holidays.

1.10.2. Control access to Site and maintain a log of all personnel onsite. No non-Work visitors allowed without prior written consent of Departmental Representative.

1.11. Departmental Representative and Consultant Offices

1.11.1. Provide office facilities for the exclusive use of the Departmental Representative and their consultants with the following intent:

1.11.1.1. Two work stations within the factory fabricated modular units.

1.11.1.2. Work stations must include; 1 desk (minimum size 120 cm x 50 cm, minimum height 70 cm), 1 swivel desk chair (minimum load requirement 100 kg), 1 bookshelf (minimum 3 shelves with a minimum shelf height of 32 cm), 1 locking filing cabinet (minimum dimensions 50 cm x 39 cm x 60 cm), 1 garbage can, and 1 recycling bin.

1.11.1.3. Building envelope: watertight construction.

1.11.1.4. Completed building: exterior to interior minimum sound attenuation of STC 30.
1.11.1.5. Building interior environment: heated and cooled to maintain temperature of 20 degrees C minimum to 25 degrees C maximum with relative humidity of 35% to 60%.
1.11.1.6. Provide ventilation and outdoor air as per ASHRAE 62.1 – 2010 Standard.
1.11.1.7. Building lighting: maintain measured lighting level of 200 lx at 1500 mm above finished floor, after building finishes and painting complete.
1.11.1.8. Thermal performance of window units: Maximum heat transfer rate (U-value) not to exceed 2.0 W/m2K.
1.11.1.9. Regularly collect refuse and recyclables and keep the office clean and properly maintained with heat and light.
1.11.1.10. Provide private washroom facilities in offices in accordance with the Contract, complete with flush or chemical type toilet, lavatory and mirror and maintain supply of paper towels and toilet tissue.
1.11.1.11. Furnish offices in accordance with the Contract.
1.11.1.12. The work stations and contents must be for the sole use of the Departmental Representative and their consultant(s) for the duration of the Work and may, if necessary, be used concurrently with other inspection agencies.
1.11.2. Installation:
1.11.2.1. Install level and plumb.
1.11.2.2. Install stairs.
1.11.2.3. Adjust doors and windows for smooth operation.
1.11.3. Provide a minimum of 2 parking spaces for Departmental Representative and their consultants adjacent to offices.

1.12. Equipment, Tools and Materials Storage

1.12.1. Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.
1.12.2. Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities

1.13. Sanitary Facilities

1.13.1. Provide sanitary facilities for work force in accordance with governing regulations and ordinances.
1.13.2. Post notices and take precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.14. Construction Signage

1.14.1. Provide and erect project signs within 10 Working Days of mobilization in a location designated by Departmental Representative.
1.14.2. Provide project identification site sign comprising foundation, framing, and one 1200 x 2400 mm signboard as detailed and as described below.

1.14.2.1. Foundations: 15 MPa concrete to CSA-A23.1 minimum 200 mm x 900 mm deep.
1.14.2.2. Framework and battens: SPF, pressure treated minimum 89 x 89 mm.
1.14.2.3. Signboard: 19 mm Medium Density Overlaid Douglas Fir Plywood to CSA O121.
1.14.2.4. Paint: alkyd enamel to CAN/CGSB-1.59 over exterior alkyd primer to CAN/CGSB 1.189.
1.14.2.5. Fasteners: hot-dip galvanized steel nails and carriage bolts.
1.14.2.6. Vinyl sign face: printed project identification, self adhesive, vinyl film overlay, supplied by Departmental Representative.
1.14.3. Locate project identification sign as directed by Departmental Representative and construct as follows:
1.14.3.1. Build concrete foundation, erect framework, and attach signboard to framing. Paint surfaces of signboard and framing with one coat primer and two coats enamel. Colour white on signboard face, black on other surfaces.
1.14.3.2. Apply vinyl sign face overlay to painted signboard face in accordance with installation instruction supplied.
1.14.4. Direct requests for approval to erect Contractor signboard to Departmental Representative. For consideration general appearance of Contractor signboard must conform to project identification site sign. Wording in both official languages.
1.14.5. Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
1.14.6. 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.

1.15. Protection and Maintenance of Traffic

1.15.1. Provide access and temporary relocated roads as necessary to maintain traffic.
1.15.2. Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
1.15.3. Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.
1.15.4. Protect travelling public from damage to person and property.
1.15.5. Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.
1.15.6. Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
1.15.7. Construct access and haul roads necessary.
1.15.8. Haul roads: constructed with suitable grades and widths; sharp curves, blind corners, and dangerous cross traffic must be avoided.

1.15.9. Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
1.15.10. Dust control: adequate to ensure safe operation at all times.
1.15.11. Location, grade, width, and alignment of construction and hauling roads: subject to approval by Departmental Representative.
1.15.12. Lighting: to assure full and clear visibility for full width of haul road and work areas during night work operations.
1.15.13. Provide snow removal during period of Work.
1.15.14. Remove, upon completion of work, haul roads designated by Departmental Representative.

1.16. Truck Wash and Decontamination Units

1.16.1. Provide Supply, install and operate the truck wash, including the installation of a water supply.
1.16.1.1. No vehicles which have come in contact with Contaminated Material must leave the Site without passing through the truck wash.
1.16.1.2. The truck wash must provide, at a minimum, the ability to wash truck tires and load boxes to a minimum height of 1.7 m.
1.16.1.3. Truck wash must have a solid separation tank and all solids collected must be classified as Contaminated Material and disposed of at a Disposal Facility.
1.16.1.4. Recycle or treat as Contaminated Water truck wash water.
1.16.2. Supply personnel decontamination units (minimum of 2) for use by hazardous material, testing and inspection personnel working in areas of hazardous materials and for general clean-up of personal protective equipment to remove Contaminated Material. Provide decontamination units for work force.
1.16.2.1. At least one personnel decontamination unit must have overhead shower capability.
1.16.2.2. The personnel decontamination units to be available to Departmental Representative and their consultants.
1.16.2.3. The personnel decontamination units are subject to acceptance of Departmental Representative.
1.16.3. The truck wash and personnel decontamination units must be maintained in good working order during onsite Work.
1.16.4. The truck wash and personnel decontamination units must be removed from the Site during Site Decommissioning.

1.17. Clean-Up

1.17.1. Remove construction debris, waste materials, packaging material from work site daily.
1.17.2. Clean dirt or mud tracked onto paved or surfaced roadways.
1.17.3. Store materials resulting from demolition activities that are salvageable.
1.17.4. Stack stored new or salvaged material not in construction facilities.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Product Data: at least 5 Working Days prior to use, Submit data on products to be used in Work. Include:

1.3.1.1. Manufacturers' catalogue sheets, MSDS sheets, brochures, literature, performance charts and diagrams, used to illustrate standard manufactured products or any other information in accordance with the Contract.

1.3.1.2. Delete information not applicable to project.

1.3.1.3. Supplement standard information to provide details applicable to project.

1.3.1.4. Cross-reference product data information to applicable portions of Contract.

1.3.2. Substitution: at least 5 Working Days prior to use and after Contract award, Submit proposals for substituting products, if required. Include statements of respective costs of items originally in accordance with the Contract and the proposed substitution.

1.3.3. Quality of Work: at least 5 Working Days prior to Work, Submit alternate means to meet or correct quality of work, if required.

1.4. Products Materials and Equipment

1.4.1. Use new products, material and equipment in accordance with the Contract. The term "products" is referred to throughout the specifications.

1.4.2. Use products of one manufacturer for material and equipment of the same type or classification in accordance with the Contract.

1.4.3. Unless otherwise specified, comply with manufacturer's latest printed instructions for materials and installation method in accordance with the Contract.

1.4.4. Notify Departmental Representative in writing of any conflict between Contract and manufacturer's instructions. Departmental Representative will instruct which document must be followed.

1.4.5. Deliver, store and maintain packaged material and equipment with manufacturer's seals and labels intact.

1.4.6. Prevent damage, adulteration and soiling of products during delivery, handling and storage. Immediately remove rejected products from Site.

1.4.7. Store products in accordance with Suppliers' instructions.

1.5. Quality of Products

1.5.1. Products, materials and equipment (referred to as products) incorporated into Work must be new, not damaged or defective, and of the best quality (compatible with the specifications) for the purpose intended. As directed by the Departmental Representative, furnish evidence as to type, source, and quality of the products provided.

1.5.2. Defective products will be rejected regardless of previous inspections.

1.5.2.1. Inspection does not relieve responsibility, but is precaution against oversight or error.

1.5.2.2. Remove and replace defective products.

1.5.3. Retain purchase orders, invoices and other documents to prove that all products utilized in the Work meet the requirements of the Contract. Produce documents as directed by the Departmental Representative.

1.5.4. Should any dispute arise as to quality or fitness of products, the decision rests strictly with the Departmental Representative in accordance with the Contract.

1.5.5. Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.6. Availability of Products

1.6.1. Immediately upon signing the Contract, review product delivery requirements and anticipate foreseeable supply delays for any items.

1.6.2. If delays in supply of products are foreseeable, Notify Departmental Representative of such in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of the Work.

1.6.3. In event of failure to Notify Departmental Representative at the start of Work and should it subsequently appear that the Work may be delayed for such reason, the Departmental Representative reserves the right to substitute more readily available products of similar character.

1.7. Manufacturer's Instructions

1.7.1. Install or erect products in accordance with the manufacturer's instructions in accordance with the Contract.

1.7.1.1. Do not rely on labels or enclosures provided with products.

1.7.1.2. Obtain written instructions directly from the manufacturer.

1.7.2. Notify Departmental Representative in writing of any conflict between Contract and manufacturer's instructions. Departmental Representative will instruct which document must be followed.

1.7.3. Improper installation or erection of products, due to failure in complying with these requirements, authorizes the Departmental Representative to instruct the removal and re-installation.

1.8. Contractor's Options for Selection of Products for Tendering

1.8.1. Products specified by "Prescriptive" specifications: select any product meeting or exceeding requirements in accordance with the Contract.

1.8.2. Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.

1.8.3. Products specified to meet particular design requirements or to match existing materials: use only material in accordance with the Contract.

1.8.4. When products are specified by a referenced standard or by performance specifications, as directed by the Departmental Representative obtain from manufacturer and independent laboratory report showing that the product meets or exceeds the requirements in accordance with the Contract.

1.9. Storage Handling and Protection

1.9.1. Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions.

1.9.2. Store packaged or bundled products in original and undamaged condition with manufacturer's seals and labels intact. Do not remove from packaging or bundling until required in Work.

1.9.3. Store products subject to damage from weather in weatherproof enclosures.

1.9.4. Remove and replace damaged products as directed by the Departmental Representative.

1.10. Transportation

1.10.1. Pay costs of transportation of products required in performance of Work.

1.10.2. Transport products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

1.10.3. Transport products subject to damage from weather in weatherproof enclosures.

1.10.4. Transport in an efficient manner that does not cause delays to the Work schedule.

1.11. Quality of Work

1.11.1. Ensure quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately Notify Departmental Representative if required Work is such as to make it impractical to produce results in accordance with the Contract. Provide alternate means to meet or correct quality of work, as accepted by the Departmental Representative.

1.11.2. Do not employ anyone unskilled in their required duties.

1.11.3. Perform Work to standard of fitness of Quality of Work in accordance with any decision by the Departmental Representative.

1.12. Coordination

1.12.1. Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

1.13. Remedial Work

1.13.1. Perform remedial Work required to repair or replace parts or portions of Work as directed by the Departmental Representative as defective or unacceptable. Coordinate adjacent affected Work as required.

1.13.2. Perform remedial Work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.14. Storage Tanks

1.14.1. Abide by the Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulations for stored petroleum products and allied petroleum products tank system located on federal or Aboriginal land, or within federal jurisdiction as described in the regulations.

1.14.2. Temporary storage tanks subject to the regulations must be registered with Environment Canada.

1.14.3. Mobile tanks subject to the regulations must be certified to be mobile.

1.14.4. Storage tanks to meet the following minimum requirements:

1.14.4.1. Corrosion protection.

1.14.4.2. Secondary containment.

1.14.4.3. Containment sumps, if applicable.

1.14.4.4. Overfill protection.

1.14.5. All components of tank system must bear certification marks indicating that they conform to the standards set out in the regulations.

1.14.6. Product transfer area must be designed to contain spills.

1.14.7. Prepare an emergency plan.

1.14.8. Prior to first filling, storage tanks must:

1.14.8.1. Be registered.

1.14.8.2. Be certified and marked.

1.14.8.3. Transfer area be constructed.

1.14.8.4. Emergency plan in place.

2. PART 2 - PRODUCTS

2.1. Asbestos Containing Materials Prohibition

2.1.1. Any material containing any degree of asbestos is banned from use in any and all sites, designs and projects.

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Preconstruction Condition Survey: within 10 Working Days prior to mobilization to Site, Submit Preconstruction Condition Survey of existing structures, utilities and surface features on site and at the Mill Creek Gravel Pit.

1.3.2. Preconstruction As-Built Documents: at least 5 Working Days prior to mobilization to Site, Submit preconstruction as-built documents prepared by a Land Surveyor

1.4. Survey Reference Points

1.4.1. Locate, confirm and protect control points prior to starting site work. Preserve permanent reference points during construction.

1.4.2. Make no changes or relocations without prior written notice to Departmental Representative.

1.4.3. Report to Departmental Representative when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

1.4.4. Require surveyor to replace control points in accordance with original survey control.

1.5. Survey Requirements

1.5.1. Establish permanent benchmarks on site, referenced to established bench marks by survey control points. Record locations, with horizontal and vertical data in Project Record Documents.

1.5.2. Establish lines and levels, locate and lay out, by instrumentation planned excavation limits.

1.5.3. Stake for grading, fill.

1.6. Existing Services

1.6.1. Size, depth and location of existing utilities and structures as specified are for guidance only. Completeness and accuracy are not guaranteed.

1.6.2. Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative. All utilities entering Site must be confirmed prior to subsurface disturbance (ie do not rely on as-built documents). As appropriate, confirm locations of buried utilities by independent utility locator and using hand test excavations or hydrovac methods.

1.6.3. Remove abandoned service lines within 2m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.
1.6.4. Maintain and protect from damage all utilities and structures encountered, unless Work involves temporarily breaking, rerouting, or connecting into existing utilities.
1.6.5. Where Work involves temporarily breaking, rerouting, or connecting into existing utilities, obtain permission from utility companies of intended interruption of services, and carry out Work at times determined by the authorities having jurisdiction.
1.6.6. Submit schedule to and obtain approval for any shutdown or closure of active service. Adhere to schedule accepted by Departmental Representative and provide notice to affected parties.
1.6.7. Provide temporary services as required to maintain critical building and tenant systems.
1.6.8. Where unknown utilities are encountered, immediately verbally notify Departmental Representative and confirm findings in writing.

1.7. Examination
1.7.1. Examine Site and Contract and be familiar and conversant with existing conditions likely to affect Work, including Contaminated Material.

1.8. Records
1.8.1. Land Surveyor to prepare preconstruction as-built Shop Drawings of all utilities.
1.8.2. Land Surveyor to prepare postconstruction as-built Shop Drawings of all utilities, including existing, reinstated, rerouted, and abandoned.
1.8.3. Maintain a complete, accurate log of control and survey work as it progresses.
1.8.4. Preconstruction Condition Survey:
1.8.4.1. Conduct Preconstruction Condition Survey of existing structures and other features which can be affected by Work, both onsite and offsite. Includes: buildings, trees and other plants, lawns, fencing, service poles, wires, rail tracks, pavement, roads, survey bench marks, monuments and other features.
1.8.4.2. Survey to include detailed photographic documentation of any preconstruction damage, and measurements where appropriate, including crack width and length, angles out of true. Record written notices to owners of features that have existing damage.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Waste Reduction Plan: within 10 Working Days after Contract award and prior to mobilization to Site, Submit a plan detailing material separation. Include:

1.3.1.1. List of materials to be reused or recycled.

1.3.1.2. Sequence, methods and means to dispose Waste offsite. For all Landfill Facilities include name of facility; location of facility; copy of valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the facility; and evidence of compliance with municipal zoning and bylaws of facility.

1.3.2. Landfill Receipts: within 5 Working Days of transport offsite, Submit receiving facility receipts indicating quantity and type of material delivered to Landfill Facility. Include:

1.3.2.1. Issued by the Landfill Facility.

1.3.2.2. On company letterhead.

1.3.2.3. Name and location of facility where the material is being disposed.

1.3.2.4. Date and weight for each shipment received and total weight received at the Landfill Facility.

1.3.3. Recycling Receipts: within 5 Working Days of transport offsite, Submit receiving facility receipts indicating quantity and type of materials sent for recycling.

1.4. Waste Deposition

1.4.1. Waste and Non-Contaminated Material Disposal:

1.4.1.1. Dispose all soil and sediment in Landfill Facility.

1.4.1.2. Divert materials other than soil or sediment which can be practically reused or recycled from Landfill as approved by Departmental Representative.

1.4.1.3. All Waste not reused or recycled must be disposed in Landfill Facility.

1.5. Waste Transport

1.5.1. Assume ownership of, and be responsible for, Waste once it is loaded on a vehicle, barge, or other vessel for transport.

1.5.2. Transport material as soon as practical. Do not unreasonably stockpile material onsite.

1.5.3. Cover material while being transported to prevent release of airborne dust, vapours, or odours, and to prevent saturation and leachate generation from material.

1.5.4. Excess water in material must not be allowed to flow out of vehicle or vessel during transport.
1.5.5. Stabilize material as necessary.
1.5.6. All vehicles, vessels and operators must be appropriately licensed and equipped to transport Waste.
1.5.7. Manifest and correlate quantities of all material transported from Site documenting quantity removed from Site, movement, transfer stations, interim storage and treatment, and weight of material at final Disposal Facility. Submit all manifests, as directed by the Departmental Representative.
1.5.8. Material transported with discrepancies in manifests must be resolved as required by regulations and as acceptable to the Departmental Representative. Discrepancies include:
1.5.8.1. No manifest or an incomplete manifest.
1.5.8.2. The material transported does not match the description in the manifest.
1.5.8.3. The amount transported differs by more than 5% in the manifest.
1.5.8.4. The material transported is in a hazardous condition.
1.5.9. Transfer/Interim Storage Facility must:
1.5.9.1. Be an existing offsite facility located in Canada or the United States.
1.5.9.2. Be designed, constructed and operated for the transfer or interim storage of Contaminated Material.
1.5.9.3. Hold a valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the transfer or interim storage of relevant Contaminated Material.
1.5.9.4. Comply with applicable municipal zoning, bylaws, and other applicable requirements.
1.5.10. Facility Authority:
1.5.10.1. For facilities within provincial or territorial jurisdiction: the relevant provincial or territorial ministry.
1.5.10.2. For facilities on First Nations reserve land in Canada not subject to the First Nation Land Management regime: Indigenous and Northern Affairs Canada.
1.5.10.3. For facilities on First Nations reserve land in Canada subject to the First Nation Land Management regime: the relevant First Nation Council. In addition, a Qualified Professional must certify that the facility is appropriate for the relevant Contaminated Material.
1.5.10.4. For facilities in the United States of America: either or both of the Environmental Protection Agency and the relevant State, as appropriate.

1.6. Waste Disposal

1.6.1. Assume ownership of, and be responsible for, Waste disposed.
1.6.2. Waste Disposal: dispose Waste at Landfill Facility provided by Contractor and accepted by the Departmental Representative.
1.6.3. Disposal Facility must:
1.6.3.1. Be an existing offsite facility located in Canada or the United States.

1.6.3.2. Be designed, constructed and operated to prevent any pollution from being caused by the facility outside the area of the facility from waste placed in or on land within the facility. Must conform with the BC Landfill Criteria For Municipal Solid Waste or equivalent requirements of authorities having jurisdiction.

1.6.3.3. Hold a valid and subsisting permit, certificate, approval, license, or other required form of authorization issued by a Facility Authority for the disposal of relevant Contaminated Material.

1.6.3.4. Comply with applicable municipal zoning, bylaws, and other applicable requirements.

1.6.4. Facility Authority:

1.6.4.1. For facilities within provincial or territorial jurisdiction: the relevant provincial or territorial ministry.

1.6.4.2. For facilities on First Nations reserve land in Canada not subject to the First Nation Land Management regime: Indigenous and Northern Affairs Canada.

1.6.4.3. For facilities on First Nations reserve land in Canada subject to the First Nation Land Management regime: the relevant First Nation Council. In addition, a Qualified Professional must certify that the facility is appropriate for the relevant Contaminated Material.

1.6.4.4. For facilities in the United States of America: either or both of the Environmental Protection Agency and the relevant State, as appropriate.

1.6.5. Dispose material as soon as practical and within 100 Working Days of leaving Site or as required by Contract unless otherwise accepted by Departmental Representative.

1.6.6. Material sent to a Landfill Facility must be permanently stored at that facility.

1.6.7. If proposed Landfill Facility is not acceptable to Departmental Representative, provide an alternate Landfill Facility that is acceptable.

1.6.8. Submit Landfill Receipts for all Waste material disposed offsite.

1.7. Materials Source Separation

1.7.1. Provide separate containers for reusable and/or recyclable Non-Contaminated Materials of the following:

1.7.1.1. Metals

1.7.1.2. Wood.

1.7.1.3. Plastics.

1.7.1.4. Paper.

1.7.1.5. Glass.

1.7.1.6. Concrete.

1.7.1.7. Other materials in accordance with the Contract.

1.7.2. Implement Materials Source Separation Program for waste generated on project in compliance with methods accepted by the Departmental Representative.

1.7.3. Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

1.7.4. Locate separated materials in areas which minimize material damage.

1.8. Diversion of Materials

1.8.1. Create a list of materials to be separated from the general waste stream and stockpiled in separate containers, as accepted by the Departmental Representative and consistent with applicable fire regulations.

1.8.1.1. Mark containers.

1.8.1.2. Provide instruction on disposal practices.

1.9. Storage, Handling and Application for Recycling

1.9.1. Do Work in compliance with Waste Reduction Plan.

1.9.2. Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes, and dispose at Recycling Facility weekly.

1.9.3. Materials in separated condition: collect, handle, store onsite, and transport offsite to an authorized recycling facility accepted by the Departmental Representative, and remove from Site weekly.

1.9.4. Materials must be immediately separated into specified categories for reuse or recycling.

1.9.5. Unless otherwise in accordance with the Contract, materials for removal become the Contractor's property.

1.9.6. Onsite sale of salvaged/recyclable material is not permitted.

1.9.7. Submit receiving facility weigh scale receipts indicating quantity and type of materials sent for recycling as directed by the Departmental Representative.

2. PART 2 - PRODUCTS

2.1. Not Used

2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used

3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Product Instructions: at least 10 Working Days before Substantial Performance of the Work is completed, Submit instructions and data by personnel experienced in maintenance and operation of products and equipment constructed and remaining onsite, if required. Revise content of documents as required before final submittal.

1.3.2. Closeout Documents: within 20 Working Days of Final Completion of Site Restoration, Submit completion documents and as-built documents.

1.4. As-Built Documents

1.4.1. The Departmental Representative will provide 2 sets of Drawings, 2 sets of Specifications, and 2 copies of the original AutoCAD files for “as-built” purposes.

1.4.2. As Work progresses, maintain accurate records to show all deviations from the Contract. Note changes as they occur on as-built Specifications, Drawings and Shop Drawings.

1.4.3. Drawings and Shop Drawings: legibly mark each item to record actual construction, including:

1.4.3.1. Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

1.4.3.2. Field changes of dimension and detail.

1.4.3.3. Changes made by change orders.

1.4.3.4. Details not on original Contract drawings.

1.4.3.5. References to related Shop Drawings and modifications.

1.4.4. Contract Specifications: legibly mark each item to record actual workmanship of construction, including:

1.4.4.1. Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

1.4.4.2. Changes made by addenda and change orders.

1.4.5. As-built information:

1.4.5.1. Record changes in red ink.

1.4.5.2. Mark on 1 set of Drawings, Specifications and Shop Drawings at Final Completion of project and, before final inspection, neatly transfer notations to second set.

1.4.5.3. Provide 1 in editable AutoCAD 14 (.dwg) file format with all as-built information.
1.4.5.4. Submit all sets as directed by the Departmental Representative.
1.4.6. As required, surveying to be completed by a Land Surveyor for as-built documents.

1.5. Completion Documents
1.5.1. Submit as directed by the Departmental Representative, a written certificate that the following have been performed:
1.5.1.1. Work has been completed and inspected by the Departmental Representative in accordance with the Contract.
1.5.1.2. Treatment and disposal of treatable soils have been completed and disposal of all other soils has been completed.
1.5.1.3. Damage has been repaired, deficiencies have been completed, missing items have been provided, and non-conformance has been corrected, in the opinion of the Departmental Representative.
1.5.1.4. Equipment and systems have been tested, adjusted and balanced, and are fully operational, as applicable.
1.5.1.5. Certificates required by the Fire Commissioner of Canada, and utility companies have been submitted, as applicable.
1.5.1.6. Operation of systems has been demonstrated to the personnel as directed by the Departmental Representative, as applicable.
1.5.1.7. Qualified Professional report documenting backfilling has met all requirements of the Contract.
1.5.1.8. Work is complete and ready for Final Site Inspection.
1.5.2. Defective products will be rejected, regardless of previous inspections. Replace defective products.
1.5.3. Prepare all documentation required as part of any permits or other authorizations obtained or otherwise the responsibility of the Contractor.

2. PART 2 - PRODUCTS

2.1. Not Used
2.1.1. Not Used

3. PART 3 - EXECUTION

3.1. Not Used
3.1.1. Not Used

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Import Backfill Material Quality: at least 5 Working Days prior to bringing material onsite, Submit documentation signed and sealed by a Qualified Professional verifying that material is acceptable for import and intended use. Include:

1.3.1.1. Grain-size distribution information.

1.3.1.2. Chemical analyses for Potential Contaminants of Concern, including metals.

1.3.1.3. Testing to be performed by a Qualified Professional at sufficient frequency to characterize all Imported Backfilled. Test using appropriate guidelines and practices.

1.3.2. Import Backfill Samples: at least 10 Working Days prior to bringing material to Site, Submit samples of Imported Backfilled.

1.3.2.1. Samples to be representative of all Imported Backfilled. Sample frequency subject to acceptance by Departmental Representative.

1.3.2.2. Submit sufficient sample size to allow geotechnical and environmental quality testing as directed by Departmental Representative.

1.4. Action and Informational Submittals

1.4.1. Owner Supply Backfill Material Quality: at least 10 Working Days prior to bringing material onsite, submit documentation signed and sealed by a Qualified Professional verifying that material is acceptable for import and intended use. Include:

1.4.1.1. Grain-size distribution information.

1.4.1.2. It is geotechnical suitable based on specification drawings and provide approval by Geotechnical professional.

1.4.1.3. Chemical analyses for Potential Contaminants of Concern, including metals.

1.4.1.4. Testing to be performed by a Qualified Professional at sufficient frequency to characterize all Imported Backfilled. Test using appropriate guidelines and practices.

1.4.2. Owner Supply Backfill Samples: at least 10 Working Days prior to bringing material to Site, submit samples of Imported Backfilled.

1.4.2.1. Samples to be representative of all Imported Backfilled. Sample frequency subject to acceptance by Departmental Representative.

1.4.2.2. Submit sufficient sample size to allow geotechnical and environmental quality testing as directed by Departmental Representative.

1.5. Sequencing for Free Phase Products

1.5.1. When floating free phase substance (NonAqueous Phase Liquids, NAPL) is present, remove free phase from saturated soil or sediment without further contaminating soil, sediment or groundwater prior to commencing other construction Work.

1.5.2. Collect free phase product (NAPL), load, and transport to a Treatment Facility.

1.6. Onsite Access Roads

1.6.1. Maintain onsite access roads as follows:

1.6.1.1. Obtain permission to use existing onsite access roads.

1.6.1.2. Maintain and clean roads for duration of Work. Maintain and clean roads for duration of Work.

1.6.1.3. Control mud and dust from road.

1.6.1.4. Repair damage incurred from use of roads.

1.6.1.5. Provide photographic documentation of roads used by construction vehicles before, during and after Work.

1.6.1.6. The Departmental Representative can instruct cleaning of the onsite access roads.

2. PART 2 - PRODUCTS

2.1. Materials

2.1.1. Erosion and sediment control materials to meet the following minimum requirements:

2.1.1.1. Hay or Straw Bale: wire bound or string tied; securely anchored by at least 2 stakes or rebars driven through bale 300 mm to 450 mm into ground; chinked (filled by wedging) with hay or straw to prevent water from escaping between bales; and entrenched minimum of 100 mm into ground.

2.1.1.2. Silt Fence: assembled, ready to install unit consisting of geotextile attached to driveable posts. Geotextile: 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.

2.1.1.3. 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.

2.1.1.4. 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.

2.1.2. Gradations to be within limits specified when tested to ASTM C117-13 (Standard Test Method for Materials Finer than 0.075 mm (No. 200) Sieve in Mineral Aggregates by Washing) and ASTM C136-06 (Standard Test Method

for Sieve Analysis of Fine and Coarse Aggregates). Sieve sizes to SCC CAN/CGSB-8.1-88 (Sieves, Testing, Woven Wire, Inch Series) and CAN/CGSB-8.2-M88 (Sieves, Testing, Woven Wire, Metric Series).

2.1.3. Import fill materials to meet the following minimum requirements

2.1.3.1. Import fill materials must be granular aggregate composed of inert, clean, tough, durable particles of crushed rock, gravel and sand capable of withstanding the deleterious effects of exposure to water, freeze-thaw, handling, spreading and compacting. The aggregate particles must be uniform in quality and free from clay lumps, wood and free from an excess of flat or elongated pieces.

2.1.3.2. Import fill materials must originate from a clean source, and be the lesser of the Canadian Council of Ministers of the Environment Soil Quality Guidelines for Commercial and Industrial Land Uses, and the British Columbia Contaminated Sites Regulation Schedule 3.1 - Standards for Residential Low Density Land Use.

2.1.3.3. Import fill material that is cobble sized or larger (> 64mm) brought onsite must be tested by the Contractor for Acid Rock Drainage (ARD) and Metals Leaching (ML) potential using acid base accounting (ABA) for assessment of ARD potential and more specifically using the Modified Sobek Test Method. The potential for metals leaching must use Shake Flask Extraction (SFE) Method for analysis of metals leaching. See guidance document Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials MEND Report 1.20.1, Natural Resources Canada, Price 2009.

2.1.3.4. Any import fill material which has a discrete sample exceeding the standards or guidelines specified must be removed from the Site and replaced, including relevant placed material, as directed by the Departmental Representative, and an alternate source of backfill must be provided, with no increases to Contract Amount or Extension of Time for completion of the Work.

2.1.4. Import fill material additional testing:

2.1.4.1. Perform additional testing as directed by the Departmental Representative.

2.1.4.2. Facilitate testing by the Departmental Representative.

2.1.5. Asphalt, as required, must, at minimum, meet the specifications for: Upper Course #1 mix-type as specified in Section 32 12 16, Hot Mix Asphalt Concrete Paving; of the BC Master Municipal Construction Document (2009) Platinum Edition.

3. PART 3 - EXECUTION

3.1. Examination

3.1.1. Site Verification of Conditions

3.1.1.1. Determine condition of existing Site and requirements to make the Site suitable for Work.

3.2. Mobilization Requirements

3.2.1. Do not mobilize until directed by Departmental Representative.

3.2.2. Mobilize all necessary equipment, materials and personnel to the Site in an orderly and efficient manner.

3.3. Site Preparation and Operation

3.3.1. Site Preparation and operation includes construction, operation and maintenance for the duration of the Work.

3.3.2. Remove and dispose all surface Non-Contaminated Waste at a Landfill to allow access for Work.

3.3.3. Clear and grubbing of the Site to allow access for Work.

3.3.3.1. Clearing consists of removing Non-Contaminated Material vegetation above existing ground surface to facilitate Work. Includes: cutting off trees and brush vegetative growth, felled trees, previously uprooted trees and stumps. Dispose of Non-Contaminated Material at a Landfill.

3.3.3.2. Grubbing consists of excavation of Non-Contaminated Material below existing ground surface to facilitate Work. Includes: stumps, roots, boulders and rock fragments. Dispose of Non-Contaminated Material at a Landfill.

3.3.4. Remove obstructions, ice and snow, from surfaces to be worked.

3.3.5. Stripping of Topsoil

3.3.5.1. Commence Topsoil stripping of areas according to Drawings after clearing and grubbing.

3.3.5.2. Strip Topsoil to depths according to Drawings. Do not mix Topsoil with other soils.

3.3.6. Stripping of Overburden

3.3.6.1. Commence Overburden stripping of areas according to Drawings after stripping of Topsoil.

3.3.6.2. Strip Overburden to depths according to Drawings. Do not mix Overburden with other soils.

3.3.6.3. Stockpile Overburden as directed by Departmental Representative.

3.3.6.4. Testing of Overburden may be required if suspected of being Contaminated. Contaminated Overburden will be considered Contaminated Material.

3.3.6.5. Reuse Overburden as Backfill as directed by Departmental Representative and agreed to by Qualified Professional. Dispose of unused Overburden as Non-Contaminated Material as directed by Departmental Representative.

3.3.7. Decommission monitoring wells located within final Contaminated Material Extents.

3.3.7.1. Decommission monitoring wells extending below the Contaminated Material Extents in accordance with methods in BC Groundwater Protection Regulation: Groundwater Monitoring Well Installation, Sampling and Decommissioning, as appropriate.

3.3.7.2. Protect monitoring wells outside Contaminated Material Extents. Replace damaged monitoring wells as directed by the Departmental Representative at Contractor's expense.

3.3.8. Protection:
3.3.8.1. Protect existing features with temporary barriers and enclosures as required by applicable local regulations.
3.3.8.2. Keep excavations clean, free of standing water, and loose soil or sediment.
3.3.8.3. Protect natural and man-made features required to remain undisturbed. Unless otherwise required or located in an area to be occupied by new construction, protect existing trees from damage.
3.3.8.4. Protect buried utilities that are required to remain undisturbed.
3.3.8.5. Provide temporary structures to divert flow of surface water from excavation.
3.3.9. Security and Safety:
3.3.9.1. Provide safety measures to ensure worker and public safety.
3.3.9.2. Ensure Site is secure during onsite Work, provide, install, and remove fencing, temporary hoarding, and other security measures as required and specified.
3.3.10. Site including all restoration and excavation areas should be secured with locked fencing, temporary hoarding and security personnel as required.

3.4. Import Fill Material

3.4.1. Do not import fill material until Departmental Representative has completed and analyzed testing results. Testing and analysis will depend on parameters. Testing will be performed at industry regular (standard) turnaround times (i.e. not priority, emergency, same day or other rush turnaround times).
3.4.2. Departmental Representative will inspect import fill material, and will not allow import of fill material that varies from Submittal samples.

3.5. Import Owner Supply Material

3.5.1. Do not import owner supply material until Departmental Representative has completed and analyzed testing results. Testing and analysis will depend on parameters. Testing will be performed at industry regular (standard) turnaround times (i.e. not priority, emergency, same day or other rush turnaround times).
3.5.2. Departmental Representative will inspect import owner supply material, and will not allow import of material that varies from Submittal samples.
3.5.3. Departmental Representative will work with geotechnical engineer and not allow import of material that varies from specification drawing and has been approved suitable by geotechnical engineer.

3.6. Site Restoration

3.6.1. Final site grades must be within 5 cm of pre-existing grades before Work commenced, unless otherwise specified.
3.6.2. Re-establish pre-existing drainage, unless otherwise specified.

3.6.3. Clean permanent access roads of contamination resulting from project activity as required or as directed of Departmental Representative, with no increases to Contract Amount or Extension of Time for completion of the Work.
3.6.4. Decontaminate equipment used in construction processes and remove from Site at end of construction activities.
3.6.5. Remove all temporary structures including subsurface structures for shoring support.
3.6.6. Upon Final Completion of Work, remove Non-Contaminated Material and debris, trim slopes, and correct defects as directed by the Departmental Representative.
3.6.7. Protect newly graded areas from traffic and erosion and maintain free of trash or debris until demobilization is completed and accepted by the Departmental Representative.
3.6.8. Reinstate pre-existing utilities and other infrastructure to original location and condition, meeting current standards, codes, and other requirements, unless otherwise indicated or as directed by the Departmental Representative.
3.6.9. Reinstate surface of Site to pre-existing conditions, including surface material (eg vegetation, gravel, pavement), unless otherwise indicated or as directed by the Departmental Representative.
3.6.10. Reinstate surface to pre-existing conditions at the Mill Creek Gravel Pit (KM 552), including surface material), unless otherwise indicated or as directed by the Departmental Representative.

3.7. Demobilization

3.7.1. Do not demobilize until directed by Departmental Representative.
3.7.2. Demobilize all necessary equipment, materials, and personnel from Site in an orderly and efficient manner.

END OF SECTION

1. PART 1 - GENERAL

1.1. Measurement Procedures

1.1.1. See 01 11 00.

1.2. Definitions

1.2.1. See 01 11 00.

1.3. Action and Informational Submittals

1.3.1. Temporary Hoarding and Fencing: at least 5 Working Days prior to installation, Submit a description of temporary hoarding and fencing.

1.3.2. Sloping, Shoring, Excavation and Backfilling Plan: within 10 Working Days after Contract award and prior to mobilization to Site, Submit documentation describing excavation Work. Include:

1.3.2.1. Excavation temporary slope design.

1.3.2.2. Excavation temporary shoring design.

1.3.2.3. Support of structures design.

1.3.2.4. Sequence, methods and means for excavation dewatering and heave protection.

1.3.2.5. Backfilling requirements. Meet or exceed requirements in accordance with the Contract and any other codes, bylaws, rules and regulations applicable to the performance of the Work. Backfilling requirements includes Imported Backfill and Owner Supplied Backfill.

1.3.2.6. Procedures for excavations adjacent to utilities or other structures if the excavation has the potential to impact utilities or other structures.

1.3.2.7. Monitoring and inspection requirements, including frequency or milestones when a Qualified Professional must inspect Works.

1.3.2.8. Sloping, Shoring, Excavation and Backfilling Plan must be signed and sealed by a Qualified Professional, as required by ground conditions, excavation depth, shoring type, or support type.

1.3.3. Monitoring and Testing Results: within 5 Working Days of sampling, submit all monitoring and testing results. Include procedures, frequency of sampling, Quality Assurance and Quality Control testing and documentation to be provided. Provide monitoring and testing results, including any assessments performed by a Qualified Professional. Include:

1.3.3.1. Noise monitoring.

1.3.3.2. Vibration monitoring.

1.3.3.3. Imported Backfilled, including geotechnical and environmental quality.

1.3.3.4. Compaction testing results.

1.3.3.5. Contaminated Water Treatment Plant water testing.

1.3.3.6. Environmental analytical results for spill or other environmental testing.

1.3.4. Weigh Scale Certification: at least 5 Working Days prior to use, Submit a copy of the Measurement Canada, Weigh Scale Certification for any onsite or offsite weigh scale used during transportation, treatment or disposal.
1.3.5. Weigh Scale Slips: within 10 Working Days of measurement, Submit all onsite and offsite weigh scale slips for material.
1.3.6. Site Scale to be installed on-Site to track contaminated soil quantities leaving to the approved licensed facility. In addition, all import material including owner supply material from Mill Creek Pit will be weighed before entering the Steamboat Site. Quantities to be provided daily to the departmental rep.

2. PART 2 - PRODUCTS

2.1. Imported Backfill
2.1.1. Meet backfill requirements according to Drawings.
2.1.2. Meet appropriate grain size distribution from Aggregate Gradations of the current version of BC Ministry of Transportation and Infrastructure Standard Specifications for Highway Construction.

2.2. Imported Backfill - Owner Supplied
2.2.1. Meet backfill requirements according to Drawings.
2.2.2. Meet appropriate grain size distribution from Aggregate Gradations of the current version of BC Ministry of Transportation and Infrastructure Standard Specifications for Highway Construction.
2.2.3. Crushing will be required to meet the product Specification.

3. PART 3 - EXECUTION

3.1. Site Review
3.1.1. Ensure that all Works comply with the final sealed design documents as prepared by a Qualified Professional.
3.1.2. Qualified Professional to visit Site regularly.

3.2. Install Temporary Hoarding and Fencing
3.2.1. Place temporary hoarding and fencing according to Drawings or as otherwise required so as to provide a visual, environmental, and safety barrier between the Site and neighbouring properties. Fencing must be installed where appropriate for safety of workers or public, or to separate work zones of different Prime Contractors.
3.2.2. Temporary hoarding and fencing to be a minimum of 2.4 m in height.
3.2.3. Temporary hoarding and fencing not to extend beyond the project Site boundary in accordance with the Contract.

3.2.4. Remove and replace temporary hoarding and fencing during excavation activities where excavation along the project Site boundary cannot be accomplished while the temporary hoarding is in place.

3.2.5. The type of temporary hoarding and fencing used will be as selected by the Contractor, but will be subject to approval by Departmental Representative. The temporary hoarding must not have visible holes and must be a neutral color subject to acceptance by Departmental Representative. Only signage accepted by the Departmental Representative will be allowed. No advertising, company identifications, or other markings permitted.

3.2.6. Remove temporary hoarding and fencing from the Site during the Site Restoration.

3.3. Design, Construction and Operation of Onsite Access Road(s)

3.3.1. Construct, operate and maintain the onsite access road(s) as required.

3.3.2. Design of temporary onsite access roads to be signed and sealed by a Qualified Professional.

3.3.3. Qualified Professional to confirm that the temporary onsite access roads allow for the safe transport of materials and equipment.

3.3.4. Construction of the onsite access road(s) may require the removal of historic infrastructure.

3.3.5. Any temporary access, detour and haul roads associated with the project must be constructed to accommodate all required uses and be maintained throughout the course of construction operations in a safe, environmentally sound manner.

3.3.6. Location, alignment, design and construction of all detour, access and haul road(s) subject to the acceptance of the Departmental Representative.

3.3.7. Employ suitable measures to maintain quality, visibility, and safe conditions in the use of access, detour and haul road(s) associated with the Work.

3.4. Temporary Sloping and Shoring

3.4.1. Determine appropriate sloping or shoring to allow excavation of Contaminated Material Extents according to Drawings or as directed by Departmental Representative.

3.4.2. Design Requirements:

3.4.2.1. Act as sloping or shoring structures for excavations as well as for stability of foundations and infrastructure during remediation/construction excavation procedures.

3.4.2.2. Allow excavation of all Contaminated Material laterally and vertically on the Site to Contaminated Material Extents in accordance with the Contract. Allow excavation of additional Contaminated Material beyond Contaminated Material Extents in order to result in no residual contamination at the Site based on field observations or Confirmation Samples.

3.4.2.3. Provide a safe working environment for personnel and equipment within the dewatered excavation area.

3.4.2.4. Additional sloping or shoring may be required to extend excavation beyond Contaminated Material Extents according to Drawings. Revise Temporary Sloping and Shoring design as required by Qualified Professional.
3.4.2.5. Temporary shoring cannot have any tiebacks or supports which extend beyond the project Site boundary.
3.4.2.6. Temporary shoring must not flex or bend when exposed while excavations are occurring on the Site.
3.4.2.7. Sloping and shoring structures are temporary structures only. Resistance to seismic loads will be at the discretion of the Qualified Professional.
3.4.2.8. Be responsible for any failures and resultant costs should the temporary sloping or shoring fail due to a seismic event during the construction period.
3.4.2.9. All Shop Drawings of sloping and shoring design to be signed and sealed by a Qualified Professional.
3.4.2.10. Temporary sloping and shoring designs to be completed in accordance with methods in current version of Canadian Foundation Engineering Manual.
3.4.3. Installation:
3.4.3.1. All installation activities must take place on the Site. No staging or construction activities are to take place on adjacent properties.
3.4.3.2. Installation must be regularly inspected by a Qualified Professional.
3.4.4. Maintain side slopes of excavations in safe condition by appropriate methods and in accordance with relevant regulations.
3.4.5. During backfill operation:
3.4.5.1. Unless otherwise indicated or as directed by the Departmental Representative, remove temporary shoring from excavations.
3.4.5.2. Do not remove support until backfilling has reached respective levels of such bracing.
3.4.5.3. Remove support in increments that ensure compacted backfill is maintained at elevation at least 500 mm above toe of support.
3.4.6. Temporary sloping and shoring excavated material:
3.4.6.1. Material excavated for sloping or shoring may be re-used as backfill to replace material removed as accepted by Qualified Professional and Departmental Representative.
3.4.6.2. Material excavated for sloping or shoring that is accepted for backfilling must follow procedures in accordance with requirements of Qualified Professional and meet Contract Documents.
3.4.6.3. Material excavated for sloping or shoring not accepted must be removed from Site at Contractor's expense.

3.5. Dewatering and Heave Protection

3.5.1. Keep excavations free of water while Work is in progress unless otherwise indicated or as directed by the Departmental Representative.
3.5.2. Provide to Departmental Representative details of proposed dewatering or heave prevention methods, including dikes, well points, and sheet pile cut-offs.

3.5.3. Plan for excavation below groundwater table to avoid quick conditions or heave, if such conditions are evident.
3.5.4. Prevent piping or bottom heave of excavations by groundwater lowering, sheet pile cut-offs, or other means, if such conditions exist.
3.5.5. Provide and maintain temporary drainage ditches and other diversions outside of excavation limits.
3.5.6. Keep excavations, staging pads, and other Work areas free from water including standby equipment necessary to ensure continuous operation of dewatering system.
3.5.7. Dewatering Methods: includes sheeting and shoring; groundwater control systems; surface or free water control systems employing ditches, diversions, drains, pipes and/or pumps; and other measures necessary to enable Work to be carried out in dry conditions.
3.5.8. Separate Contaminated Water from Non-Contaminated Water and collect and divert to Contaminated Water Treatment Plant as required.

3.6. Excavation

3.6.1. Notify Departmental Representative at least 5 Working Days in advance of excavation operations.
3.6.2. Excavate to lines, grades, elevations and dimensions according to Drawings or as directed by Departmental Representative.
3.6.3. Excavate all Contaminated Material laterally and vertically on the Site to Contaminated Material Extents in accordance with the Contract. Excavate additional Contaminated Material beyond Contaminated Material Extents in order to result in no residual contamination at the Site based on field observations or Confirmation Samples.
3.6.4. Excavation must not interfere with bearing capacity of adjacent foundations and infrastructure.
3.6.5. Machine cut banks and slopes.
3.6.6. Protect bottom of excavations from excessive traffic.
3.6.7. Grade excavation top perimeter to prevent surface water run-off into excavation.
3.6.8. Keep excavated and stockpiled materials safe distance away from edge of excavation.
3.6.9. Restrict vehicle operations directly adjacent to open excavations.
3.6.10. Segregate and handle to minimize the amount of Hazardous Waste materials wherever possible, while complying with Hazardous Waste disposal regulations. Segregation of Hazardous Waste during excavation will be by visual and olfactory characteristics and available in-situ characterization.
3.6.11. Contaminated Material onsite classification will be based on available in-situ characterization or ex-situ characterization as directed by Departmental Representative.
3.6.12. Non-Contaminated Material onsite classification will be based on available in-situ characterization or ex-situ characterization as directed by Departmental Representative.

3.6.13. Remove Waste Oversize Debris. Break or cut oversize debris into manageable size.

3.6.13.1. Piles encountered during excavation must be cut off at base of excavation. Piles are not to be extracted beyond the base of the excavation.

3.6.13.2. Debris that impinges on infrastructure or neighbouring properties is not to be removed unless directed by Departmental Representative. Qualified Professional to confirm debris can be removed without impacting infrastructure or neighbouring properties.

3.6.14. Remove Non-Contaminated Material to Landfill or re-use as Owner Supplied Backfill according to Drawings and as directed by Departmental Representative.

3.6.15. Remove Contaminated Material to o offsite Treatment Facility or offsite Disposal Facility.

3.6.16. Earth bottoms of excavations to be undisturbed soil or sediment, level, free from loose, soft or organic material.

3.6.17. Notify Departmental Representative when bottom of excavation is reached based on Contaminated Material Extents.

3.6.18. Provide assistance for collection of Confirmation Samples as directed to the Departmental Representative.

3.6.19. Obtain acceptance by Departmental Representative of completed excavation.

3.7. Backfill Types and Compaction

3.7.1. Use only Imported Backfilled or Owner Supplied Backfill in accordance with the Contract and which has been recommended by a Qualified Professional, and previously accepted as a Submittal.

3.7.2. Compact material in accordance with the Contract to ensure no long term settlement and is suitable for planned post-remediation use:

3.7.2.1. Compact each layer of material to the more stringent of Excavation Plan or Drawings.

3.7.2.2. Machine compact all fill materials unless otherwise according to Drawings.

3.8. Backfilling

3.8.1. Do not proceed with backfilling operations until completion of following:

3.8.1.1. Confirmation Samples collection, analysis, and assessment has been completed by the Departmental Representative. Confirmation Samples analysis and assessment may take up to 7 Working Days. No Standby Time charges or increases to Contract Amount or Extension of Time for completion of the Work can be incurred for Confirmation Samples results provided within 7 Working Days, not including day of sample collection.

3.8.1.2. Surveying has been completed by a Land Surveyor for as-built documents

3.8.1.3. Departmental Representative has inspected and excavation limits accepted by the Departmental Representative based on survey data and Confirmation Samples results.

3.8.1.4. Departmental Representative has inspected and accepted backfill material.

3.8.1.5. Proposed backfill material can be sampled and tested for geotechnical and environmental quality. Backfill material testing may take up to 5 Working Days not including day of sample collection.
3.8.1.6. Departmental Representative has inspected and accepted compaction results for previous lift.
3.8.1.7. Removal of shoring and bracing; backfilling of voids with satisfactory backfill material.
3.8.2. Areas to be backfilled to be free from debris, snow, ice, water and frozen ground to greatest extent practicable.
3.8.3. Do not use backfill material which is frozen or contains ice, snow or debris to greatest extent practicable.
3.8.4. Place backfill material in uniform layers not exceeding 300 mm compacted thickness, or in accordance with the Contract. Compact each layer to the satisfaction of the Qualified Professional and in accordance with the Contract before placing succeeding layer.
3.8.5. Backfill compaction to be tested by a Qualified Professional in accordance with Excavation Plan.
3.8.6. Notify Departmental Representative when final backfill grade is reached.
3.8.7. Do not begin subsequent Work until surveying has been completed by the Departmental Representative for documentation.

3.9. Owner Supplied Material Backfilling

3.9.1. Place in locations in excavation as directed by Departmental Representative.
3.9.2. Be responsible for compacting to the satisfaction of the Qualified Professional and in accordance with the Contract.
3.9.2.1. Collect and test samples as required by the Qualified Professional prior to placement.
3.9.2.2. Identify any geotechnical concerns prior, and obtain Departmental Representative approval to proceed, prior to placement.

END OF SECTION

DRAWINGS

SITE LOCATION

MILL CREEK GRAVEL PIT (Km 552)

Steamboat Mountain

Tepee Mountain

Steamboat Creek

Alaska Highway

Communication Hill 140

Steamboat

Mill Creek

Border Creek

TETSA RIVER PROVINCIAL PARK

TETSA RIVER

97

N

500m 0 1000m 2000m

SCALE: 1:50,000(approx.)

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. M. BUCKLER
46307
07/12/18

No.	DATE:	DESCRIPTION	BY:	APPROVED
02	7/11/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	3/26/18	Issued for Tender	DK	TW

REVISIONS

core6 ENVIRONMENTAL

ARCADIS Design & Consultancy for natural and built assets

ADDRESS/CLIENT: Steamboat Maintenance Camp, Kilometre 537.9
Alaska Highway, BC
Public Services and Procurement Canada

DESIGN:	
DRAWN:	DK
CHECKED:	GB/TW
APPROVED:	TW
SCALE:	1:50000

TITLE: Location Plan

DATE:	May 2018
SHEET No.	1 of 9
PROJECT No.	00338
REVISION No.	02
DRAWING No.	18-00338-01

PLOT SCALE: 1:1 CADD FILE NO. Clients\PWGSC\00338 Steamboat\2018-2019\2-Specifications\Drawings\Rev 02\18-00338-01-R2.dwg

NOTES:
1. PLAN BASED ON GOLDER ASSOCIATES 1660199_2000_2017-BASE DATA DWG, & CAN-AM GEOMATICS 20172100A838_0_STP DWG.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.
3. AERIAL PHOTO SUPPLIED BY GOLDER AND SOURCED UNDER LICENSE FROM BING IMAGES, IMAGE DATE IS JULY, 2010.

No.	DATE:	DESCRIPTION	BY	APPROVED
		REVISIONS		
02	11/1/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW

PLOT SCALE: 1:1 CADD FILE NO: Clients\PWGSC\Alaska Steamboat\2018-00338 Specification\Drawings\Rev 02\18-00338-02-STP.dwg

LEGEND
- STRUCTURE
- ABOVE GROUND STORAGE TANK
- CONCRETE BARRIER
- CREST OF SLOPE
- AREA CLEARED FROM TREES, NOV. 2017
- FENCE LINE
- EDGE OF ROAD
- ANCHOR PILE
- POWER LINE
- BURIED CABLE
- BURIED PIPE
- COLD MIX MATERIAL
- PROPOSED EXTENT OF REMEDIAL EXCAVATION
- ESTIMATED SLOPE EXCAVATION

NOTE: SITE FEATURES WILL BE MOVED OUT OF EXCAVATION AREA BY OTHERS PRIOR TO WORK.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G. M. BUCKLEY # 46307 — NOV 1/18

5m 0 25m
SCALE: 1:500(approx.)

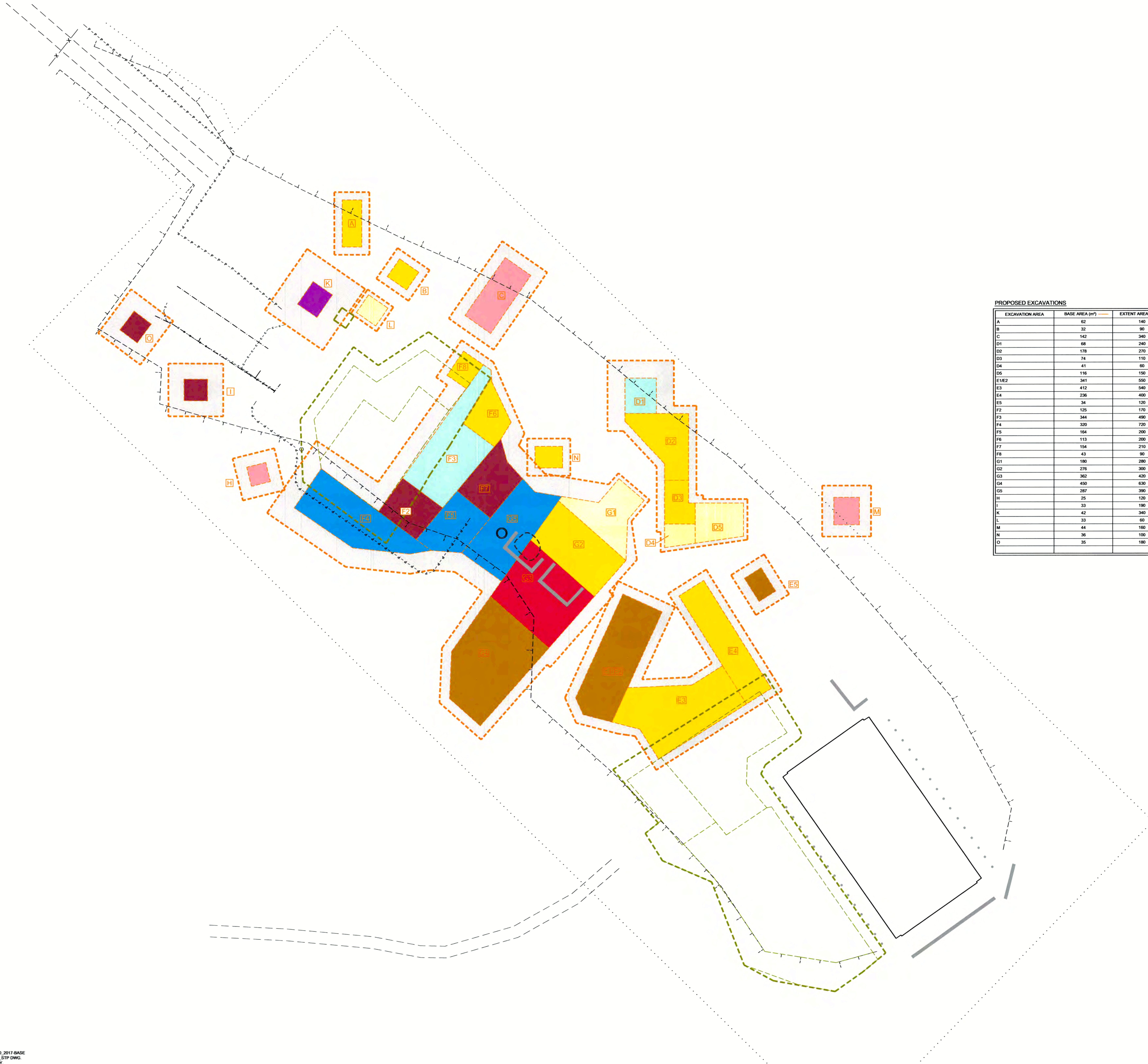
coreb ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

DRAWN:	DK
CHECKED:	GB/TW
APPROVED:	TW
SCALE:	1:500

ADDRESS & CLIENT: Steamboat Maintenance Camp, Kilometre 537.9 Alaska Highway, BC
Public Services and Procurement Canada

TITLE: Site Plan

DATE:	May 2018
SHEET No.	2 of 9
PROJECT No.	00338
REVISION No.	02
DRAWING No.	18-00338-02



PROPOSED EXCAVATIONS

EXCAVATION AREA	BASE AREA (m²)	EXTENT AREA (m²)	DEPTH (m)	VOLUME (m³)
A	62	140	2.0	200
B	32	90	2.0	130
C	142	340	3.0	730
D1	68	240	4.5	690
D2	178	270	2.0	450
D3	74	110	2.0	190
D4	41	60	1.0	50
D5	116	150	1.0	130
E1/E2	341	550	2.5	1110
E3	412	540	2.0	950
E4	236	400	2.0	630
E5	34	120	2.5	190
F2	125	170	4.0	580
F3	344	490	4.5	1870
F4	320	720	5.0	2600
F5	164	200	5.0	900
F6	113	200	2.0	310
F7	154	210	4.0	730
F8	43	90	2.0	140
G1	180	280	1.0	230
G2	276	300	2.0	580
G3	362	420	3.5	1370
G4	450	630	2.5	1350
G5	287	390	5.0	1680
H	25	120	3.0	210
I	33	190	4.0	440
K	42	340	6.0	1150
L	33	60	1.0	50
M	44	160	3.0	300
N	36	100	2.0	140
O	35	180	4.0	430
			TOTAL VOLUME	20490

LEGEND

- STRUCTURE
- ABOVE GROUND STORAGE TANK
- CONCRETE BARRIER
- CREST OF SLOPE
- AREA CLEARED FROM TREES, NOV. 2017
- FENCE LINE
- EDGE OF ROAD
- ANCHOR PILE
- POWER LINE
- BURIED CABLE
- BURIED PIPE
- COLD MIX MATERIAL
- PROPOSED EXTENT OF REMEDIAL EXCAVATION
- ESTIMATED SLOPE EXCAVATION
- PROPOSED EXCAVATION 1.0m DEPTH
- PROPOSED EXCAVATION 2.0m DEPTH
- PROPOSED EXCAVATION 2.5m DEPTH
- PROPOSED EXCAVATION 3.0m DEPTH
- PROPOSED EXCAVATION 3.5m DEPTH
- PROPOSED EXCAVATION 4.0m DEPTH
- PROPOSED EXCAVATION 4.5m DEPTH
- PROPOSED EXCAVATION 5.0m DEPTH
- PROPOSED EXCAVATION 6.0m DEPTH

NOTES:
1. PLAN BASED ON GOLDER ASSOCIATES 1660199_2000_2017-BASE DATA DWG. & CAN-AM GEOMATICS 20172100AB3B_0_STP DWG.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

No.	DATE:	DESCRIPTION	BY:	APPROVED
02	7/11/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	3/26/18	Issued for Tender	DK	TW

REVISIONS

PLOT SCALE: 1:1 CADD FILE NO. Clients\PWGSC\00338 Steamboat\2018-2019\2-Specifications\Drawings\Rev 02\18-00338-03A-R2.dwg

5m 0 25m

SCALE: 1:500(approx.)

core6 ENVIRONMENTAL

ARCADIS Design & Consultancy for natural and built assets

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G. M. BUCKLER # 46307

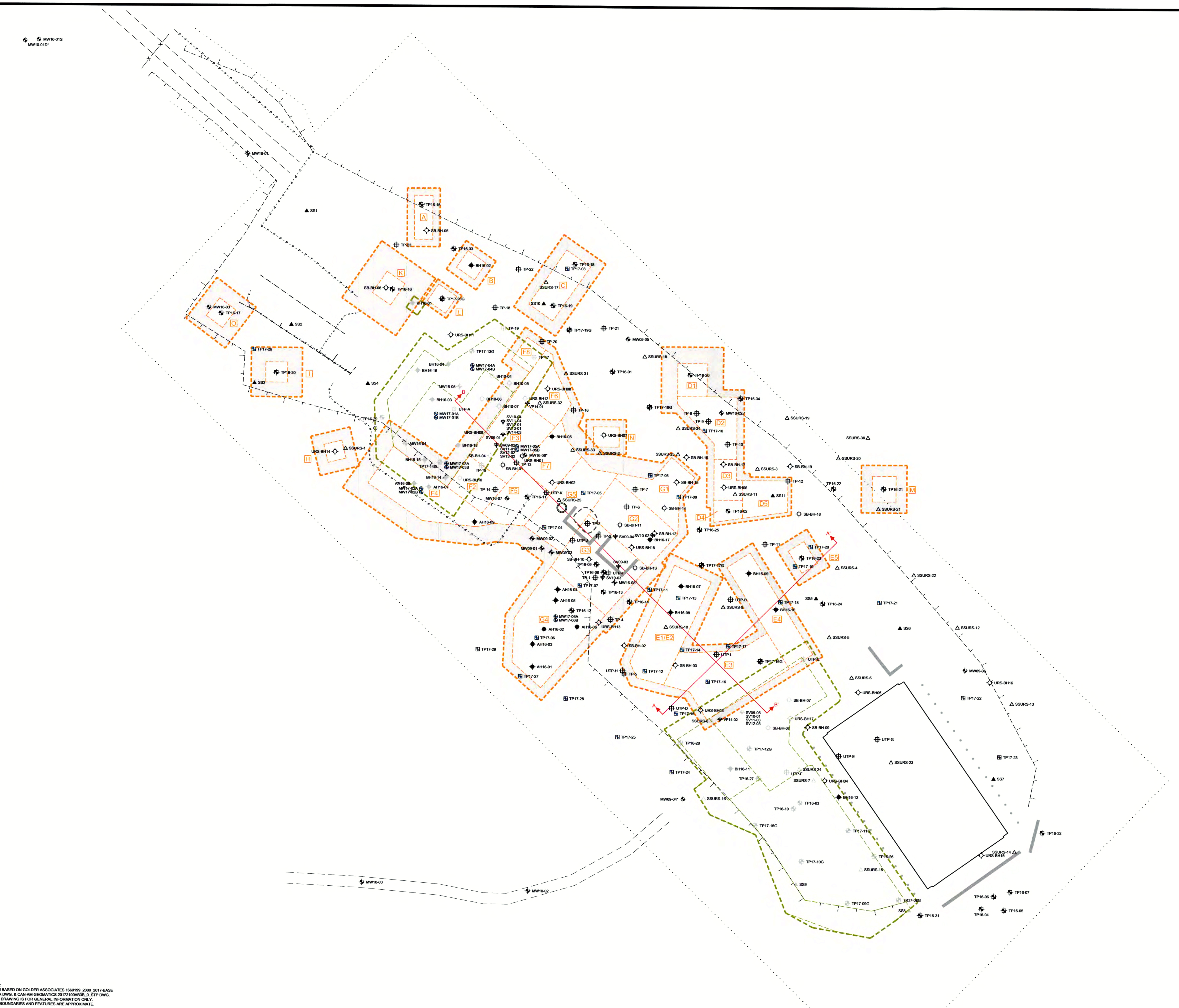
07/12/'18

DESIGN:
DRAWN: DK
CHECKED: GB/TW
APPROVED: TW
SCALE: 1:500

ADDRESS & CLIENT: Steamboat Maintenance Camp, Kilometre 537.9
Alaska Highway, BC
Public Services and Procurement Canada

TITLE: Proposed Extent of Remedial Excavations

DATE: May 2018
SHEET No. 3 of 9
PROJECT No. 00338
REVISION No. 02
DRAWING No. 18-00338-03A



SCALE: 1:500(approx.)

LEGEND

- STRUCTURE
- ABOVE GROUND STORAGE TANK
- CONCRETE BARRIER
- CREST OF SLOPE
- AREA CLEARED FROM TREES, NOV. 2017
- FENCE LINE
- EDGE OF ROAD
- ANCHOR PILE
- POWER LINE
- BURIED CABLE
- BURIED PIPE
- COLD MIX MATERIAL
- FORMER SOIL SAMPLE LOCATION (2002-2015)
- SURFICIAL SOIL SAMPLE LOCATION (2002-2015)
- FORMER TEST PIT LOCATION (2002-2015)
- TEST PIT LOCATION (2002-2015)
- FORMER BOREHOLE LOCATION (2002-2015)
- BOREHOLE LOCATION (2002-2015)
- FORMER SURFICIAL SOIL SAMPLE LOCATION (2016)
- SURFICIAL SOIL SAMPLE LOCATION (2016)
- FORMER TEST PIT LOCATION (2016)
- TEST PIT LOCATION (2016)
- FORMER BOREHOLE LOCATION (2016)
- BOREHOLE LOCATION (2016)
- TP17-11G FORMER TEST PIT LOCATION (BY GOLDER, 2017)
- TP17-16G TEST PIT LOCATION (BY GOLDER, 2017)
- DESTROYED MONITORING WELL LOCATION
- MONITORING WELL LOCATION
  * INDICATES A DECOMMISSIONED WELL
- DESTROYED SOIL VAPOUR LOCATION (2002-2015)
- SOIL VAPOUR LOCATION (2002-2015)
- LIMIT OF CORE6/ARCADIS REMEDIAL EXCAVATION (SEPT./OCT. 2017)
- CORE6/ARCADIS TESTPIT (2017)
- CORE6/ARCADIS MONITORING WELL (2017)
- PROPOSED EXTENT OF REMEDIAL EXCAVATION
- ESTIMATED SLOPE EXCAVATION
- A / A' CROSS SECTION LOCATION (SEE DRAWINGS 18-00338-04 & 18-00338-05)

NOTES:
1. PLAN BASED ON GOLDER ASSOCIATES 1660199_2000_2017-BASE DATA DWG. & CAN-AM GEOMATICS 20172100AB3B_0_STP DWG.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

No.	DATE:	DESCRIPTION	BY:	APPROVED
02	7/11/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	3/26/18	Issued for Tender	DK	TW

REVISIONS

PLOT SCALE: 1:1 CADD FILE NO. Clients\PWGSC\00338 Steamboat\2018-2019\2-Specifications\Drawings\Rev 02\18-00338-03B-R2.dwg

PROFESSIONAL ENGINEER, PROVINCE OF BRITISH COLUMBIA, G. M. BUCKLER # 46307, 07/12/18

core6 ENVIRONMENTAL

ARCADIS Design & Consultancy for natural and built assets

DESIGN:	
DRAWN:	DK
CHECKED:	GB/TW
APPROVED:	TW
SCALE:	1:500

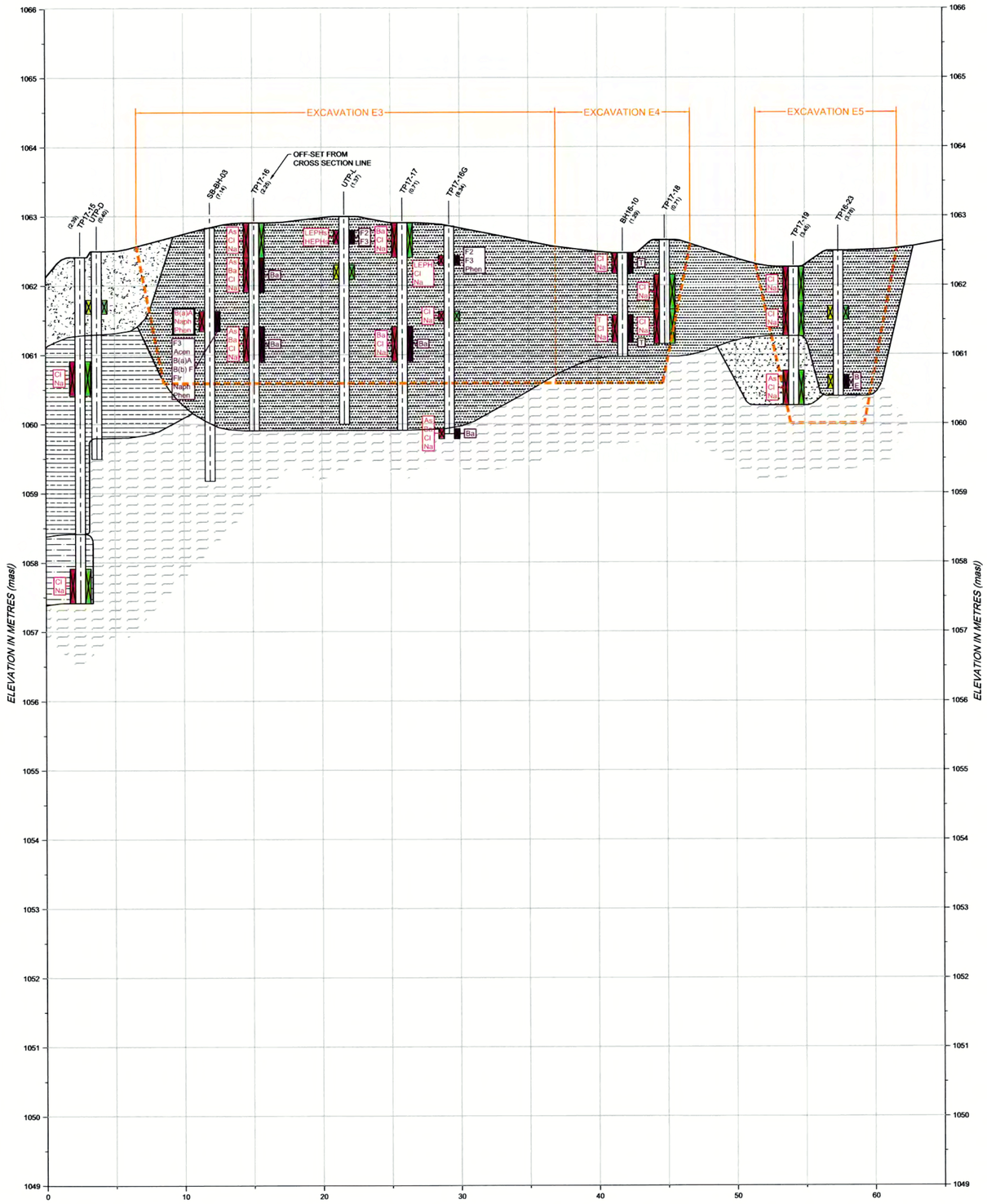
ADDRESS & CLIENT: Steamboat Maintenance Camp, Kilometre 537.9 Alaska Highway, BC
Public Services and Procurement Canada

TITLE: Investigation Sample Location Plan

DATE:	May 2018
SHEET No.	4 of 9
PROJECT No.	00338
REVISION No.	02
DRAWING No.	18-00338-03B

A
SOUTHWEST

A'
NORTHEAST



NOTES:
1. THE CROSS SECTION SHOWN IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL CONDITIONS MAY VARY.

LEGEND

	GRAVEL
	SAND & GRAVEL
	SILT
	SILTY CLAY
	SILTY CLAYEY SAND
	CLAYEY SILT
	BEDROCK
	SOIL CONCENTRATION(S) LESS THAN APPLICABLE CSR STANDARDS/CCME GUIDELINES - CSR LEFT/CCME RIGHT
	SOIL CONCENTRATION(S) GREATER THAN APPLICABLE CSR STANDARDS/CCME GUIDELINES - CSR LEFT/CCME RIGHT
	BLACK WELL SCREEN - NO DATA
	GREEN WELL SCREEN - GROUNDWATER CONCENTRATION(S) LESS THAN APPLICABLE CSR STANDARDS/CCME GUIDELINES - CSR LEFT/CCME RIGHT
	RED WELL SCREEN - GROUNDWATER CONCENTRATION(S) GREATER THAN APPLICABLE CSR STANDARDS/CCME GUIDELINES - CSR LEFT/CCME RIGHT
BETX	BENZENE, ETHYLBENZENE, TOLUENE & XYLENE
LEPH	LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS
HEPH	HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
F2	(C10-C16) UNCORRECTED
F3	(C16-C34) UNCORRECTED
Acen	ACENAPHTHENE
B(a)A	BENZO(A)ANTHRACENE
B(b)F	BENZO(B)FLUORANTHENE
Flr	FLUORENE
Naph	NAPHTHALENE
Phen	PHENANTHRENE
As	ARSENIC
Ba	BARIUM
Cl	CHLORIDE
Na	SODIUM
	PROPOSED EXTENT OF REMEDIAL EXCAVATION

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
G. M. BUCKLER
46307
07/12/18

No.	DATE:	DESCRIPTION REVISIONS	BY:	APPROVED
02	7/11/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	3/29/18	Issued for Tender	DK	TW

SCALE: HOR. 1:250 (1.0m 0 2.5m)
VERT.1:50 (0.1m 0 0.25m)

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

DRAWN: DK
CHECKED: GB/TW
APPROVED: TW
SCALE: As Shown

ADDRESS & CLIENT: Steamboat Maintenance Camp, Kilometre 537.9 Alaska Highway, BC
Public Services and Procurement Canada

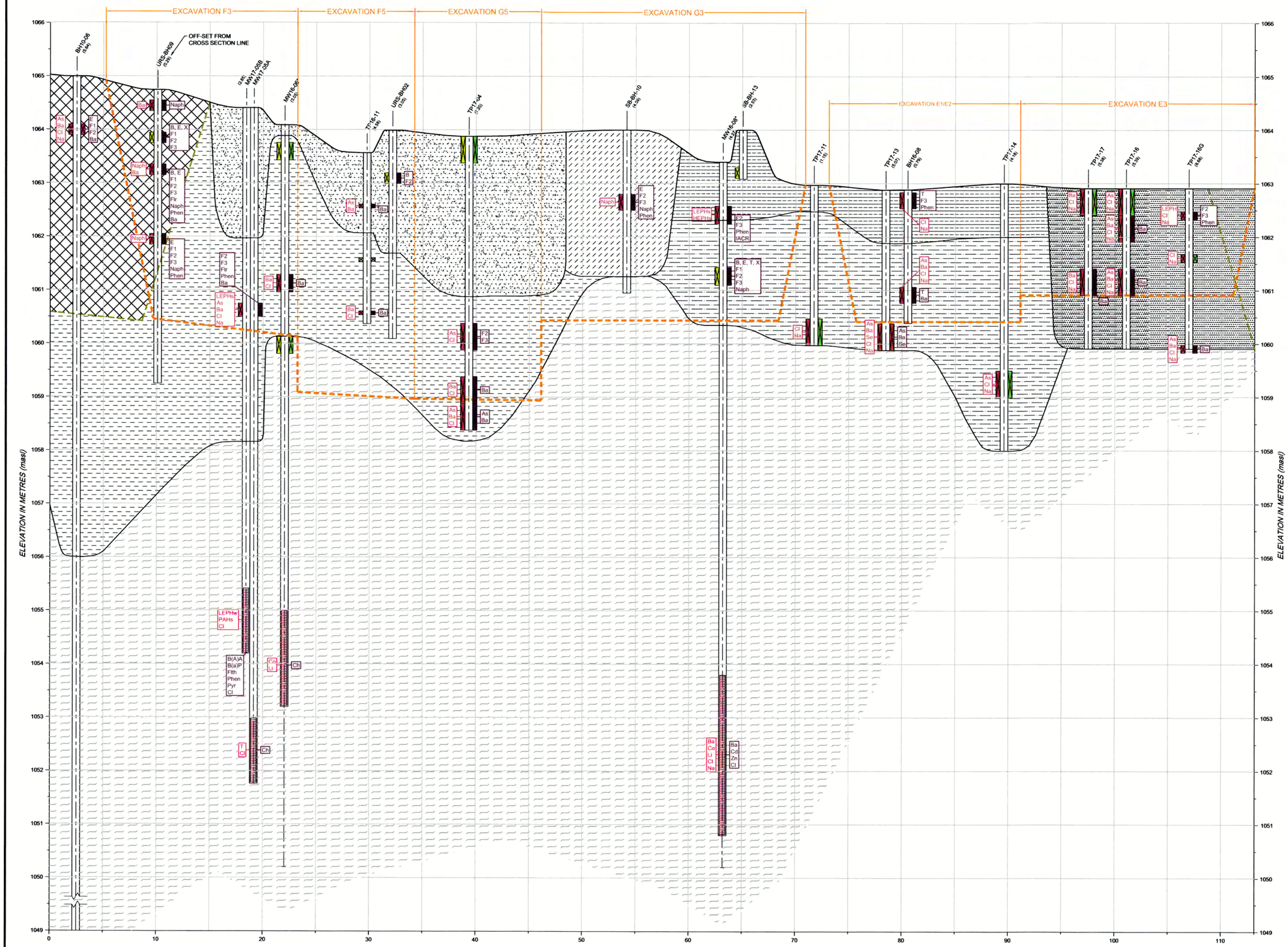
TITLE: Cross Section A - A' showing Proposed Remedial Excavations

DATE: May 2018
SHEET No. 5 of 9
PROJECT No. 00338
REVISION No. 02
DRAWING No. 18-00338-04

PLOT SCALE: 1:1
CADD FILE NO. Clients\PWGSC\00338 Steamboat\2018-2019\02 Specifications\Drawings\Rev 02\18-00338-04-02.dwg

B
NORTHWEST

B'
SOUTHEAST



LEGEND

	FILL
	SAND & GRAVEL
	CLAY
	SILT
	CLAYEY SILT
	SILTY CLAY
	SILTY CLAYEY SAND
	BEDROCK
	EXCAVATION F
	SOIL CONCENTRATION(S) LESS THAN APPLICABLE CSR STANDARDS/CCME GUIDELINES - CSR LEFT/CCME RIGHT
	SOIL CONCENTRATION(S) GREATER THAN APPLICABLE CSR STANDARDS/CCME GUIDELINES - CSR LEFT/CCME RIGHT
	BLACK WELL SCREEN - NO DATA
	GREEN WELL SCREEN - GROUNDWATER CONCENTRATION(S) LESS THAN APPLICABLE CSR STANDARDS/CCME GUIDELINES - CSR LEFT/CCME RIGHT
	RED WELL SCREEN - GROUNDWATER CONCENTRATION(S) GREATER THAN APPLICABLE CSR STANDARDS/CCME GUIDELINES - CSR LEFT/CCME RIGHT
BETX	BENZENE, ETHYLBENZENE, TOLUENE & XYLENE
EPH (C10-C19)	LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS UNCORRECTED FOR PAHs
LEPH	LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS
HEPH	HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
F1	(C6-C10) UNCORRECTED
F2	(C10-C16) UNCORRECTED
F3	(C16-C34) UNCORRECTED
B(a)A	BENZO(A)ANTHRACENE
B(a)P	BENZO(A)PYRENE
Flth	FLUORANTHENE
Flr	FLUORENE
Naph	NAPHTHALENE
Phen	PHENANTHRENE
Pyr	PYRENE
IACR	INDEX OF ADDITIVE CANCER RISK
Ch	CHLOROFORM
Al	ALUMINUM
As	ARSENIC
Ba	BARIUM
Co	COBALT
Fe	IRON
Li	LITHIUM
Se	SELENIUM
Zn	ZINC
Cl	CHLORIDE
Na	SODIUM
	PROPOSED EXTENT OF REMEDIAL EXCAVATION

NOTES:
1. THE CROSS SECTION SHOWN IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL CONDITIONS MAY VARY.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — G. M. BUCKLER # 46307 — 07/12/18

No.	DATE:	DESCRIPTION	BY:	APPROVED
02	7/11/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	3/26/18	Issued for Tender	DK	TW

REVISIONS

SCALE: HOR. 1:250 (1.0m 0 2.5m)
VERT.1:50 (0.1m 0 0.25m)

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

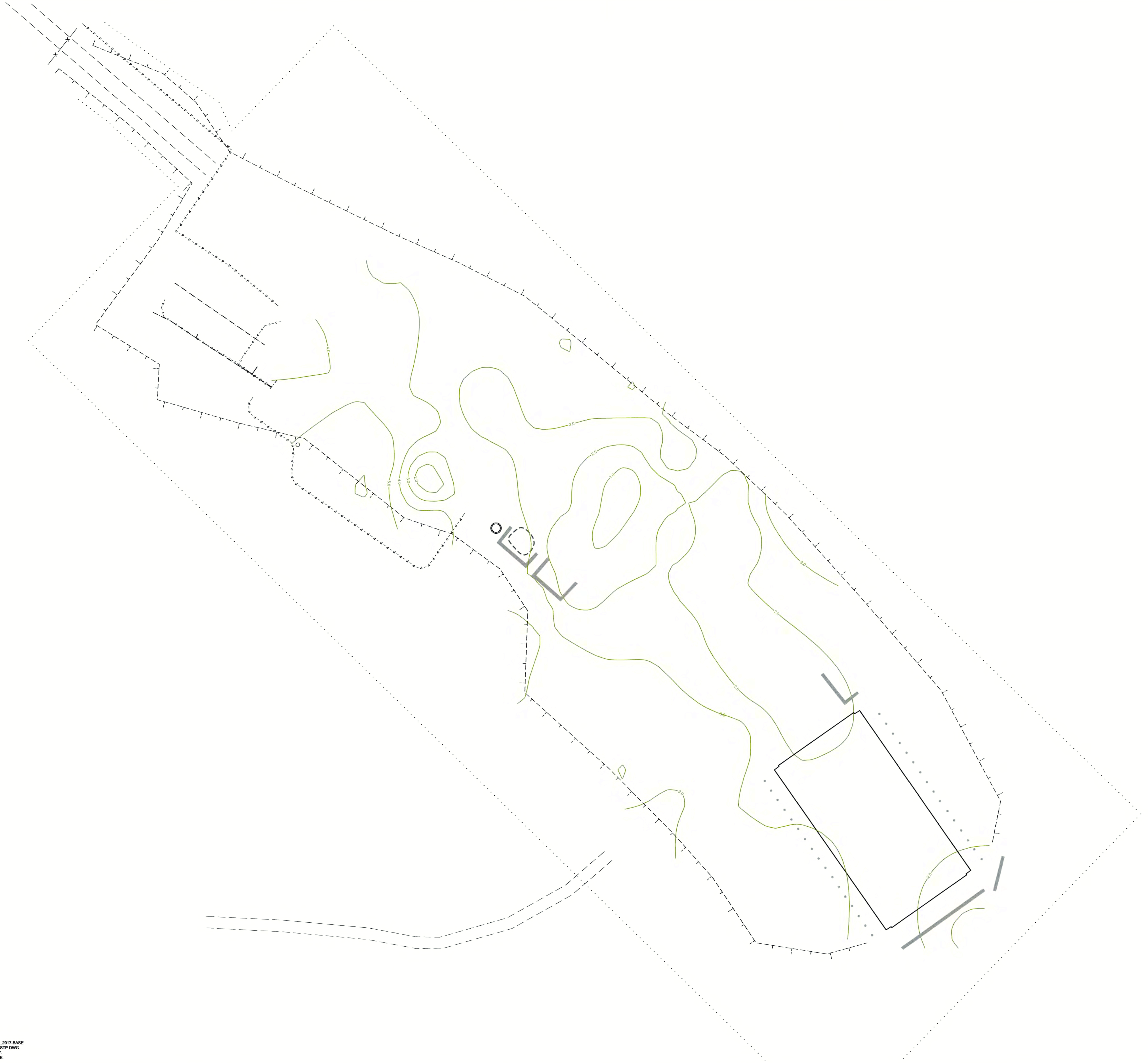
DRAWN: DK
CHECKED: GB/TW
APPROVED: TW
SCALE: As Shown

ADDRESS & CLIENT: Steamboat Maintenance Camp, Kilometre 537.9 Alaska Highway, BC
Public Services and Procurement Canada

TITLE: Cross Section B - B' showing Proposed Remedial Excavations

DATE: May 2018
SHEET No. 6 of 9
PROJECT No. 00338
REVISION No. 02
DRAWING No. 18-00338-05

PLOT SCALE: 1:1 CADD FILE NO. Clients*WSP\300338 Steamboat\2018-2019\2 Specification\Drawings\Rev 02\18-00338-05-R2.dwg



NOTES:
1. PLAN BASED ON GOLDER ASSOCIATES 1660199_2000_2017-BASE DATA DWG. & CAN-AM GEOMATICS 20172100AB3B_0_STP DWG.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

LEGEND

- STRUCTURE
- ABOVE GROUND STORAGE TANK
- CONCRETE BARRIER
- CREST OF SLOPE
- AREA CLEARED FROM TREES, NOV. 2017
- FENCE LINE
- EDGE OF ROAD
- ANCHOR PILE
- POWER LINE
- BURIED CABLE
- BURIED PIPE
- COLD MIX MATERIAL
- 2.0 INFERRED BEDROCK CONTOURS BASED ON GOLDER DRAWING AND DEPTH TO BEDROCK ENCOUNTERED DURING THE ARCADIS/CORE6 SUPPLEMENTAL INVESTIGATION

No.	DATE:	DESCRIPTION	BY:	APPROVED
02	7/11/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	3/26/18	Issued for Tender	DK	TW

REVISIONS

5m 0 25m
SCALE: 1:500(approx.)

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — G. M. BUCKLER # 46307
11/12/18

DESIGN:	
DRAWN:	DK
CHECKED:	GB/TW
APPROVED:	TW
SCALE:	1:500

ADDRESS & CLIENT: Steamboat Maintenance Camp, Kilometre 537.9
Alaska Highway, BC
Public Services and Procurement Canada

TITLE: Bedrock Contour Plan

DATE:	May 2018
SHEET No.	7 of 9
PROJECT No.	00338
REVISION No.	02
DRAWING No.	18-00338-06

PLOT SCALE: 1:1 CADD FILE NO. [illegible]

1.0 REFERENCES

.1 American Society for Testing and Materials International (ASTM)
.2 ASTM D698-12-e2. Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400ft lbs/ft3) (600kN m/m3).
.3 2016 Standard Specifications for Highway Construction, British Columbia Ministry of Transportation and Infrastructure (BC MoTI 2016).

2.0 TESTS AND INSPECTIONS

.1 Quality Assurance testing of materials and compaction of backfill will be carried out by testing laboratory designated by Department Representative.
.2 Not later than one week before backfilling or filling, provide to the designated testing agency, 23 kg sample of backfill materials proposed for use.
.3 Do not begin backfilling or filling operations until material has been approved for use by Department Representative.
.4 Not later than 48 hours before backfilling or filling with approved material, notify Department Representative so that Quality Assurance compaction tests can be carried out by designated testing agency.
.5 Before commencing work, conduct, with Departmental Representative, condition survey of existing structures, trees and other plants, fencing, service poles, survey bench marks and monuments which may be affected by work.

3.0 SAMPLES

.1 Provide grain size analysis testing results for all proposed backfill material types including material source identification a minimum of two weeks prior to placement.
.2 Allow continual sampling by Department Representative during aggregate production.
.3 Pay cost of sampling and testing of aggregates which fail to meet specified requirements.

4.0 MATERIALS

.1 Surfacing Aggregate - HFSA to BC MoTI 2012 Standard Specifications. gradation as per Table 202-C.
.2 Subbase - SGSB to BC MoTI 2012 Standard Specifications, gradation as per Table 202-C.
.3 Subgrade Fill - to be well graded granular material, substantially free from clay lumps, organic matter and other extraneous material, screened to remove all stones in excess of maximum 200 mm diameter. Material to conform to following gradation.

SIEVE DESIGNATION	PERCENT PASSING
200mm	100
75mm	100
50mm	70-100
25mm	50-100
4.75mm	22-100
2.36mm	10-85
0.075mm	2-8

.4 Aggregate quality: to be sound, hard, durable material free from soft, thin, elongated or laminated particles, organic material, clay lumps or minerals, or other substances that would act in deleterious manner for use intended.
.5 Imported fill materials produced by the crushing of rock or pit run materials that contain cobble sized or larger (>64mm) rock particles must be tested by the Contractor for Acid Rock Drainage (ARD) and Metal Leaching (ML) potential prior to being brought onsite. Testing shall be carried out using the following test methods:
  .1 Modified Acid Base Accounting (modified ABA) for the assessment of ARD potential (solid phase rock material)
  .2 Total metals analysis by ICP-MS for assessment of metal content (solid phase rock material)
  .3 Shake Flask Extraction (SFE) for assessment of metal leaching potential (SFE test leachate)
  .4 Details on the above test methods and interpretation of test results oar outlined in the guidance document titled "Prediction Manual for Drainage Chemistry from Sulpidic Geologic Materials MEND Report 1.20.1, Natural Resources Canada, 2009.
  .5 Imported fill materials must originate from a clean source.

5.0 AGGREGATE SOURCE

.1 The contractor may use material from the PSPC Mill Creek Gravel Pit on the Alaska Highway (Km 552) for designated types of aggregates to be placed. This material will have to be screened/processed by the contractor to meet the designated gradations.
.2 Inform Departmental Representative of proposed source of aggregates and provide access for sampling at least two week prior to commencing production.
.3 If, in opinion of Departmental Representative, materials from proposed source do not meet, or cannot reasonably be processed to meet, specified requirements, located an alternative source of demonstrate that material from source in question can be processed to meet specified requirements.
.4 Advise Departmental Representative two weeks in advance of proposed change of material source to allow sampling and testing.
.5 Acceptance of material at source does not preclude future rejection if it fails to conform the requirements specified, lacks uniformity, or if its field performance is found to be unsatisfactory.

6.0 MATERIALS HANDLING

.1 Handle and transport aggregates to avoid segregation, contamination and degradation.
.2 Do not use intermixed or contaminated materials. Remove and dispose rejected materials within 48 hours of rejection.

7.0 BACKFILLING

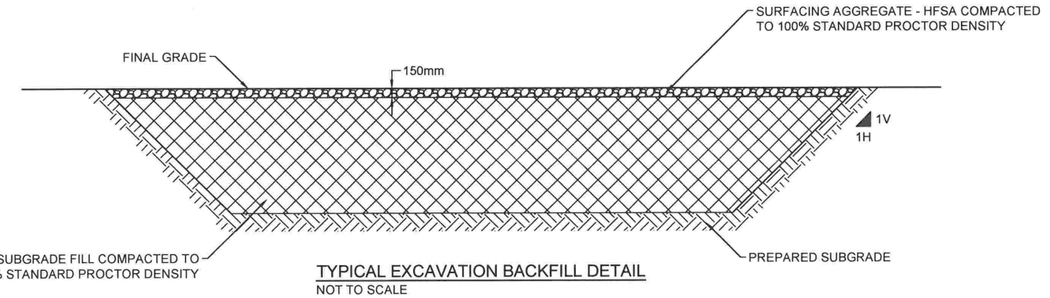
.1 Inspection: do not commence backfilling until fill material and spaces to be filled have been inspected and approved by Departmental Representative.
.2 Remove snow, ice, construction debris, organic soil and standing water from spaces to be filled.
.3 Subgrade Preparation: Shape subgrade surface to avoid surface ponding and promote drainage. Roll subgrade as directed by Departmental Representative to obtain a relatively smooth, even and uniformly compacted subgrade surface.
.4 Placing:
  .1 Place Subgrade Fill in lifts not exceeding a loose thickness of 300 mm.
  .2 Place Subbase and Surfacing Aggregate material in lifts not exceeding a compacted thickness of 150 mm.
  .3 Application of ORC pellets to be placed during the first lift of sub grade fill, see Section 9.0.
.5 Compaction: compact each layer of material to following densities for material to ASTM D698:
  .1 Subgrade Fill - to underside of subbase: 95%
  .2 Subbase: 100%
  .3 Surfacing Aggregate: 100%
.6 Wet and dry the backfill material as required to achieve specified density.
.7 If material is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected to value not greater than 2 to 3% moisture above optimum value for compaction in accordance with ASTM D698.
.8 Reshape compacted surfaces to within 25 mm of elevations as indicated.

8.0 GRADING

.1 Grade so that water will drain away from buildings, walls and paved areas, to catch basins and other disposal areas approved by Departmental Representative. Grade to be gradual between finished spot elevations shown on drawings.
.2 Grade soil and backfill, establishing natural contours and eliminating uneven areas and low spots, ensuring positive drainage.
.3 Verify that grades are correct and notify Departmental Representative if discrepancies occur.

9.0 APPLICATION OF ORC

.1 ORC application to be intermixed with first lift of backfill material placed at the base of the excavation areas (E, F, G and other areas as needed). The location and quantity of ORC application will be as directed by the Departmental Representative.



TYPICAL EXCAVATION BACKFILL DETAIL
NOT TO SCALE

NOTES:
1. PLAN BASED ON PDF OF GOLDER'S 1660199_2000_11 -GEOTECH.DWG
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA G. M. BUCKLER # 46307 7/12/18

No.	DATE:	DESCRIPTION	BY:	APPROVED
02	7/11/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	3/26/18	Issued for Tender	DK	TW

REVISIONS

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

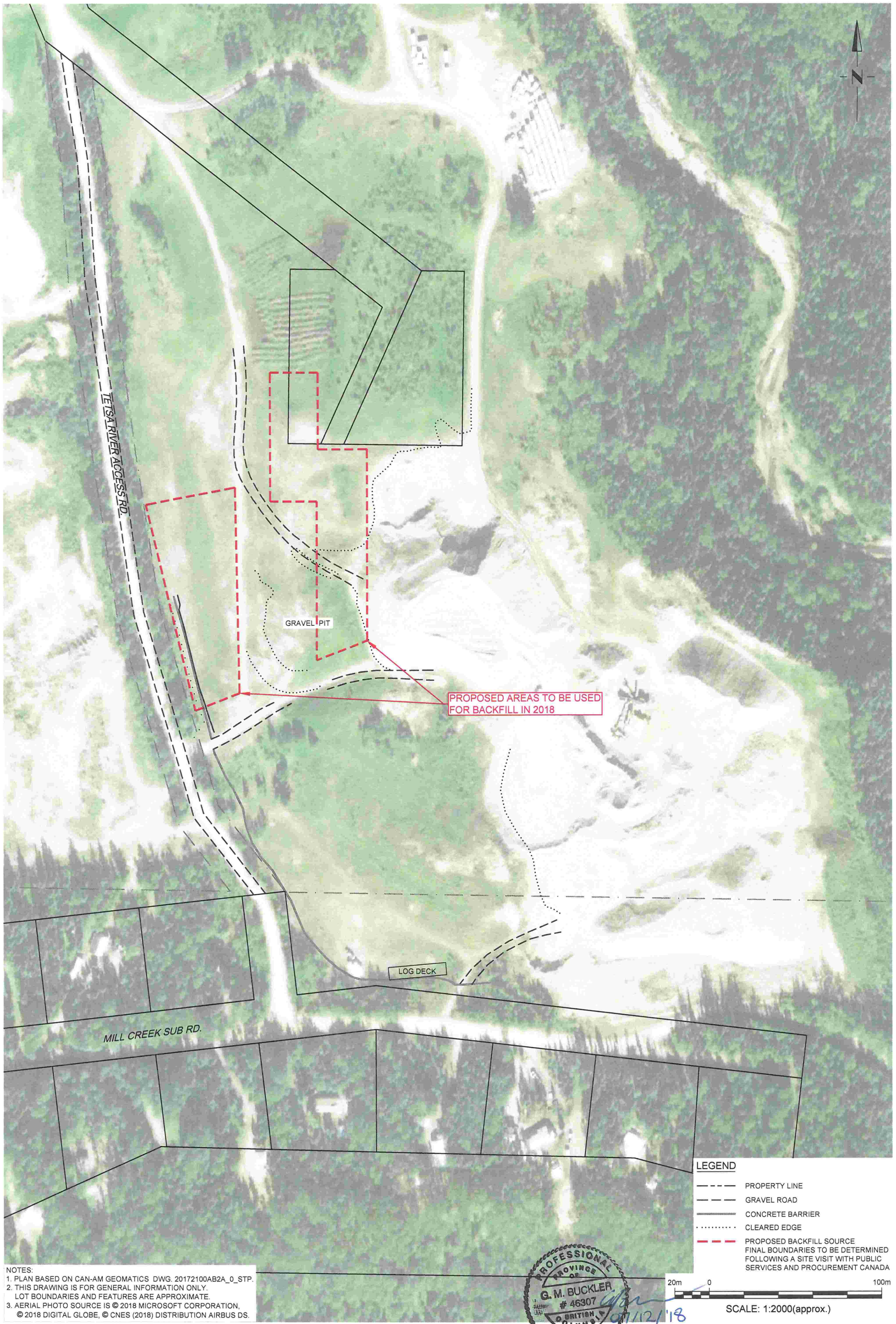
DESIGN:
DRAWN: DK
CHECKED: GB/TW
APPROVED: TW
SCALE: Not to Scale

ADDRESS / CLIENT: Steamboat Maintenance Camp, Kilometre 537.9 Alaska Highway, BC
Public Services and Procurement Canada

TITLE: Site Restoration & Compaction Details

DATE: May 2018
SHEET No. 8 of 9
PROJECT No. 00338
REVISION No. 02
DRAWING No. 18-00338-07

PLOT SCALE: 1:1 CADD FILE NO. Clients\PWGSC\00338 Steamboat\2018-2019\2-Specifications\Drawings\Rev 02\18-00338-07-R2.dwg



NOTES:
1. PLAN BASED ON CAN-AM GEOMATICS DWG. 20172100AB2A_0_STP.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.
3. AERIAL PHOTO SOURCE IS © 2018 MICROSOFT CORPORATION, © 2018 DIGITAL GLOBE, © CNES (2018) DISTRIBUTION AIRBUS DS.

PROFESSIONAL ENGINEER — PROVINCE OF BRITISH COLUMBIA — G. M. BUCKLER # 46307 — 9/11/12/'18

No.	DATE:	DESCRIPTION	BY:	APPROVED
02	7/11/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
01	5/30/18	Updated based on comments by Public Services & Procurement Canada	DK	TW
00	3/26/18	Issued for Tender	DK	TW

REVISIONS

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

DESIGN:	
DRAWN:	DK
CHECKED:	GB/TW
APPROVED:	TW
SCALE:	1:2000

ADDRESS/CLIENT: Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC
Public Services and Procurement Canada

TITLE: Mill Creek Gravel Pit

DATE:	May 2018
SHEET No.	9 of 9
PROJECT No.	00338
REVISION No.	02
DRAWING No.	18-00338-08

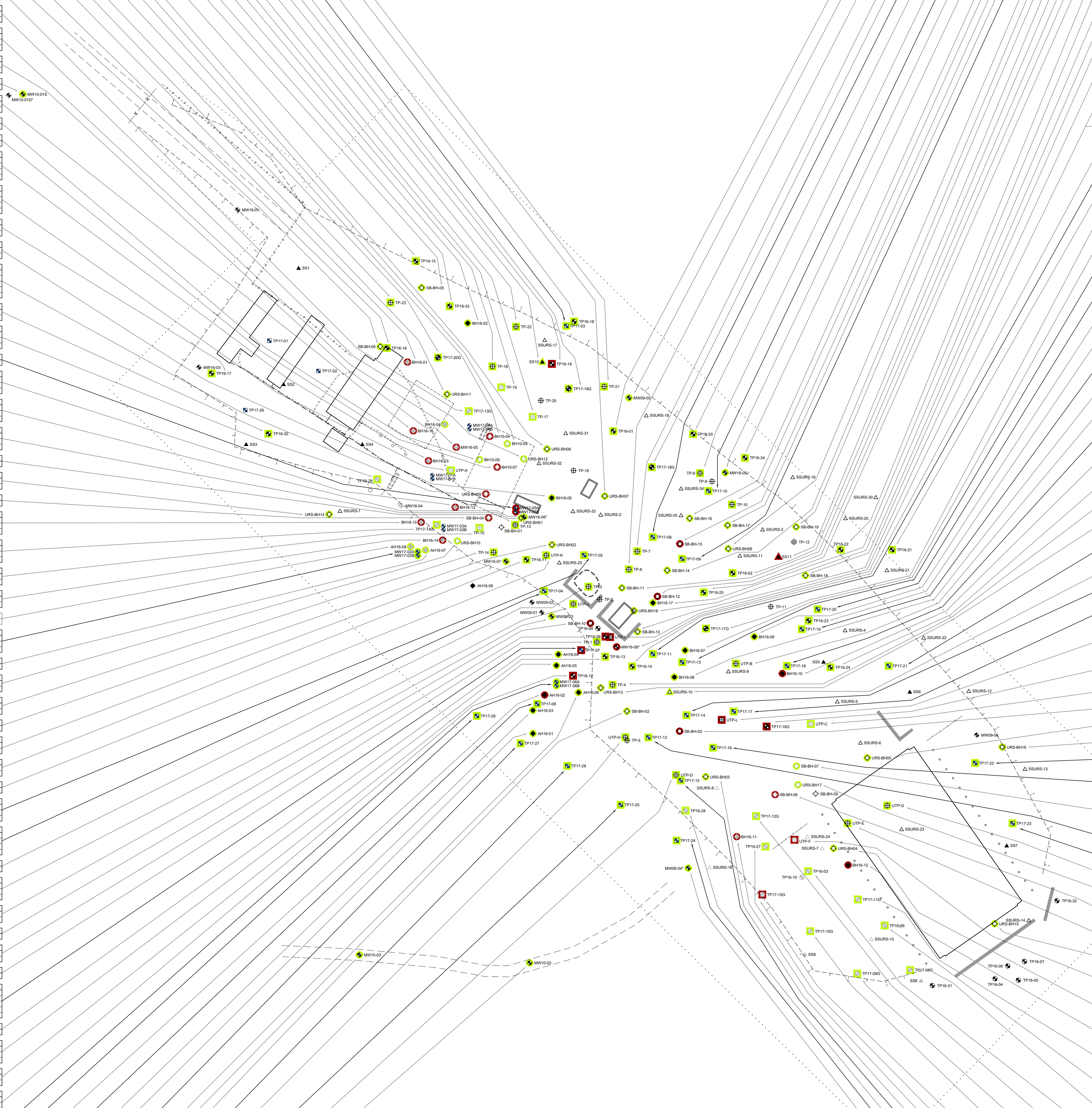
PLOT SCALE: 1:1 CADD FILE NO. Clients\PWGSC\00338 Steamboat\2018-2019\2-Specifications\Drawings\Rev 02\18-00338-08-R2.dwg

ATTACHMENT 1
Cost of Service Form

	Class of Labour, Plant or Material	Unit of Measure	Estimated Quantity (EQ)	Price per Unit (PU) applicable taxes extra	Extended amount (EQ x PU) applicable taxes extra
1	Pre-Mobilization Submittals	Lump Sum	1		
2	Mobilization	Lump Sum	1		
3	Site Preparation	Lump Sum	1		
4	Site Facilities: Provision	Lump Sum	1		
5	Site Facilities: Operation	Lump Sum	1		
6	Standby Time	Day	3		
7	Contaminated Water Treatment and Disposal: Provision	Lump Sum	1		
8	Contaminated Water Treatment: Operation	Litres	500		
9	Temporary Sloping and Shoring	Lump Sum	1		
10	Waste Oversized Debris Removal	Hour	10		
11	Excavation – Soil	Tonnes	37,860		
12	Excavation Weathered Bedrock	Tonnes	3,443		
13	Backfill: Owner Supplied	Tonnes	44,649		
14	Transport: Contaminated Material: Hazardous Waste	Tonnes	10		
15	Transport: Contaminated Material: Waste Quality	Tonnes	41,303		
16	Transport: Non-Contaminated Material and Waste	Tonnes	10		
17	Disposal: Contaminated Material: Hazardous Waste	Tonnes	10		
18	Disposal: Contaminated Material: Waste Quality	Tonnes	41,303		
19	Disposal: Non-Contaminated Material: Waste Quality	Tonnes	10		
20	Bobcat with Sweeper Attachment	Lump Sum	1		
21	Surface Aggregate	Tonnes	2,478		
22	Crush Backfill at Mill Creek Pit	Tonnes	44,649		
23	Site Restoration	Lump Sum	1		
24	Site Restoration Mill Creek Gravel Pit	Lump Sum	1		

	Class of Labour, Plant or Material	Unit of Measure	Estimated Quantity (EQ)	Price per Unit (PU) applicable taxes extra	Extended amount (EQ x PU) applicable taxes extra
25	Move & Store Culverts from Mill Creek Pit to Site	Lump Sum	1		
26	Clear and Grub at Mill Creek	Lump Sum	1		
27	Provision of ORC Pellets (1500 kg)	Lump Sum	1		
28	Weigh Scale Placed at Site	Lump Sum	1		
29	Demobilization	Lump Sum	1		
30	Closeout Submittals	Lump Sum	1		

ATTACHMENT 2
Assessment Report Figures (3A to 3D)



CSR STANDARDS

ANALYTE	B	E	T	X	VHs	VPHs	EPH (C10-C19)	EPH (C19-C32)	LEPHs	HEPHs	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(k)fluoranthene	Dibenz(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	2-MethylNaphthalene	Naphthalene	Phenanthrene	Pyrene	Quinoline	Other PAHs	VOC
Sch 3.1 Part 1 GW Flow to AW-FW IL	2.5	200	0.5	20	NS	NS	NS	NS	90-9500	NS	NS	NS	NS	NS	NS	NS	NS	NS	75	NS	NS	NS	VARIES	VARIES
Sch 3.1 Part 1 GW Flow to AW-FW RLLD	2.5	200	0.5	20	NS	NS	NS	NS	90-9500	NS	NS	NS	NS	NS	NS	NS	NS	NS	75	NS	NS	NS		
Sch 3.1 Part 1 GW used for DW IL	0.035	15	6	6.5	NS	NS	NS	NS	70-500	NS	NS	NS	NS	NS	NS	NS	NS	NS	100	NS	NS	NS		
Sch 3.1 Part 1 GW used for DW RLLD	0.035	15	6	6.5	NS	NS	NS	NS	70-500	NS	NS	NS	NS	NS	NS	NS	NS	NS	100	NS	NS	NS		
Sch 3.1 Part 1 Intake of Contaminated Soil IL	6500	700000	550000	1000000	NS	NS	NS	NS	80000	NS	1000	NS	50	NS	NS	300000	NS	NS	150000	NS	NS	NS		
Sch 3.1 Part 1 Intake of Contaminated Soil RLLD	150	4000	3500	8500	NS	NS	NS	NS	450	NS	10000	NS	5	NS	NS	1500	NS	NS	850	NS	NS	NS		
Sch 3.1 Part 1 Toxicity to Soil Invertebrates and Plants IL	250	650	450	600	NS	NS	NS	NS	250	NS	30	NS	70	NS	NS	200	NS	NS	20	NS	NS	NS		
Sch 3.1 Part 1 Toxicity to Soil Invertebrates and Plants RLLD	100	200	150	150	NS	NS	NS	NS	150	NS	2.5	NS	20	NS	NS	50	NS	NS	0.6	NS	NS	NS		
Sch 3.1 Part 2 HH IL	NS	NS	NS	NS	NS	200	NS	NS	NS	2000	NS	500	NS	500	50	NS	500	950	NS	300000	200000	10		
Sch 3.1 Part 2 HH RLLD	NS	NS	NS	NS	NS	200	NS	NS	NS	1000	NS	50	NS	50	5	NS	50	60	NS	1500	1000	2.5		
Sch 3.1 Part 3 EH IL	NS	NS	NS	NS	NS	200	NS	NS	NS	2000	NS	10	NS	10	10	NS	10	NS	NS	50	100	NS		
Sch 3.1 Part 3 EH RLLD	NS	NS	NS	NS	NS	200	NS	NS	NS	1000	NS	1	NS	1	1	NS	1	NS	NS	5	10	NS		
Sch 4 Hazardous Waste Regulation	500	240	2400	30000	NS	NS	NS	NS	NS	NS	NS	NS	1	NS	NS	NS	NS	NS	NS	NS	NS	NS		

LEGEND

STRUCTURE
FORMER STRUCTURE
ABOVE GROUND STORAGE TANK
CONCRETE BARRIER
CREST OF SLOPE
AREA CLEARED FROM TREES, NOV. 2017
FENCE LINE
EDGE OF ROAD
ANCHOR PILE
POWER LINE
BURIED CABLE
BURIED PIPE
COLD MIX MATERIAL
FORMER SOIL SAMPLE LOCATION (2002-2015)
SURFICIAL SOIL SAMPLE LOCATION (2002-2015)
FORMER TEST PIT LOCATION (2002-2015)
TEST PIT LOCATION (2002-2015)
FORMER BOREHOLE LOCATION (2002-2015)
BOREHOLE LOCATION (2002-2015)
FORMER SURFICIAL SOIL SAMPLE LOCATION (2016)
SURFICIAL SOIL SAMPLE LOCATION (2016)
FORMER TEST PIT LOCATION (2016)
TEST PIT LOCATION (2016)
FORMER BOREHOLE LOCATION (2016)
BOREHOLE LOCATION (2016)
TP17-11G FORMER TEST PIT LOCATION (BY GOLDER, 2017)
TP17-16G TEST PIT LOCATION (BY GOLDER, 2017)
DESTROYED MONITORING WELL LOCATION
MONITORING WELL LOCATION
* INDICATES A DECOMMISSIONED WELL
CORE6/ARCADIS TESTPIT (2017)
CORE6/ARCADIS MONITORING WELL (2017)
SOIL CONCENTRATION(S) LESS THAN APPLICABLE CSR STANDARDS
SOIL CONCENTRATION(S) GREATER THAN APPLICABLE CSR STANDARDS

BETX — BENZENE, ETHYLBENZENE, TOLUENE & XYLENE
VHs — VOLATILE HYDROCARBONS
VPHs — VOLATILE PETROLEUM HYDROCARBONS
EPH (C10-C19) — LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS UNCORRECTED FOR PAHs
EPH (C19-C32) — HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS UNCORRECTED FOR PAHs
LEPHs — LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS
HEPHs — HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
PAH — POLYCYCLIC AROMATIC HYDROCARBONS
VOC — VOLATILE ORGANIC COMPOUNDS
< — LESS THAN
RDL — REPORTED DETECTION LIMIT
- — NOT ANALYZED
NS — NO STANDARDS
AS — APPLICABLE STANDARDS
CSR — CONTAMINATED SITES REGULATION
RL — RESIDENTIAL LAND USE STANDARD
PL — URBAN PARK LAND STANDARD
IL — INDUSTRIAL LAND USE STANDARD
HWR — HAZARDOUS WASTE REGULATION

SAMPLE I.D. — ANALYTE

TP17-24	B
0 - 0.5	<0.005

DEPTH (m) — RESULTS

NOTES:
1. Sample values are presented as Milligrams per kilogram (mg/kg).
2. Leachate Sample values are presented as Micrograms per Litre (µg/L).
3. Sample where RDL Exceeds applicable CSR Standards shaded in GREY.
4. Sample Exceeding applicable CSR Standards shaded in YELLOW.

NOTES:
1. PLAN BASED ON GOLDER ASSOCIATES 1660199_2000_2017-BASE DATA DWG. & CAN-AM GEOMATICS 20172100AB3B_0_STP DWG.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

PLOT SCALE: 1:1 DRAWN BY: DK CADD FILE: Clients\PWGSC\00338 Steamboat\03-Additional Investigations\4-Figures\Fig3A 3B-Soil Analytical-R0.dwg|Layout1

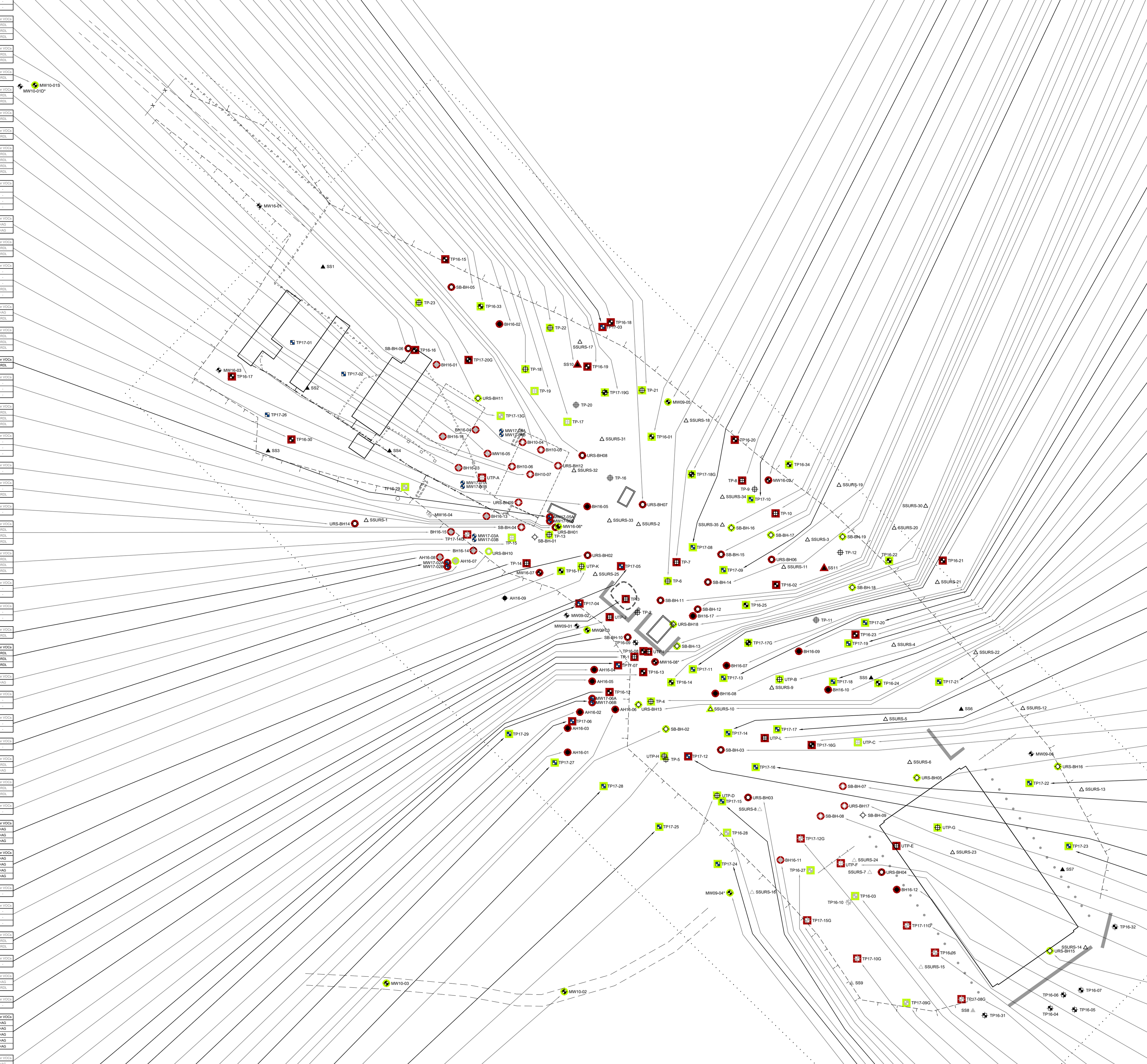
5m 0 25m
SCALE: 1:500(approx.)

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

ADDRESS & CLIENT:
Steamboat Maintenance Camp, Kilometre 537.9
Alaska Highway, BC
Public Services and Procurement Canada

FIGURE TITLE:
Soil Analytical Results
CSR - Petroleum Hydrocarbons

REV:	DATE:	PROJECT No:	FIGURE No:
00	Mar. 2018	00338/102516	Figure 3A



CCME GUIDELINES

ANALYTE	B	E	T	X	F1	F1-	F2	F2-	F3	F3-	F4	F4 (SG)	Acenaphthene	Anthracene	Benzo(a)anthracene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Other PAHs	IACR	1,1,2,2-Tetrachloroethane	Tetrachloroethene	Trichloroethene	Other VOCs
CCME Course Soil IL	0.0068	0.018	0.08	2.4	240	NG	260	NG	1700	NG	3300	3300	0.28	32	10	10	10	NG	10	180	0.25	10	0.013	0.046	100	VARIES	1	50	0.6	0.01	VARIES
CCME Course Soil RL/PL	0.0068	0.018	0.08	2.4	30	NG	150	NG	300	NG	2800	2800	0.28	2.5	1	1	1	6.2	1	50	0.25	1	0.013	0.046	10		1	5	0.2	0.01	
CCME Fine Soil CL	0.0068	0.018	0.08	2.4	170	NG	230	NG	2500	NG	6600	6600	0.28	32	10	10	10	NG	10	180	0.25	10	0.013	0.046	100		1	50	0.6	0.01	
CCME Course Soil RL/PL	0.0068	0.018	0.08	2.4	170	NG	150	NG	1300	NG	5600	5600	0.28	2.5	1	1	1	6.2	1	50	0.25	1	0.013	0.046	10		1	5	0.2	0.01	

NOTES:
1. PLAN BASED ON GOLDER ASSOCIATES 1660199_2000_2017-BASE DATA DWG. & CAN-AM GEOMATICS 20172100AB3B_0_STP DWG.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

LEGEND

- STRUCTURE
- FORMER STRUCTURE
- ABOVE GROUND STORAGE TANK
- CONCRETE BARRIER
- CREST OF SLOPE
- AREA CLEARED FROM TREES, NOV. 2017
- FENCE LINE
- EDGE OF ROAD
- ANCHOR PILE
- POWER LINE
- BURIED CABLE
- BURIED PIPE
- COLD MIX MATERIAL
- FORMER SOIL SAMPLE LOCATION (2002-2015)
- SURFICIAL SOIL SAMPLE LOCATION (2002-2015)
- FORMER TEST PIT LOCATION (2002-2015)
- TEST PIT LOCATION (2002-2015)
- FORMER BOREHOLE LOCATION (2002-2015)
- BOREHOLE LOCATION (2002-2015)
- FORMER SURFICIAL SOIL SAMPLE LOCATION (2016)
- SURFICIAL SOIL SAMPLE LOCATION (2016)
- FORMER TEST PIT LOCATION (2016)
- TEST PIT LOCATION (2016)
- FORMER BOREHOLE LOCATION (2016)
- BOREHOLE LOCATION (2016)
- TP17-11G FORMER TEST PIT LOCATION (BY GOLDER, 2017)
- TP17-16G TEST PIT LOCATION (BY GOLDER, 2017)
- DESTROYED MONITORING WELL LOCATION
- MONITORING WELL LOCATION * INDICATES A DECOMMISSIONED WELL
- CORE6/ARCADIS TESTPIT (2017)
- CORE6/ARCADIS MONITORING WELL (2017)
- SOIL CONCENTRATION(S) LESS THAN APPLICABLE CCME GUIDELINES
- SOIL CONCENTRATION(S) GREATER THAN APPLICABLE CCME GUIDELINES

BETX	BENZENE, ETHYLBENZENE, TOLUENE & XYLENE
F1	(C6-C10) UNCORRECTED
F1-	(C6-C10) MINUS BTEX
F2	(C10-C16) UNCORRECTED
F2-	(C10-C16) MINUS NAPHTHALENE
F3	(C16-C34) UNCORRECTED
F3-	(C16-C34) MINUS PAH
F4	(C34-C50) UNCORRECTED
F4 (SG)	(C34-C50) SILICA GEL CLEAN-UP
PAH	POLYCYCLIC AROMATIC HYDROCARBONS
IACR	INDEX OF ADDITIVE CANCER RISK
VOC	VOLATILE ORGANIC COMPOUNDS
<	LESS THAN
RDL	REPORTED DETECTION LIMIT
-	NOT ANALYZED
NG	NO GUIDELINES
AG	APPLICABLE GUIDELINES
CCME	CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT
RL	RESIDENTIAL LAND USE GUIDELINE
PL	URBAN PARK LAND GUIDELINE
IL	INDUSTRIAL LAND USE GUIDELINE

SAMPLE I.D. — ANALYTE

TP17-24	Arsenic
0 - 0.5	7.1

DEPTH (m) — RESULTS

NOTES:
1. Sample values are presented as Milligrams per kilogram (mg/kg).
2. Sample where RDL Exceeds applicable CCME Guidelines shaded in GREY.
3. Sample Exceeding applicable CCME Guidelines shaded in YELLOW.

5m 0 25m
SCALE: 1:500(approx.)

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

ADDRESS & CLIENT:
Steamboat Maintenance Camp, Kilometre 537.9
Alaska Highway, BC
Public Services and Procurement Canada

FIGURE TITLE:
Soil Analytical Results
CCME - Petroleum Hydrocarbons

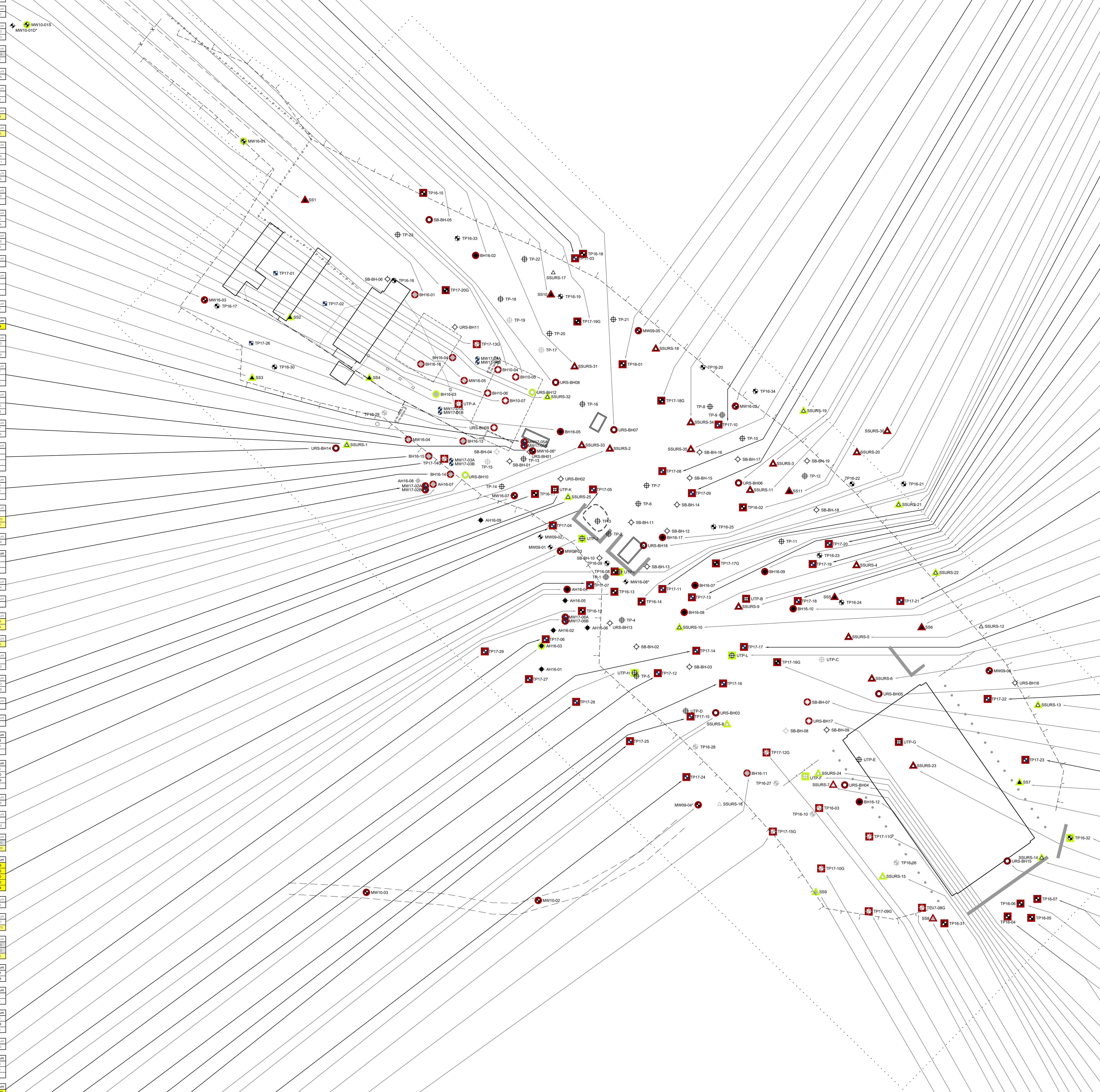
REV:	DATE:	PROJECT No:	FIGURE No:
00	Mar. 2018	00338/102516	Figure 3B

PLOT SCALE: 1:1 DRAWN BY: DK CADD FILE: Clients\PWGSC\00338 Steamboat\03-Additional Investigations\4-Figures\Fig3A 3B-Soil Analytical-R0.dwg\Layout2

Sample	Depth (m)	Date	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Other Metals	Chloride	Sodium
URS-BH07	0.2 - 0.4	11/23/05	-	-	-	-	-	-	-	-	-	-	250	116
TP16-18	1.0 - 1.2	11/06/16	11.5	397	0.79	1.06	18.8	567	3.19	0.71	140	<AS	117	178
TP17-03	0 - 0.5	11/24/17	7.2	308	0.3	0.54	11	417	1.8	0.5	50	<AS	59	43
	1.5 - 2.0		5.9	354	0.3	0.55	13	489	2.1	0.5	57	<AS	57	36
TP17-19	1.4	7/14/17	12.5	1,390	0.7	0.18	13	157	1.5	1	135	<AS	166	27
	2.4		20.5	953	0.6	0.24	10	146	1.9	0.9	123	<AS	283	79
SS10	0.15 - 0.45	9/09/16	9.94	190	<0.40	0.158	10.3	63.7	1.14	<0.50	58.9	<AS	1,070	657
SSURS-31	0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	-	-	879	531
	0 - 0.2		-	-	-	-	-	-	-	-	-	-	879	531
BH16-02	0.3 - 0.61	9/06/16	8.12	527	0.53	0.207	10.4	89.2	1.28	<0.50	69.3	<AS	380	<330
SB-BH-05	1.2 - 1.5	2/03/03	12	1,140	1	<0.5	99	-	<4	<2	101	<AS	-	-
TP16-15	1.0 - 1.2	11/06/16	6.89	359	<0.40	0.478	10.1	1.63	1.63	<0.50	67.6	<AS	65.2	56.2
URS-BH08	0.1 - 0.3	11/23/05	8.3	797	0.6	0.08	12	345	1.5	0.6	107	<AS	-	-
BH10-04	0.9 - 1.2	10/10/10	11.4	903	0.65	0.16	18.8	-	1.77	0.54	115	<AS	304	59.6
BH10-05	1.5 - 1.8	10/10/10	12.1	1,340	0.6	0.31	13.7	-	1.51	0.48	125	<AS	630	132
TP17-20	0.5	7/14/17	7.8	271	0.4	0.17	11	146	1.2	0.7	74	<AS	28	39
	2.0		16	1,240	0.7	0.19	11	183	1.3	1	125	<AS	70	7
	2.0		12	1,270	0.7	0.2	11	186	1.2	1	127	<AS	79	10
BH16-01	0.3 - 0.61	9/06/16	8.78	687	0.48	0.233	7.7	118	1.19	<0.50	78.7	<AS	8.3	10.5
	1.21 - 1.52		5.59	580	<0.40	0.186	9	67.3	0.63	<0.50	66.6	<AS	8.3	16.9
	3.64 - 3.94		9.66	927	0.75	0.533	10.3	212	1.17	<0.50	116	<AS	137	51.8
MW16-01	0.33 - 0.66	8/31/16	4.91	165	<0.40	0.282	9.5	230	0.67	<0.50	38.1	<AS	4.4	4.5
SS1	0.5	8/31/16	7.38	315	0.41	1.97	18.1	445	4.31	0.58	92.9	<AS	128	54
TP17-13	1.0	7/13/17	12.2	1,190	0.7	0.22	13	181	1.4	1.1	129	<AS	79	22
	4.1		14.3	953	0.6	0.39	12	222	1.5	0.9	120	<AS	60	8
URS-BH12	0.1 - 0.3	11/24/05	8.9	590	0.5	0.07	10	172	1.1	<0.5	92	<AS	-	-
MW10-01S	0.8 - 1.1	9/20/10	<5.0	123	<0.50	<0.50	8.5	-	<4.0	<2.0	54	<AS	34.3	41.7
SSURS-32	0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	-	-	21	32.3
	0 - 0.2		-	-	-	-	-	-	-	-	-	-	21	32.3
BH16-04	0.3 - 0.61	9/06/16	9.9	821	0.62	0.254	11.6	177	1.17	<0.50	99.2	<AS	297	<260
	3.94 - 4.24		10.2	790	0.56	0.532	11.3	201	1.18	<0.50	111	<AS	58.4	8.7
MW16-05	0.16 - 0.49	9/03/16	10.5	759	0.87	0.307	14.9	139	1.29	0.8	117	<AS	154	61.6
BH16-16	0 - 0.3	9/09/16	7.62	482	0.53	0.325	10.8	131	1.05	<0.50	92.9	<AS	16.8	20
	2.27 - 2.58		9.28	832	0.58	0.278	14.4	167	1.18	<0.50	86.3	<AS	16.7	7.1
BH10-06	0.9 - 1.1	10/11/10	11.3	1,320	0.66	0.14	15.8	-	1.41	0.52	118	<AS	1,170	564
BH10-07	0.7 - 0.9	10/11/10	8.61	1,390	0.54	<0.10	7.95	-	1.04	0.42	79.9	<AS	620	374
BH16-03	0.15 - 0.45	9/06/16	7.97	169	<0.40	0.288	9.2	68.1	1.09	<0.50	39	<AS	15	21
	0.15 - 0.45		5.6	162	<0.40	0.184	10.1	73.5	0.92	<0.50	40.9	<AS	15.7	22.9
	3.94 - 4.24		6.65	237	0.45	0.501	12.1	235	1.07	<0.50	61.5	<AS	56.6	41.1
SS2	0.5	8/31/16	6.47	277	0.4	1.53	13.7	550	3.61	<0.50	74.6	<AS	15.2	14.4

UTP-A	Date	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Zirconium	Other Metals	Chloride	Sodium
0.2 - 0.4	8/02/06	7.3	437	0.5	0.51	10	417	1.9	<0.5	81	11.8	<AS	46	39.5
0.8 - 1.0		9.8	618	0.7	0.25	11	259	1.7	0.7	111	15.5	<AS	-	-

Sample	Depth (m)	Date	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Other Metals	Chloride	Sodium
MW16-03	0.16 - 0.33	9/01/16	7.76	462	0.45	0.259	12.3	192	1.39	<0.50	69.9	<AS	13.3	9.5
	2.3 - 2.63		7.6	976	0.48	0.297	8.5	130	0.97	<0.50	95.3	<AS	10.2	17.4
SS4	0.5	8/31/16	4.3	207	<0.40	0.783	10.1	456	1.6	<0.50	63.6	<AS	7.9	10.9
	0.5		4.82	249	<0.40	0.71	8.9	401	1.72	<0.50	66.2	<AS	10.6	2.9
BH16-05	3.03 - 3.18	9/06/16	7.97	514	0.62	0.524	12.5	131	2.05	0.5	139	<AS	137	31
URS-BH09	0.2 - 0.4	11/24/05	8.8	396	0.4	0.11	11	98.9	1.3	0.6	94	<AS	-	-
	0.2 - 0.4		9.1	435	0.5	0.1	12	88.4	1.4	0.6	95	<AS	-	-
	1.4 - 1.6		10	737	0.5	0.25	12	194	1.6	<0.5	118	<AS	-	-
SS3	0.5	8/31/16	4.39	223	<0.40	0.771	10.8	779	1.72	<0.50	41.9	<AS	4.1	3.7
MW17-05	3.66 - 3.91	11/19/17	11.5	832	0.6	0.41	17	241	1.3	0.5	105	<AS	780	434
BH16-13	0.9 - 1.2	9/09/16	9.3	737	0.75	0.444	17.2	346	1.75	0.56	106	<AS	70.4	16.3
	0.9 - 1.2		9.76	732	0.81	0.535	19.1	298	1.6	0.51	105	<AS	54.4	13
	4.5 - 4.8		5.91	230	<0.40	0.497	11.4	177	1.05	<0.50	57.2	<AS	383	18.9
MW16-04	0.16 - 0.49	9/02/16	5.29	227	<0.40	0.839	10.6	582	1.7	<0.50	49.3	<AS	7.2	6.7
	1.64 - 1.97		6.82	195	0.55	0.237	12.2	182	0.83	<0.50	51.3	<AS	13.9	17
	3.78 - 4.11		7.84	247	0.51	0.568	13.5	276	1.14	<0.50	76.9	<AS	110	20
MW16-06	0.33 - 0.66	9/04/16	8.66	122	<0.40	0.188	11	66.7	1.28	<0.50	65.5	<AS	14	21
	2.8 - 3.13		7.32	501	0.57	0.362	13.7	166	0.98	<0.50	77.2	<AS	266	115
	2.8 - 3.13		6.96	361	0.56	0.546	13.8	209	1	<0.50	71.8	<AS	239	123
SSURS-1	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	25	7.7
	0 - 0.2		-	-	-	-	-	-	-	-	-	-	25	10.4
URS-BH14	0.2 - 0.4	11/24/05	8.8	347	0.4	0.1	8	173	1.1	0.5	73	<AS	-	-
	0.2 - 0.4		8.4	261	0.4	0.1	9	153	1	0.5	72	<AS	-	-
	3.4 - 3.6		10.1	759	0.5	0.3	10	188	1.5	0.5	121	<AS	-	-
	4.2 - 4.4		8.5	560	0.5	0.34	10	220	1.5	0.5	110	<AS	-	-
BH16-15	0 - 0.3	9/09/16	8.97	471	0.55	0.263	11.6	129	1.1	<0.50	82.1	<AS	8.4	4.5
	0.91 - 1.21		7.23	243	0.45	0.328	11.5	146	1.18	<0.50	72.6	<AS	6.1	7.2
	4.85 - 5.15		12	418	0.55	0.486	14.3	226	1.17	<0.50	91.4	<AS	87.6	7
TP17-14	0.5	7/13/17	7.5	497	0.5	0.44	14	265	1.9	0.7	82	<AS	76	83
	2.5		13.8	1,210	1.1	0.62	196	157	35.3	1.5	835	<AS	4,200	1,420
	2.5		10.4	133	0.5	0.17	10	113	1.5	0.9	84	<AS	2,380	917
BH16-14	0 - 0.3	9/09/16	9.05	831	0.66	0.3	12.1	156	1.34	<0.50	113	<AS	20.7	30.8
MW17-02	2.3 - 2.6	11/20/17	11.3	1,200	0.6	0.2	15	213	1.8	1	114	<AS	10	5
	3.0 - 3.25		8.8	380	0.5	0.34	14	265	1.1	0.3	83	<AS	18	3
	4.6 - 4.8		13.3	1,390	0.6	0.37	15	229	2	2.9	122	<AS	29	6
AH16-07	0.8 - 0.9	11/05/16	7.78	468	0.54	0.407	9	332	1.47	<0.50	110	<AS	252	50.4
URS-BH10	0.3 - 0.5	11/24/05	9.3	250	0.6	0.11	14	126	1.3	<0.5	80	<AS	-	-
SSURS-33	0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	-	-	729	404
	0 - 0.2		-	-	-	-	-	-	-	-	-	-	729	404
SSURS-2	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	839	513
MW16-07	0.16 - 0.49	9/04/16	7.89	595	0.68	0.362	12.8	227	1.25	<0.50	89.5	<AS	8.1	13
	0.16 - 0.49		6.7	478	0.52	0.516	21.8	282	1.55	<0.50	110	<AS	7	13.3
TP16-11	1.0	9/07/16	10.2	568	0.62	0.501	14.8	262	1.45	<0.50	99.8	<AS	77.2	80.2
	3.0		9.93	512	0.58	0.602	12.4	282	1.21	<0.50	104	<AS	151	79.8
UTP-K	0.2 - 0.4	8/03/06	6.2	510	0.5	0.25	9	248	1.3	0.9	92	<AS	-	-
SSURS-25	0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	-	-	3	6
TP17-05	0 - 0.5	11/15/17	11	303	0.8	0.1	21	-	1.5	0.9	83	<AS	281	112
	1.5 - 2.0		13.7	1,430	0.8	0.27	14	-	1.3	1	139	<AS	147	49
	3.5 - 4.0		8.4	877	0.9	0.53	16	-	2	1	155	<AS	121	17
TP17-04	0 - 0.5	11/18/17	5.1	192	0.3	0.5	12	442	1.7	0.5	46	<AS	28	46
	3.5 - 4.0		10.6	330	0.7	0.11	21	264	1.5	0.8	88	<AS	137	100
	4.5 - 5.0		9.4	609	0.5	0.15	12	238	0.9	0.4	89	<AS	365	199
	5.0 - 5.5		14.2	1,150	0.7	0.35	16	275	1.7	0.8	148	<AS	299	31
UTP-J	0.1 - 0.3	8/03/06	4.4	172	0.4	0.62	8	600	1.7	<0.5	48	<AS	7	11.6
MW09-03	1.5 - 2	10/06/09	9	967	0.62	<0.50	12.9	-	<4.0	<2.0	94.8	<AS	23	-
	1.5 - 2		9.7	1,070	0.66	<0.50	13.6	-	<4.0	<2.0	97.9	<AS	24.7	<200
TP16-08	0.5	9/07/16	5.58	278	<0.40	0.713	11.7	540	1.79	<0.50	54.9	<AS	176	<270
	3.4		9.68	580	0.51	0.324	10.9	193	1.37	<0.50	94.3	<AS	4,080	2,580
TP17-07	0.5 - 1.0	11/17/17	39.2	559	1.1	0.17	21	226	3.3	1.9	108	<AS	672	399
	1.5 - 2.0		11.7	482	0.9	0.14	18	288	2	1.3	104	<AS	953	565
	2.5 - 3.0		13.2	944	0.7	0.21	17	178	1.4	0.7	123	<AS	602	340
	3.0 - 3.5		11.6	748	0.8	0.21	16	245	1.7	0.8	111	<AS	607	340
	3.0 - 3.5		8.8	469	0.6	0.14	15	166	1.4	0.5	76	<AS	660	394
AH16-04	0.45 - 0.5	11/05/16	9.34	307	0.42	0.3	13.1	208	1.66	<0.50	87	<AS	193	175
TP16-13	0.5	9/07/16	4.85	185	<0.40	0.649	9.6	434	1.49	<0.50	38.5	<AS	64	82.7
	1.5		8.11	159	0.72	0.24	18.7	148	1.16	<0.50	69.9	<AS	3,130	2,270
TP16-12	0.5	9/07/16	8.35	194	0.42	0.194	12.2	127	1.28	<0.50	70.1	<AS	163	<290
	0.5		8.03	190	0.51	0.304	12.8	177	1.18	<0.50	75.7	<AS	183	<280
	1.5		10.6	955	0.65	0.384	10.4	219	1.44	<0.50	113	<AS	422	265
MW17-06	0.8 - 1.0	11/21/17	7.6	208	0.5	0.13	16	135	1.6	0.7	65	<AS	122	127
	2.28 - 2.55		3.9	280	0.3	0.08	8	82	0.7	0.2	46	<AS	147	133
TP17-29	2.5 - 3.0	11/23/17	11.4	686	0.6	0.14	13	187	1.3	0.8	91	<AS	31	16
	4.5 - 5.0		13	1,080	0.7	0.33	15	255	1.5	0.8	129	<AS	63	10
TP17-06	1.5 - 2.0	11/17/17	12.8	1,220	0.7	0.2	13	195	1.5	0.9	121	<AS	273	99
	2.5 - 3.0		11.3	1,140	0.7	0.16	13	136	1.3	0.8	112	<AS	222	103
	3.5 - 4.0		9.7	582	0.6	0.13	15	146	1.4	0.9	88	<AS	150	86
AH16-03	0.5 - 0.6	11/05/16	10	147	0.42	0.151	16.4	141	1.43	<0.50	65.6	<AS	63.5	115
TP17-27	1.5 - 2.0	11/22/17	10.7	672	0.9	0.17	22	277	1.5	0.8	99	<AS	77	48
	1.5 - 2.0		10.2	676	0.8	0.17	22	344	1.7	0.6	109	<AS	95	55
	3.5 - 4.0		11.5	741	0.7	0.28	15	205	1.5	0.6	132	<AS	192	57
TP17-14	3.5 - 4.0	11/18/17	11.7	194	0.7	0.17	27	235	1.5	0.9	78	<AS	6,180	3,690
UTP-H	0 - 0.2	8/03/06	3.5	167	0.3	0.59	8	722	1.4	0.6	39	<AS	3	7.3
TP17-28	1.5 - 2.0	11/23/17	9.1	563	0.8	0.13	19	269	1.1	0.8	85	<AS	44	34
	3.5 - 4.0		10.5	651	0.7	0.19	16	221	1.2	0.7	93	<AS	147	89
TP17-12	1.5 - 2.0	11/22/17	8.7	202	0.4	0.11	18	154	1.3	0.6	60	<AS	1,570	898
	3.5 - 4.0		10.3	477	0.8	0.16	22	276	1.5	0.5	102	<AS	961	4,370
MW10-03	1.5 - 1.8	9/27/10	12.3	675	0.84	0.8	19.8	-	<4.0	<2.0	110	<AS	296	35.6
TP17-16	0 - 0.5	11/16/17	11.2	241	0.5	0.15	15	92	1.3	0.5	66	<AS	9,480	5,300
	0.5 - 1.0		10.5	994	0.6	0.22	15	201	1.3	0.8	98	<AS	5,800	1,880
	1.5 - 2.0		10.2	917	0.6	0.23	13	184	1.4	0.6	103	<AS	5,400	2,960
TP17-15	1.5 - 2.0	11/22/17	9.5	188	0.6	0.15	23	201	1.5	0.8	87	<AS	1,660	1,040
	4.5 - 5.0		7.6	344	0.5	0.46	16	524	1.7	0.6	70	<AS	1,840	899
TP17-25	0 - 0.5	11/23/17	5.3	289	0.4	0.6	13	466	1.5	0.6	42	<AS	75	47
	2.5 - 3.0		9.4	165	0.6	0.13	19	140	1.2	0.4	65	<AS	234	274
URS-BH03	3.2 - 3.4	11/23/05	10.1	559	0.5	0.19	13	242	1.6	0.6	98	<AS	-	-
SSURS-8	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	5	19
TP17-24	0 - 0.5	11/22/17	7.1	301	0.4	0.9	16	622	2.6	0.7	68	<AS	122	66
	1.5 - 2.0		9.3	368	0.6	0.13	16	142	1.1	0.6	73	<AS	594	469
	3.5 - 4.0		7.1	127	0.4	0.08	13	138	0.7	0.3	46	<AS	1,590	986
MW10-02	1.5 - 1.8	9/22/10	7.5	1,370	<0.50	0.51	7.1	-	<4.0	<2.0	84.7	<AS	-	-
	3.0 - 3.2		-	-	-	-	-	-	-	-	-	-	251	160
MW09-04	1.8 - 2.1	10/07/09	10.5	712	0.7	<0.50	18.1	-	<4.0	<2.0	100	<AS	664	309
BH16-11	0.16 - 0.46	9/09/16	4.86	296	<0.40	0.705	11.3	635	1.59	<0.50	49.3	<AS	491	347
	2.12 - 2.42		10.6	325	0.52	0.346	13.7	215	1.1	<0.50	73.2	<AS	1,190	641
TP17-15	0.5	7/13/17	10.4	329	0.8	0.22	16	220	1.7	0.9	94	<AS	76	103
	1.5		7.6	101	0.6	0.11	18	136	1.2	0.6	57	<AS	236	181
	2.6		9.4	391	0.7	0.17	15	228	1.4	0.8	86	<AS	415	215



Sample	Depth (m)	Date	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Other Metals	Chloride	Sodium
TP16-01	0.5 - 0.5	9/08/16	11.3	199	0.55	0.199	8	106	0.97	0.55	80.1	<AS	1,640	898
	2.5 - 2.5		-	-	-	-	-	-	-	-	-	-	1,510	1,030
MW09-05	1.2 - 1.5	10/08/09	9.1	335	0.54	<0.50	12.7	-	<4.0	<3.0	83.2	<AS	468	246
	2.1 - 2.4		-	-	-	-	-	-	-	-	-	-	153	34.4
SSURS-18	0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	-	-	248	167
TP17-18	0.5	7/14/17	10.9	143	0.4	0.18	10	94	1.2	0.6	80	<AS	2,560	1,020
	1.0		12.8	939	0.6	0.19	11	213	1.5	0.9	108	<AS	744	246
	1.5		11.8	1,070	0.7	0.25	11	158	1.4	0.7	136	<AS	532	143
SSURS-34	0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	-	-	3,310	2,350
	0 - 0.2		-	-	-	-	-	-	-	-	-	-	3,310	2,350
TP17-10	0.5 - 1.0	11/15/17	13.5	1,040	0.7	0.2	15	-	1.3	0.7	120	<AS	1,700	590
	2.0 - 2.5		6.4	1,080	0.6	0.26	10	-	1.2	0.5	117	<AS	928	245
MW16-02	0.33 - 0.66	9/01/16	4.21	239	<0.40	0.575	14.1	472	1.9	<0.50	47.3	<AS	541	341
	1.97 - 2.3		6.55	240	<0.40	0.2	8.5	108	0.79	<0.50	68.3	<AS	908	548
SSURS-35	0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	-	-	4,280	3,120
	0 - 0.2		-	-	-	-	-	-	-	-	-	-	4,280	3,120
TP17-08	0 - 0.5	11/15/17	9.8	540	0.7	0.16	14	-	1.3	0.4	115	<AS	4,100	1,640
	2.0 - 2.5		6.7	415	0.4	0.15	7	-	0.8	0.4	71	<AS	1,700	463
TP17-09	0 - 0.5	11/15/17	5.9	219	0.5	0.13	9	-	1	0.8	76	<AS	6,340	3,700
	2.5 - 3.0		9.7	967	0.6	0.2	10	-	1	0.8	97	<AS	5,000	2,440
SSURS-19	0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	-	-	30	57
URS-BH06	0.3 - 0.5	11/23/05	7.4	418	0.4	0.11	9	143	1.4	<0.5	80	<AS	5,508	3,288
	0.7 - 0.9		-	-	-	-	-	-	-	-	-	-	3,530	<0.1
	1.3 - 1.5		-	-	-	-	-	-	-	-	-	-	2,900	1,470
SSURS-3	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	3,888	2,304
SSURS-11	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	9,568	6,016
SS11	0.15 - 0.45	9/9/16	5.23	295	<0.40	0.817	11	797	1.85	<0.50	46.8	<AS	2,060	1,340
TP16-02	0.5 - 0.5	9/06/16	4.68	228	<0.40	0.46	10.1	570	1.72	<0.50	45.5	<AS	237	51.8
	2.5 - 2.5		9.35	1,210	0.755	0.379	6.7	139	1.11	<0.50	121	<AS	1,020	90.8
SSURS-30	0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	-	-	208	268
	0 - 0.2		-	-	-	-	-	-	-	-	-	-	208	268
SSURS-20	0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	-	-	1,082	674
BH16-17	0.15 - 0.45	9/09/16	9.54	891	0.65	0.319	11	161	1.14	<0.50	105	<AS	2,360	1,290
	1.21 - 1.52		10.7	1,070	0.58	0.408	10.6	178	1.68	0.6	123	<AS	1,190	446
URS-BH18	0.2 - 0.4	11/24/05	-	-	-	-	-	-	-	-	-	-	2,430	462
UTP-I	0.2 - 0.4	8/03/06	3	107	0.2	0.36	8	353	1.1	<0.5	34	<AS	2	6.5
	0.8 - 1.0		7.8	508	0.7	1.62	14	426	2.4	1	94	<AS	-	-
	1.4 - 1.6		8.3	550	0.8	0.11	14	251	1.4	0.9	99	<AS	-	-
TP16-14	0.5	9/07/16	5.4	241	0.41	0.935	10.7	511	1.86	<0.50	48.7	<AS	1,280	959
	2.5		10.1	342	0.57	0.32	8.4	184	1.2	<0.50	84.1	<AS	4,090	2,690
SSURS-21	0 - 0.2	11/24/05	4.1	187	0.3	0.6	9	597	1.6	<0.5	51	<AS	18	32
TP17-11	2.5 - 3.0	11/18/17	9.4	216	0.6	0.11	20	156	1.5	0.7	82	<AS	9,880	5,270
TP17-17	0.5	7/14/17	12.1	598	0.7	0.29	16	300	1.3	0.8	117	<AS	376	211
	0.5		10.5	247	0.6	0.12	10	113	1.4	0.8	84	<AS	6,550	3,420
	1.5		9.4	245	0.6	0.13	10	99	1.4	1	77	<AS	7,330	3,740
BH16-07	0.15 - 0.45	9/06/16	8.33	477	0.8	0.413	15	214	1.35	<0.50	86.3	<AS	5,800	2,420
	2.27 - 2.58		7.94	120	0.43	0.186	9.2	52.2	1.01	<0.50	87.2	<AS	1,360	768
TP17-13	2.5 - 3.0	11/24/17	12.8	872	0.6	0.14	11	153	1.4	0.9	93	<AS	3,640	1,950
	2.5 - 3.0		12.8	991	0.6	0.17	11	162	1.4	1.2	98	<AS	3,380	1,900
TP17-20	1.5 - 2.0	11/16/17	7.3	598	0.5	0.2	9	191	1.1	0.6	73	<AS	5,080	3,020
	2.5 - 3.0		9.2	498	0.5	0.26	11	172	1.1	0.6	68	<AS	5,830	1,980
	2.5 - 3.0		10.4	701	0.5	0.22	10	165	1.1	0.5	82	<AS	5,950	3,510
BH16-09	0.15 - 0.45	9/06/16	6.64	404	0.47	0.22	8	120	0.88	<0.50	75.6	<AS	3,040	2,060
	1.06 - 1.36		5.72	779	0.44	0.227	7.3	114	0.76	<0.50	67.5	<AS	2,150	1,340
TP17-19	0 - 0.5	11/16/17	5.4	304	0.3	0.52	26	430	1.7	0.4	40	<AS	3,250	1,810
	0.5 - 1.0		9.8	249	0.5	0.23	12	212	1.3	0.4	68	<AS	5,160	2,770
	1.5 - 2.0		10.3	310	0.5	0.09	8	114	1	0.7	73	<AS	4,470	2,640
BH16-08	0.05 - 0.35	9/06/16	4.87	222	<0.40	0.714	13.9	473	1.95	<0.50	40.9	<AS	2,230	1,540
	1.82 - 2.12		10.1	527	0.89	0.488	18.5	369	1.8	<0.50	115	<AS	5,340	3,220
SSURS-4	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	1,640	1,056
UTP-B	0.1 - 0.3	8/02/06	5.3	260	0.4	0.54	10	492	1.7	0.7	56	<AS	4,020	2,700
	0.6 - 0.8		4	148	0.3	0.45	10	339	1.8	0.6	51	<AS	2,240	1,590
	1.4 - 1.6		-	-	-	-	-	-	-	-	-	-	6,750	4,890
	2.5 - 2.7		-	-	-	-	-	-	-	-	-	-	12,200	9,010
SSURS-9	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	3,542	2,288
TP17-18	0.5 - 1.0	11/16/17	5.8	219	0.4	0.51	10	482	1.9	0.4	47	<AS	4,510	2,380
	1.0 - 1.5		5.3	234	0.3	0.42	11	497	1.6	0.2	42	<AS	4,080	2,140
SS5	0.5	8/31/16	3.79	194	<0.40	0.608	9.4	483	1.46	<0.50	39.6	<AS	1,750	1,260
SSURS-22	0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	-	-	9	15
	0 - 0.2		-	-	-	-	-	-	-	-	-	-	8	13
TP17-21	0.5 - 1.0	11/16/17	5.2	272	0.4	0.75	11	851	1.9	0.3	41	<AS	2,670	1,610
	1.5 - 2.0		6.4	441	0.4	0.54	10	544	1.5	0.3	45	<AS	2,080	1,190
	2.5 - 3.0		4	4,390	0.4	0.28	7	304	1.1	0.3	60	<AS	1,350	825
BH16-10	0 - 0.3	9/09/16	6.45	327	0.44	0.65	13	446	1.74	<0.50	62.5	<AS	2,780	2,040
	0.9 - 1.3		5.51	313	<0.40	0.663	11	673	1.78	<0.50	52.7	<AS	2,250	1,370
	0.9 - 1.3		5.15	327	<0.40	0.712	12.7	598	1.81	<0.50	54.1	<AS	2,190	1,390
SSURS-10	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	67	93
SS6	0.5	8/31/16	3.81	171	<0.40	0.599	9.1	420	1.43	<0.50	35.7	<AS	496	316
SSURS-5	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	988	511
TP17-17	0 - 0.5	11/15/17	8	450	0.8	0.16	13	-	1.4	1	117	<AS	4,340	2,540
	1.5 - 2.0		8.8	1,020	0.6	0.36	11	-	1.1	0.7	111	<AS	3,280	717
	1.5 - 2.0		9.7	903	0.6	0.32	11	-	1.1	0.3	107	<AS	3,300	655
UTP-L	0.2 - 0.4	8/03/06	3.9	165	0.4	0.51	9	551	1.8	<0.5	42	<AS	-	-
	0.2 - 0.4		4.6	216	0.3	0.76	9	1300	2.7	0.7	48	<AS	25	59.3
SSURS-6	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	2,147	1,243
MW09-06	1.5 - 1.8	10/08/09	<5.0	755	0.72	<0.50	10.9	-	<4.0	<2.0	118	<AS	113	94
URS-BH05	0.2 - 0.4	11/23/05	-	-	-	-	-	-	-	-	-	-	2,640	1,640
	0.7 - 0.9		2	107	0.2	0.16	11	152	1.4	<0.5	35	<AS	3,180	<0.1
TP17-22	0 - 0.5	11/24/17	9.7	369	0.4	0.54	12	418	1.8	0.4	59	<AS	271	153
SSURS-13	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	28	32
TP17-16	0.5	7/14/17	4.5	221	0.3	0.58	11	514	1.6	0.7	43	<AS	3,620	2,110
	1.3		9.7	332	0.6	0.17	9	211	1.3	0.9	101	<AS	4,410	2,570
	3.0		11.6	1,020	0.6	0.25	10	163	1.3	1	121	<AS	2,450	698
SB-BH-07	3.3 - 3.4	2/03/03	13	941	1	<0.5	32	-	<4	<2	99	<AS	-	-
TP17-23	0.5 - 1.0	11/24/17	11.1	1,940	0.8	0.21	9	199	1.3	0.6	113	<AS	1,070	690
SS7	0.5	8/31/16	4.7	198	<0.40	0.657	10.7	415	1.54	<0.50	43.9	<AS	88.3	47.3
UTP-G	0.2 - 0.4	8/02/06	4.2	209	0.3	0.55	9	703	1.9	0.8	41	<AS	311	250
	0.6 - 0.8		-	-	-	-	-	-	-	-	-	-	6,940	4,580
	1.5 - 1.7		-	-	-	-	-	-	-	-	-	-	1,860	420
	2.3 - 0		-	-	-	-	-	-	-	-	-	-	596	80.2
	2.3 - 0		-	-	-	-	-	-	-	-	-	-	498	76.6
TP16-32	0.8 - 0.9	11/07/16	4.88	200	<0.40	0.832	15.8	486	2.4	<0.50	54.6	<AS	-	-
SSURS-23	0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	-	-	871	536
SSURS-14	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	31	25.6
URS-BH15	0.3 - 0.5	11/24/05	4.1	216	0.3	0.42	11	685	2.8	<0.5	42	<AS	-	-
	1.6 - 1.8		4.1	3,490	0.4	<0.05	8	44	0.8	<0.5	76	<AS	-	-
TP16-07	0.5	9/07/16	5.76	1,520	0.51	0.523	9.2	322	1.38	<0.50	70.3	<AS	8.6	12.9

TP16-07	Date	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	-	2800	-	-	-	-	-	-	-	-	-	-

LEACHATE (µg/L)

Sample	Depth (m)	Date	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Other Metals	Chloride	Sodium
TP16-06	0.5	9/07/16	8.95	1,130	0.69	0.297	11.3	205	1.21	<0.50	102	<AS	14.2	16
	0.5		8.86	1,200	0.62	0.256	10.5	211	1.07	<0.50	96.7	<AS	5.7	6.9
TP16-05	0.5	9/07/16	9.88	1,420	0.79	0.387	13.5	238	1.27	<0.50	128	<AS	5.1	11.1
TP16-04	0.5	9/07/16	8.15	866	0.77	0.321	13.3	222	1.12	<0.50	79.8	<AS	18.1	15.8
	1.65		7.23	2,420	0.74	0.28	8.4	104	0.64	<0.50	124	<AS	99.1	63.3

TP16-04	Date	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Other Metals	Chloride	Sodium
1.65	9/07/16	-	4450	-	-	-	-	-	-	-	-	-	-

LEACHATE (µg/L)

Sample	Depth (m)	Date	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Other Metals	Chloride	Sodium
URS-BH17	0.2 - 0.4	11/24/05	9.4	1,010	0.6	0.12	12	161	1.7	0.7	120	<AS	-	-
	2.3 - 2.5		10.1	771	0.5	0.26	8	184	1.2	0.5	115	<AS	-	-
SSURS-24	0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	-	-	7	19
UTP-F	0.3 - 0.5	8/02/06	5.3	204	0.3	0.61	9	882	1.7	<0.5	47	<AS	-	-
URS-BH04	0.2 - 0.4	11/23/05	-	-	-	-	-	-	-	-	-	-	2,228	869
	0.6 - 0.8		-	-	-	-	-	-	-	-	-	-	1,170	398
	1.7 - 1.9		12	843	0.5	0.35	11	247	1.7	0.6	140	<AS	476	158
SSURS-7	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	2,584	1,613
BH16-12	0.3 - 0.6	9/09/16	9.24	1,190	0.63	0.366	10.8	187	1.14	<0.50	109	<AS	1,410	819
	2.72 - 3.03		10.2	869	0.61	0.515	9.7	165	1.08	<0.50	115	<AS	78.4	31.8
TP17-11	0.5	7/13/17	4.6	307	0.3	0.47	10	429	1.5	0.8	61	<AS	580	398
	1.5		7.3	281	0.4	0.35	11	254	1	0.6	62	<AS	2,440	803
	2.6		7.2	305	0.4	0.4	12	255	1	0.7	64	<AS	1,540	657
SSURS-15	0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	-	-	19	25
TP16-31	0.8 - 0.9	11/07/16	5.1	218	<0.40	0.825	10.5	2.22	2.22	<0.50	53.1	<AS	9.9	9.4
	1.8 - 1.9		7.78	304	0.63	0.498	15.6	1.26	1.26	<0.50	73.4	<AS	1,410	760
	1.8 - 1.9		8.36	304	0.63	0.437	16.7	1.31	1.31	<0.50	78.4	<AS	1,370	791
SS8	0.5	8/31/16	9.13	795	0.54	0.38	11.5	311	1.16	<0.50	95.5	<AS	4.8	12.5
TP17-08	0.5	7/13/17	6.5	452	0.4	0.42	13	438	1.7	0.6	63	<AS	178	140
	1.5		9.3	396	0.7	0.23	18	341	1.5	0.8	87	<AS	2,960	1,640
	2.6		7.9	281	0.4	0.4	12	278	1.1	0.6	66	<AS	830	216
TP16-03	0.5	9/08/16	8.72	471	0.65	0.329	12.6	213	1.24	<0.50	163	<AS	32	35.9
	0.5		9.65	474	0.73	0.346	14	210	1.35	<0.50	139	<AS	29.7	40.7
	1.5		10.6	358	0.48	0.2	8.8	128	1.2	0.62	96.4	<AS	276	<230
TP17-12	0.5	7/13/17	5.4	335	0.3	0.58	10	450	1.5	0.8	73	<AS	2,840	1,730
	1.3		9.9	466	0.6	0.38	16	374	1.7	1	86	<AS	8,580	5,120
	3.0		12.6	960	0.6	0.39	12	234	1.5	1	130	<AS	2,150	873
TP17-09	0.5	7/13/17	7.7	343	0.5	0.49	14	561	1.9	0.9	80	<AS	2,060	128
	1.5		7.7	154	0.6	0.16	15	249	1.2	0.8	68	<AS	2,990	1,660
	2.6		9.3	491	0.5	0.24	12	211	1.2	0.8	75	<AS	4,870	2,640
TP17-10	0.5	7/13/17	5.6	353	0.4	0.58	13	540	1.7	0.7	78	<AS	115	95
	1.0		8.4	307	0.5	0.2	15	204	1.5	0.8	66	<AS	-	-
	2.6		11.7	672	0.7	0.35	17	402	1.6	0.9	112	<AS	490	241
	2.6		9.7	293	0.5	0.14	12	114	1.2	0.9	80	<AS	7,220	3,790
SS9	0.5	8/31/16	3.85	174	<0.40	0.578	9.7	334	1.19	<0.50	41	<AS	8.1	6.8

CSR STANDARDS

ANALYTE	Arsenic	Barium	Beryllium	Cadmium	Chromium	Manganese	Molybdenum	Selenium	Zinc	Other Metals	Chloride	Sodium
Sch 3.1 Part 1 GW Flow to AW-FW IL	10	3500	1-500	1-50	60	NS	650	1	150-3000	VARIES	600	NS
Sch 3.1 Part 1 GW Flow to AW-FW RLLD	10	3500	1-500	1-50	60	NS	650	1	150-3000		600	NS
Sch 3.1 Part 1 GW used for DW IL	10	350	1-2500	1-70	60	2000	15	1	200-5500		100	15000
Sch 3.1 Part 1 GW used for DW RLLD	10	350	1-2500	1-70	60	2000	15	1	200-5500		100	15000
Sch 3.1 Part 1 Intake of Contaminated Soil IL	400	1000	15000	3500	20000	1000000	3500	3500	1000000		1000000	1000000
Sch 3.1 Part 1 Intake of Contaminated Soil RLLD	20	8500	85	20	100	6000	200	200	10000		1000000	1000000
Sch 3.1 Part 1 Toxicity to Soil Invertebrates and Plants IL	40	1500	350	75	250	2000	150	2	450		2500	1000
Sch 3.1 Part 1 Toxicity to Soil Invertebrates and Plants RLLD	25	700	150	30	200	2000	80	1.5	450		350	200
Sch 3.1 Part 2 HH IL	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS
Sch 3.1 Part 2 HH RLLD	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS
Sch 3.1 Part 3 EH IL	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS
Sch 3.1 Part 3 EH RLLD	NS	NS	NS	NS	NS	NS	NS	NS	NS		NS	NS
Sch 4 Hazardous Waste Regulation	NS	100000	NS	NS	NS	NS	NS	NS	NS		NS	NS

NOTE:
1. When comparing to Omineca/Peace region (Protocol 4) the background soil standard for barium is 500 mg/kg and selenium is 4 mg/kg. The soil samples (TP16-18; TP17-03; TP16-15; BH16-16; UTP-A; MW16-03; URS-BH09; MW16-06; BH16-15; TP17-14G; MW17-02; AH16-07; MW16-07; TP16-11; TP17-07; TP17-12; TP17-24; TP17-15G; TP17-08; URS-BH08; BH16-07; BH16-09; TP17-21; TP17-17; TP17-22; TP17-08G; TP16-03G; TP17-12G; TP17-09G; TP17-10G; TP17-13; TP17-13G) are below provincial standards.

LEGEND

STRUCTURE
FORMER STRUCTURE
ABOVE GROUND STORAGE TANK
CONCRETE BARRIER
CREST OF SLOPE
AREA CLEARED FROM TREES, NOV. 2017
FENCE LINE
EDGE OF ROAD
ANCHOR PILE
POWER LINE
BURIED CABLE
BURIED PIPE
COLD MIX MATERIAL
FORMER SOIL SAMPLE LOCATION (2002-2015)
SURFICIAL SOIL SAMPLE LOCATION (2002-2015)
FORMER TEST PIT LOCATION (2002-2015)
TEST PIT LOCATION (2002-2015)
FORMER BOREHOLE LOCATION (2002-2015)
BOREHOLE LOCATION (2002-2015)
FORMER SURFICIAL SOIL SAMPLE LOCATION (2016)
SURFICIAL SOIL SAMPLE LOCATION (2016)
FORMER TEST PIT LOCATION (2016)
TEST PIT LOCATION (2016)
FORMER BOREHOLE LOCATION (2016)
BOREHOLE LOCATION (2016)
TP17-11G FORMER TEST PIT LOCATION (BY GOLDER, 2017)

TP17-16G TEST PIT LOCATION (BY GOLDER, 2017)
DESTROYED MONITORING WELL LOCATION
MONITORING WELL LOCATION
* INDICATES A DECOMMISSIONED WELL
CORE6/ARCADIS TESTPIT (2017)
CORE6/ARCADIS MONITORING WELL (2017)
SOIL CONCENTRATION(S) LESS THAN APPLICABLE CSR STANDARDS
SOIL CONCENTRATION(S) GREATER THAN APPLICABLE CSR STANDARDS
< LESS THAN
RDL REPORTED DETECTION LIMIT
\- NOT ANALYZED
NS NO STANDARDS
AS APPLICABLE STANDARDS
CSR CONTAMINATED SITES REGULATION
RL RESIDENTIAL LAND USE STANDARD
PL URBAN PARK LAND STANDARD
IL INDUSTRIAL LAND USE STANDARD
HWR HAZARDOUS WASTE REGULATION

SAMPLE I.D. — ANALYTE

TP17-24	Arsenic
0 - 0.5	7.1

DEPTH (m) — RESULTS

NOTES:
1. Sample values are presented as Milligrams per kilogram (mg/kg).
2. Leachate Sample values are presented as Micrograms per Litre (µg/L).
3. Sample where RDL Exceeds applicable CSR Standards shaded in GREY.
4. Sample Exceeding applicable CSR Standards shaded in YELLOW.

NOTES:
1. PLAN BASED ON GOLDER ASSOCIATES 1660199_2000_2017-BASE DATA DWG. & CAN-AM GEOMATICS 20172100AB3B_0_STP DWG.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

5m 0 25m
SCALE: 1:500(approx.)

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

ADDRESS & CLIENT:
Steamboat Maintenance Camp, Kilometre 537.9
Alaska Highway, BC
Public Services and Procurement Canada

FIGURE TITLE:
Soil Analytical Results
CSR - Metals

REV:	DATE:	PROJECT No:	FIGURE No:
00	Mar. 2018	00338/102516	Figure 3C

PLOT SCALE: 1:1 DRAWN BY: DK CADD FILE: Clients\PWGSC\00338 Steamboat\03-Additional Investigations\4-Figures\Fig3C 3D-Soil Analytical-R0.dwg\Layout1

URS-BH07	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	11/23/05	-	-	-	-	-	-	-	-	250	116

TP16-18	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.0 - 1.2	11/06/16	11.5	397	18.8	3.19	25.2	0.71	140	<AG	117	178

TP17-03	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/24/17	7.2	308	11	1.8	13.6	0.5	50	<AG	59	43
1.5 - 2.0		5.9	354	13	2.1	16	0.5	57	<AG	57	36

TP17-19	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.4	7/14/17	12.5	1,390	13	1.5	27.8	1	135	<AG	166	27
2.4		20.5	953	10	1.9	24.2	0.9	123	<AG	283	79

SS10	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.15 - 0.45	9/09/16	9.94	190	10.3	1.14	9.27	<0.50	58.9	<AG	1,070	657

SSURS-31	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	879	531
0 - 0.2		-	-	-	-	-	-	-	-	879	531

BH16-02	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.3 - 0.61	9/06/16	8.12	527	10.4	1.28	13.5	<0.50	69.3	<AG	380	<330

SB-BH-05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.2 - 1.5	2/03/03	12	1,140	99	<4	22	<2	101	<AG	-	-

TP16-15	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.0 - 1.2	11/06/16	6.89	359	10.1	1.63	15	<0.50	67.6	<AG	65.2	56.2

URS-BH08	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.1 - 0.3	11/23/05	8.3	797	12	1.5	21.8	0.6	107	<AG	-	-

BH10-05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 1.8	10/10/10	12.1	1,340	13.7	1.51	27.2	0.48	125	<AG	630	132

BH10-04	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.9 - 1.2	10/10/10	11.4	903	18.8	1.77	27.2	0.54	115	<AG	304	59.6

TP17-20	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/14/17	7.8	271	11	1.2	13.7	0.7	74	<AG	28	39
2.0		16	1,240	11	1.3	24.8	1	125	<AG	70	7
2.0		12	1,270	11	1.2	25.7	1	127	<AG	79	10

BH16-01	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.3 - 0.61	9/06/16	8.78	687	7.7	1.19	14	<0.50	78.7	<AG	8.3	10.5
1.21 - 1.52		5.59	580	9	0.63	12.4	<0.50	66.6	<AG	8.3	16.9
3.64 - 3.94		9.66	927	10.3	1.17	23.4	<0.50	116	<AG	137	51.8

MW16-01	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.33 - 0.66	8/31/16	4.91	165	9.5	0.67	13.1	<0.50	38.1	<AG	4.4	4.5

SS1	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	7.38	315	18.1	4.31	24.7	0.58	92.9	<AG	128	54

TP17-13	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.0	7/13/17	12.2	1,190	13	1.4	27.2	1.1	129	<AG	79	22
4.1		14.3	953	12	1.5	27.1	0.9	120	<AG	60	8

URS-BH12	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.1 - 0.3	11/24/05	8.9	590	10	1.1	17.9	<0.5	92	<AG	-	-

MW10-01S	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.8 - 1.1	9/20/10	<5.0	123	8.5	<4.0	12.1	<2.0	54	<AG	34.3	41.7

SSURS-32	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	21	32.3
0 - 0.2		-	-	-	-	-	-	-	-	21	32.3

BH16-04	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.3 - 0.61	9/06/16	9.9	821	11.6	1.17	19	<0.50	99.2	<AG	297	<260
3.94 - 4.24		10.2	790	11.3	1.18	22.6	<0.50	111	<AG	58.4	8.7

MW16-05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.16 - 0.49	9/03/16	10.5	759	14.9	1.29	22.3	0.8	117	<AG	154	61.6

BH16-16	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.3	9/09/16	7.62	482	10.8	1.05	16.3	<0.50	92.9	<AG	16.8	20
2.27 - 2.58		9.28	832	14.4	1.18	19.9	<0.50	86.3	<AG	16.7	7.1

BH10-06	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.9 - 1.1	10/11/10	11.3	1,320	15.8	1.41	28.9	0.52	118	<AG	1,170	564

BH10-07	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.7 - 0.9	10/11/10	8.61	1,390	7.95	1.04	12.7	0.42	79.9	<AG	620	374

BH16-03	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.15 - 0.45	9/06/16	7.97	169	9.2	1.09	6.92	<0.50	39	<AG	15	21
0.15 - 0.45		5.6	162	10.1	0.92	7.23	<0.50	40.9	<AG	15.7	22.9
3.94 - 4.24		6.65	237	12.1	1.07	17.7	<0.50	61.5	<AG	56.6	41.1

SS2	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	6.47	277	13.7	3.61	22.2	<0.50	74.6	<AG	15.2	14.4

UTP-A	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	8/02/06	7.3	437	10	1.9	20.9	<0.5	81	<AG	46	39.5
0.8 - 1.0		9.8	618	11	1.7	24.3	0.7	111	<AG	-	-

MW16-03	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.16 - 0.33	9/01/16	7.76	462	12.3	1.39	14.1	<0.50	69.9	<AG	13.3	9.5
2.3 - 2.63		7.6	976	8.5	0.97	19.4	<0.50	95.3	<AG	10.2	17.4

SS4	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	4.3	207	10.1	1.6	14.6	<0.50	63.6	<AG	7.9	10.9
0.5		4.82	249	8.9	1.72	14.9	<0.50	66.2	<AG	10.6	2.9

BH16-05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
3.03 - 3.18	9/06/16	7.97	514	12.5	2.05	28.2	0.5	139	<AG	137	31

URS-BH09	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	11/24/05	8.8	396	11	1.3	15	0.6	94	<AG	-	-
0.2 - 0.4		9.1	435	12	1.4	14.5	0.6	95	<AG	-	-
1.4 - 1.6		10	737	12	1.6	24	<0.5	118	<AG	-	-

SS3	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	4.39	223	10.8	1.72	16.4	<0.50	41.9	<AG	4.1	3.7

MW17-05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
3.66 - 3.91	11/19/17	11.5	832	17	1.3	27.8	0.5	105	<AG	780	434

BH16-13	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.9 - 1.2	9/09/16	9.3	737	17.2	1.75	29.7	0.56	106	<AG	70.4	16.3
0.9 - 1.2		9.76	732	19.1	1.6	31	0.51	105	<AG	54.4	13
4.5 - 4.8		5.91	230	11.4	1.05	16.8	<0.50	57.2	<AG	383	18.9

MW16-04	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.16 - 0.49	9/02/16	5.29	227	10.6	1.7	16.1	<0.50	49.3	<AG	7.2	6.7
1.64 - 1.97		6.82	195	12.2	0.83	13.7	<0.50	51.3	<AG	13.9	17
3.78 - 4.11		7.84	247	13.5	1.14	23.1	<0.50	76.9	<AG	110	20

MW16-06	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.33 - 0.66	9/04/16	8.66	122	11	1.28	10.9	<0.50	65.5	<AG	14	21
2.8 - 3.13		7.32	501	13.7	0.98	18.5	<0.50	77.2	<AG	266	115
2.8 - 3.13		6.96	361	13.8	1	21.4	<0.50	71.8	<AG	239	123

SSURS-1	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	25	7.7
0 - 0.2		-	-	-	-	-	-	-	-	25	10.4

URS-BH14	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	11/24/05	8.8	347	8	1.1	14.4	0.5	73	<AG	-	-
0.2 - 0.4		8.4	261	9	1	14.5	0.5	72	<AG	-	-
3.4 - 3.6		10.1	759	10	1.5	25.2	0.7	121	<AG	-	-
4.2 - 4.4		8.5	560	10	1.5	26.8	0.5	110	<AG	-	-

BH16-15	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.3	9/09/16	8.97	471	11.6	1.1	15.3	<0.50	82.1	<AG	8.4	4.5
0.91 - 1.21		7.23	243	11.5	1.18	12.5	<0.50	72.6	<AG	6.1	7.2
4.85 - 5.15		12	418	14.3	1.17	19.7	<0.50	91.4	<AG	87.6	7

TP17-14	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/13/17	7.5	497	14	1.9	16.3	0.7	82	<AG	76	83
2.5		13.8	1,210	106	35.3	57.8	1.5	835	<AG	4,200	1,420
2.5		10.4	133	10	1.5	14.5	0.9	84	<AG	2,380	917

BH16-14	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.3	9/09/16	9.05	831	12.1	1.34	22.1	<0.50	113	<AG	20.7	30.8

MW17-02	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
2.3 - 2.6	11/20/17	11.3	1,200	15	1.8	25.9	1	114	<AG	10	5
3.0 - 3.25		8.8	380	14	1.1	22.3	0.3	83	<AG	18	3
4.6 - 4.8		13.3	1,390	15	2	26.6	2.9	122	<AG	29	6

AH16-07	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.8 - 0.9	11/05/16	7.78	468	9	1.47	16.2	<0.50	110	<AG	252	50.4

URS-BH10	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.3 - 0.5	11/24/05	9.3	250	14	1.3	16.9	<0.5	80	<AG	-	-

SSURS-33	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	729	404
0 - 0.2		-	-	-	-	-	-	-	-	729	404

SSURS-2	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	839	513

MW16-07	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.16 - 0.49	9/04/16	7.89	595	12.8	1.25	18.2	<0.50	89.5	<AG	8.1	13
0.16 - 0.49		6.7	478	21.8	1.55	16.7	<0.50	110	<AG	7	13.3

TP16-11	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.0	9/07/16	10.2	568	14.6	1.45	22.4	<0.50	99.8	<AG	77.2	80.2
3.0		9.93	512	12.4	1.21	27	<0.50	104	<AG	151	79.8

UTP-K	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	8/03/06	8.2	510	9	1.3	17.3	0.9	92	<AG	-	-

SSURS-25	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	3	6

TP17-05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/15/17	11	303	21	1.5	19.2	0.9	83	<AG	281	112
1.5 - 2.0		13.7	1,430	14	1.3	29.4	1	139	<AG	147	49
3.5 - 4.0		8.4	877	16	2	34.8	1	155	<AG	121	17

TP17-04	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/18/17	5.1	192	12	1.7	15.6	0.5	46	<AG	28	46
3.5 - 4.0		10.6	330	21	1.5	20.1	0.8	88	<AG	137	100
4.5 - 5.0		9.4	609	12	0.9	18.8	0.4	89	<AG	365	199
5.0 - 5.5		14.2	1,150	16	1.7	31.9	0.8	148	<AG	299	31

UTP-J	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.1 - 0.3	8/03/06	4.4	172	8	1.7	15.3	<0.5	48	<AG	7	11.6

MW09-03	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 2.0	10/06/09	9	967	12.9	<4.0	19.8	<2.0	94.8	<AG	23	-
1.5 - 2.0		9.7	1,070	13.6	<4.0	20.7	<2.0	97.9	<AG	24.7	-

TP16-06	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	5.58	278	11.7	1.79	16.6	<0.50	54.9	<AG	176	<270
3.4		9.68	580	10.9	1.37	20.2	<0.50	94.3	<AG	4,080	2,580

TP17-07	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5 - 1.0	11/17/17	39.2	559	21	3.3	28.3	1.9	108	<AG	672	399
1.5 - 2.0		11.7	482	18	2	25.6	1.3	104	<AG	953	565
2.5 - 3.0		13.2	944	17	1.4	28.6	0.7	123	<AG	602	340
3.0 - 3.5		11.6	748	16	1.7	27.3	0.8	111	<AG	607	340
3.0 - 3.5		8.8	469	15	1.4	19.3	0.5	76	<AG	660	394

AH16-04	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.45 - 0.5	11/05/16	9.34	307	13.1	1.66	14.8	<0.50	87	<AG	193	175

TP16-13	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	4.85	185	9.6	1.49	11.5	<0.50	38.5	<AG	64	82.7
1.5		8.11	159	18.7	1.16	17.7	<0.50	69.9	<AG	3,130	2,270

TP16-12	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	8.35	194	12.2	1.28	13.5	<0.50	70.1	<AG	163	<290
0.5		8.03	190	12.8	1.18	14.9	<0.50	75.7	<AG	183	<280
1.5		10.6	955	10.4	1.44	24.1	<0.50	113	<AG	422	265

MW17-06	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.8 - 1.0	11/21/17	7.6	208	16	1.6	14	0.7	65	<AG	122	127
2.28 - 2.55		3.9	280	8	0.7	10.1	0.2	46	<AG	147	133

TP17-29	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
2.5 - 3.0	11/23/17	11.4	686	13	1.3	18.7	0.8	91	<AG	31	16
4.5 - 5.0		13	1,080	15	1.5	31.7	0.8	129	<AG	63	10

TP17-06	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 2.0	11/17/17	12.8	1,220	13	1.5	24.5	0.9	121	<AG	273	99
2.5 - 3.0		11.3	1,140	13	1.3	23.4	0.8	112	<AG	222	103
3.5 - 4.0		9.7	582	15	1.4	18.9	0.9	88	<AG	150	86

AH16-03	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5 - 0.6	11/05/16	10	147	16.4	1.43	12	<0.50	65.6	<AG	63.5	115

TP17-27	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 2.0	11/22/17	10.7	672	22	1.5	32.4	0.8	99	<AG	77	48
1.5 - 2.0		10.2	676	22	1.7	37.9	0.6	109	<AG	95	55
3.5 - 4.0		11.5	741	15	1.5	29.9	0.6	132	<AG	192	57

TP17-14	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
3.5 - 4.0	11/18/17	11.7	194	27	1.5	26.8	0.9	78	<AG	6,180	3,690

UTP-H	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	8/03/06	3.5	167	8	1.4	15	0.6	39	<AG	3	7.3

TP17-28	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 2.0	11/23/17	9.1	563	19	1.1	24.2	0.8	85	<AG	44	34
3.5 - 4.0		10.5	651	16	1.2	22.9	0.7	93	<AG	147	89

TP17-12	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 2.0	11/22/17	8.7	202	18	1.3	13.7	0.6	60	<AG	1,570	898
3.5 - 4.0		10.3	477	22	1.5	31.9	0.5	102	<AG	961	4,370

MW10-03	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 1.8	9/27/10	12.3	675	19.8	<4.0	28	<2.0	110	<AG	296	35.6

TP17-16	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/16/17	11.2	241	15	1.3	14.5	0.5	66	<AG	9,480	5,300
0.5 - 1.0		10.5	994	15	1.3	32.5	0.8	98	<AG	5,800	1,880
1.5 - 2.0		10.2	917	13	1.4	28	0.6	103	<AG	5,400	2,960

TP17-15	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 2.0	11/22/17	9.5	188	23	1.5	19.9	0.6	87	<AG	1,660	1,040
4.5 - 5.0		7.6	344	16	1.7	21.9	0.6	70	<AG	1,840	899

TP17-25	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/23/17	5.3	289	13	1.5	14.9	0.6	42	<AG	75	47
2.5 - 3.0		9.4	165	19	1.2	16.5	0.4	65	<AG	234	274

URS-BH03	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
3.2 - 3.4	11/23/05	10.1	559	13	1.6	22.5	0.6	98	<AG	-	-

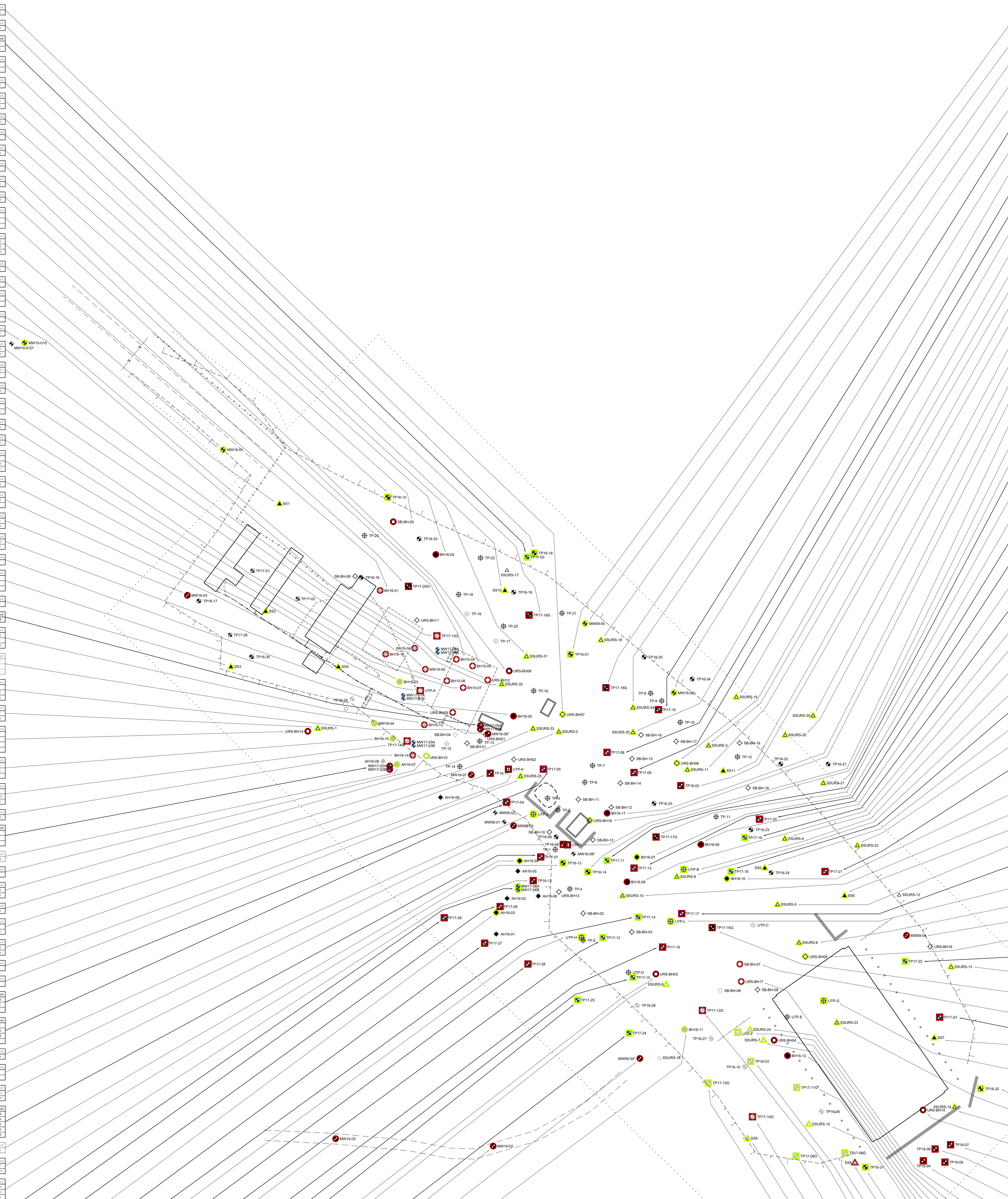
SSURS-8	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	5	19

TP17-24	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/22/17	7.1	301	16	2.6	21.5	0.7	68	<AG	122	66
1.5 - 2.0		9.3	368	16	1.1	17.6	0.6	73	<AG	594	469
3.5 - 4.0		7.1	127	13	0.7	11.8	0.3	46	<AG	1,590	986

MW10-02	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 1.8	9/22/10	7.5	1,370	7.1	<4.0	15.3	<2.0	84.7	<AG	-	-
3.0 - 3.2		-	-	-	-	-	-	-	-	251	160

MW09-04	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.8 - 2.1	10/07/09	10.5	712	18.1	<4.0	26.9	<2.0	100	<AG	664	209

BH16-11	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.16 - 0.46	9/09/16	4.86	296	11.3	1.59	14.5	<0.50	49.3	<AG	491	347
2.12 - 2.42		10.6	325	13.7	1.1	19.1	<0.50	73.2	<AG	1,190	641



TP16-01	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/08/16	11.3	199	8	0.97	13.4	0.55	80.1	<AG	1,640	898
2.5		-	-	-	-	-	-	-	-	1,510	1,030

MW09-05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.2 - 1.5	10/08/09	9.1	335	12.7	<4.0	14	<3.0	83.2	<AG	468	246
2.1 - 2.4		-	-	-	-	-	-	-	-	153	34.4

SSURS-18	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	248	167

TP17-18	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/14/17	10.9	143	10	1.2	13.5	0.6	80	<AG	2,560	1,020
1.0		12.8	939	11	1.5	22.4	0.9	108	<AG	744	246
1.5		11.8	1,070	11	1.4	25.2	0.7	136	<AG	532	143

SSURS-34	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	3,310	2,350
0 - 0.2		-	-	-	-	-	-	-	-	3,310	2,350

TP17-10	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5 - 1.0	11/15/17	13.5	1,040	15	1.3	22.9	0.7	120	<AG	1,700	590
2.0 - 2.5		6.4	1,080	10	1.2	24.5	0.5	117	<AG	928	245

MW16-02	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.33 - 0.66	9/01/16	4.21	239	14.1	1.9	14.6	<0.50	47.3	<AG	541	341
1.97 - 2.3		6.55	240	8.5	0.79	12.5	<0.50	68.3	<AG	908	548

SSURS-35	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	4,280	3,120
0 - 0.2		-	-	-	-	-	-	-	-	4,280	3,120

TP17-08	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/15/17	9.8	540	14	1.3	20.1	0.4	115	<AG	4,100	1,640
2.0 - 2.5		6.7	415	7	0.8	13.1	0.4	71	<AG	1,700	463

TP17-09	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/15/17	5.9	219	9	1	12.2	0.8	76	<AG	6,340	3,700
2.5 - 3.0		9.7	967	10	1	20.3	0.8	97	<AG	5,000	2,440

SSURS-19	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	30	57

URS-BH06	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.3 - 0.5	11/23/05	7.4	418	9	1.4	14.1	<0.5	80	<AG	5,508	3,288
0.7 - 0.9		-	-	-	-	-	-	-	-	3,530	<0.1
1.3 - 1.5		-	-	-	-	-	-	-	-	2,900	1,470

SSURS-3	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	3,888	2,304

SSURS-11	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	9,568	6,016

SS11	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.15 - 0.45	9/9/16	5.23	295	11	1.85	15.5	<0.50	46.8	<AG	2,060	1,340

TP16-02	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/08/16	4.68	228	10.1	1.72	14	<0.50	45.5	<AG	237	51.8
2.5		9.35	1,210	6.7	1.11	20.5	<0.50	121	<AG	1,020	90.6

SSURS-30	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	8/03/06	-	-	-	-	-	-	-	-	208	268
0 - 0.2		-	-	-	-	-	-	-	-	208	268

SSURS-20	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	1,082	674

BH16-17	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.15 - 0.45	9/09/16	9.54	891	11	1.14	20	<0.50	105	<AG	2,360	1,290
1.21 - 1.52		10.7	1,070	10.6	1.68	24.7	0.6	123	<AG	1,190	446

URS-BH18	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	11/24/05	-	-	-	-	-	-	-	-	2,430	462

UTP-I	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	8/03/06	3	107	8	1.1	12.8	<0.5	34	<AG	2	6.5
0.8 - 1.0		7.8	508	14	2.4	25.2	1	94	<AG	-	-
1.4 - 1.6		8.3	550	14	1.4	22.8	0.9	99	<AG	-	-

TP16-14	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	5.4	241	10.7	1.86	14.6	<0.50	48.7	<AG	1,280	959
2.5		10.1	342	8.4	1.2	15.9	<0.50	84.1	<AG	4,090	2,690

SSURS-21	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/24/05	4.1	187	9	1.6	18.4	<0.5	51	<AG	18	32

TP17-11	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
2.5 - 3.0	11/18/17	9.4	216	20	1.5	18.1	0.7	82	<AG	9,880	5,270

TP17-17	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/14/17	12.1	598	16	1.3	37.2	0.8	117	<AG	376	211
0.5		10.5	247	10	1.4	13.3	0.8	84	<AG	6,550	3,420
1.5		9.4	245	10	1.4	13.5	1	77	<AG	7,330	3,740

BH16-07	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.15 - 0.45	9/06/16	8.33	477	15	1.35	22.8	<0.50	86.3	<AG	5,800	2,420
2.27 - 2.58		7.94	120	9.2	1.01	12.5	<0.50	87.2	<AG	1,360	768

TP17-13	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
2.5 - 3.0	11/24/17	12.8	872	11	1.4	19.7	0.9	93	<AG	3,640	1,950
2.5 - 3.0		12.8	991	11	1.4	22.4	1.2	98	<AG	3,380	1,900

TP17-20	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 2.0	11/16/17	7.3	598	9	1.1	16.1	0.6	73	<AG	5,080	3,020
2.5 - 3.0		9.2	498	11	1.1	16.5	0.6	68	<AG	5,830	1,980
2.5 - 3.0		10.4	701	10	1.1	18.2	0.5	82	<AG	5,950	3,510

BH16-09	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.15 - 0.45	9/06/16	6.64	404	8	0.88	12.3	<0.50	75.6	<AG	3,040	2,060
1.06 - 1.36		5.72	779	7.3	0.76	12	<0.50	67.5	<AG	2,150	1,340

TP17-19	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/16/17	5.4	304	26	1.7	15	0.4	40	<AG	3,250	1,810
0.5 - 1.0		9.8	249	12	1.3	14.8	0.4	68	<AG	5,160	2,770
1.5 - 2.0		10.3	310	8	1	13	0.7	73	<AG	4,470	2,640

BH16-08	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.05 - 0.35	9/06/16	4.87	222	13.9	1.95	14.5	<0.50	40.9	<AG	2,230	1,540
1.82 - 2.12		10.1	527	18.5	1.8	31.3	<0.50	115	<AG	5,340	3,220

SSURS-4	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	1,640	1,056

UTP-B	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.1 - 0.3	8/02/06	5.3	260	10	1.7	16.4	0.7	56	<AG	4,020	2,700
0.6 - 0.8		4	148	10	1.8	18.3	0.6	51	<AG	2,240	1,590
1.4 - 1.6		-	-	-	-	-	-	-	-	6,750	4,890
2.5 - 2.7		-	-	-	-	-	-	-	-	12,200	9,010

SSURS-9	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	3,542	2,288

TP17-18	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5 - 1.0	11/16/17	5.8	219	10	1.9	14.6	0.4	47	<AG	4,510	2,380
1.0 - 1.5		5.3	234	11	1.6	14.3	0.2	42	<AG	4,080	2,140

SS5	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	3.79	194	9.4	1.46	13.8	<0.50	39.6	<AG	1,750	1,260

SSURS-22	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	9	15
0 - 0.2		-	-	-	-	-	-	-	-	8	13

TP17-21	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5 - 1.0	11/16/17	5.2	272	11	1.9	18.6	0.3	41	<AG	2,670	1,610
1.5 - 2.0		6.4	441	10	1.5	16.4	0.3	45	<AG	2,080	1,190
2.5 - 3.0		4	4,390	7	1.1	13.8	0.3	60	<AG	1,350	825

BH16-10	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.3	9/09/16	6.45	327	13	1.74	15.5	<0.50	62.5	<AG	2,780	2,040
0.9 - 1.3		5.51	313	11.5	1.78	15.5	<0.50	52.7	<AG	2,250	1,370
0.9 - 1.3		5.15	327	12.7	1.81	15.6	<0.50	54.1	<AG	2,190	1,390

SSURS-10	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	67	93

SS6	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	3.81	171	9.1	1.43	12.7	<0.50	35.7	<AG	496	316

SSURS-5	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	988	511

TP17-17	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/15/17	8	450	13	1.4	19.7	1	117	<AG	4,340	2,540
1.5 - 2.0		8.8	1,020	11	1.1	22.9	0.7	111	<AG	3,280	717
1.5 - 2.0		9.7	903	11	1.1	23.2	0.3	107	<AG	3,300	655

UTP-L	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	8/03/06	3.9	165	9	1.8	16.2	<0.5	42	<AG	-	-
0.2 - 0.4		4.6	216	9	2.7	20.1	0.7	48	<AG	25	59.3

SSURS-6	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	2,147	1,243

MW09-06	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
1.5 - 1.8	10/08/09	<5.0	755	10.9	<4.0	22.9	<2.0	118	<AG	113	94

URS-BH05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	11/23/05	-	-	-	-	-	-	-	-	2,640	1,640
0.7 - 0.9		2	107	11	1.4	8.3	<0.5	35	<AG	3,180	<0.1

TP17-22	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.5	11/24/17	9.7	369	12	1.8	17.8	0.4	59	<AG	271	153

SSURS-13	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	28	32

TP17-16	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/14/17	4.5	221	11	1.8	14.8	0.7	43	<AG	3,620	2,110
1.3		9.7	332	9	1.3	19	0.9	101	<AG	4,410	2,570
3.0		11.5	1,020	10	1.3	25.4	1	121	<AG	2,450	698

SB-BH-07	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
3.3 - 3.4	2/03/03	13	941	32	<4	24	<2	99	<AG	-	-

TP17-23	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5 - 1.0	11/24/17	11.1	1,940	9	1.3	22.7	0.6	113	<AG	1,070	690

SS7	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	4.7	198	10.7	1.54	15.3	<0.50	43.9	<AG	88.3	47.3

UTP-G	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	8/02/06	4.2	209	9	1.9	15.4	0.8	41	<AG	311	250
0.6 - 0.8		-	-	-	-	-	-	-	-	6,940	4,580
1.5 - 1.7		-	-	-	-	-	-	-	-	1,860	420
2.3 - 0		-	-	-	-	-	-	-	-	596	80.2
2.3 - 0		-	-	-	-	-	-	-	-	498	76.6

TP16-32	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.8 - 0.9	11/07/16	4.88	200	15.8	2.4	17.6	<0.50	54.6	<AG	-	-

SSURS-23	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	871	536

SSURS-14	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	31	25.6

URS-BH15	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.3 - 0.5	11/24/05	4.1	216	11	2.8	16.5	<0.5	42	<AG	-	-
1.6 - 1.8		4.1	3,490	8	0.8	14	<0.5	76	<AG	-	-

TP16-07	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	5.76	1,520	9.2	1.38	17.2	<0.50	70.3	<AG	8.6	12.9

TP16-06	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	8.95	1,130	11.3	1.21	24.9	<0.50	102	<AG	14.2	16
0.5		8.86	1,200	10.5	1.07	24	<0.50	96.7	<AG	5.7	6.9

TP16-05	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	9.88	1,420	13.5	1.27	34.1	<0.50	128	<AG	5.1	11.1

TP16-04	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/07/16	8.15	866	13.3	1.12	19.7	<0.50	79.8	<AG	18.1	15.8
1.65		7.23	2,420	8.4	0.64	22.4	<0.50	124	<AG	99.1	63.3

URS-BH17	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	11/24/05	9.4	1,010	12	1.7	25.5	0.7	120	<AG	-	-
2.3 - 2.5		10.1	771	8	1.2	23.1	0.5	115	<AG	-	-

SSURS-24	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/24/05	-	-	-	-	-	-	-	-	7	19

UTP-F	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.3 - 0.5	8/02/06	5.3	204	9	1.7	17.2	<0.5	47	<AG	-	-

URS-BH04	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.2 - 0.4	11/23/05	-	-	-	-	-	-	-	-	2,228	869
0.6 - 0.8		-	-	-	-	-	-	-	-	1,170	398
1.7 - 1.9		12	843	11	1.7	29.2	0.6	140	<AG	476	158

SSURS-7	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	2,584	1,613

BH16-12	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.3 - 0.6	9/09/16	9.24	1,190	10.8	1.14	24.2	<0.50	109	<AG	1,410	819
2.72 - 3.03		10.2	869	9.7	1.08	21.5	<0.50	115	<AG	78.4	31.8

TP17-11	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/13/17	4.6	307	10	1.5	14.1	0.6	61	<AG	580	398
1.5		7.3	281	11	1	22.2	0.6	62	<AG	2,440	803
2.6		7.2	305	12	1	21.1	0.7	64	<AG	1,540	657

SSURS-15	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0 - 0.2	11/22/05	-	-	-	-	-	-	-	-	19	25

TP16-31	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.8 - 0.9	11/07/16	5.1	218	10.5	2.22	17.1	<0.50	53.1	<AG	9.9	9.4
1.8 - 1.9		7.78	304	15.6	1.26	34	<0.50	73.4	<AG	1,410	760
1.8 - 1.9		8.36	304	16.7	1.31	34.5	<0.50	78.4	<AG	1,370	791

SS8	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	9.13	795	11.5	1.16	24.5	<0.50	95.5	<AG	4.8	12.5

TP17-08	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/13/17	6.5	452	13	1.7	18.2	0.6	63	<AG	178	140
1.5		9.3	396	18	1.5	26.5	0.8	87	<AG	2,960	1,640
2.6		7.9	281	12	1.1	21.2	0.6	66	<AG	830	216

TP16-03	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	9/06/16	8.72	471	12.6	1.24	21.6	<0.50	163	<AG	32	35.9
0.5		9.65	474	14	1.35	22.5	<0.50	139	<AG	29.7	40.7
1.5		10.6	358	8.8	1.2	15.4	0.62	96.4	<AG	276	<230

TP17-12	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/13/17	5.4	335	10	1.5	15.5	0.8	73	<AG	2,840	1,730
1.3		9.9	466	16	1.7	26.7	1	86	<AG	8,580	5,120
3.0		12.6	960	12	1.5	29.5	1	130	<AG	2,150	873

TP17-09	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/13/17	7.7	343	14	1.9	19.3	0.9	80	<AG	2,060	128
1.5		7.7	154	15	1.2	19.6	0.8	68	<AG	2,990	1,660
2.6		9.3	491	12	1.2	19.2	0.8	75	<AG	4,870	2,640

TP17-10	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/13/17	5.6	353	13	1.7	18.2	0.7	78	<AG	115	95
1.0		8.4	307	15	1.5	16.2	0.8	66	<AG	-	-
2.6		11.7	672	17	1.6	42	0.9	112	<AG	490	241
2.6		9.7	293	12	1.2	14.5	0.9	80	<AG	7,220	3,790

SS9	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	8/31/16	3.85	174	9.7	1.19	14.2	<0.50	41	<AG	8.1	6.8

TP17-15	Date	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
0.5	7/13/17	10.4	329	16	1.7	25.5	0.9	94	<AG	76	103
1.5		7.6	101	18	1.2	15	0.6	57	<AG	236	181
2.6		9.4	391	15	1.4	24.5	0.8	86	<AG	415	215

CCME GUIDELINES

ANALYTE	Arsenic	Barium	Chromium	Molybdenum	Nickel	Selenium	Zinc	Other Metals	Chloride	Sodium
CCME Course Soil IL	12	2000	87	40	89	2.9	360	VARIES	NS	NS
CCME Course Soil RL/PL	12	500	64	10	45	1	200		NS	NS
CCME Fine Soil CL	12	2000	87	40	89	2.9	360		NS	NS
CCME Course Soil RL/PL	12	500	64	10	45	1	200		NS	NS

LEGEND

STRUCTURE	TP17-16G TEST PIT LOCATION (BY GOLDER, 2017)
FORMER STRUCTURE	DESTROYED MONITORING WELL LOCATION
ABOVE GROUND STORAGE TANK	MONITORING WELL LOCATION * INDICATES A DECOMMISSIONED WELL
CONCRETE BARRIER	CORE6/ARCADIS TESTPIT (2017)
CREST OF SLOPE	CORE6/ARCADIS MONITORING WELL (2017)
AREA CLEARED FROM TREES, NOV. 2017	SOIL CONCENTRATION(S) LESS THAN APPLICABLE CCME GUIDELINES
FENCE LINE	SOIL CONCENTRATION(S) GREATER THAN APPLICABLE CCME GUIDELINES
EDGE OF ROAD	< LESS THAN
ANCHOR PILE	RDL REPORTED DETECTION LIMIT
POWER LINE	- NOT ANALYZED
BURIED CABLE	NG NO GUIDELINES
BURIED PIPE	AG APPLICABLE GUIDELINES
COLD MIX MATERIAL	CCME CANADIAN COUNCIL OF MINISTERS OF THE ENVIRONMENT
FORMER SOIL SAMPLE LOCATION (2002-2015)	RL RESIDENTIAL LAND USE GUIDELINE
SURFICIAL SOIL SAMPLE LOCATION (2002-2015)	PL URBAN PARK LAND GUIDELINE
FORMER TEST PIT LOCATION (2002-2015)	IL INDUSTRIAL LAND USE GUIDELINE
TEST PIT LOCATION (2002-2015)	
FORMER BOREHOLE LOCATION (2002-2015)	
BOREHOLE LOCATION (2002-2015)	
FORMER SURFICIAL SOIL SAMPLE LOCATION (2016)	
SURFICIAL SOIL SAMPLE LOCATION (2016)	
FORMER TEST PIT LOCATION (2016)	
TEST PIT LOCATION (2016)	
FORMER BOREHOLE LOCATION (2016)	
BOREHOLE LOCATION (2016)	
TP17-11G FORMER TEST PIT LOCATION (BY GOLDER, 2017)	

SAMPLE I.D. — ANALYTE

TP17-24	Arsenic
0 - 0.5	7.1

DEPTH (m) — RESULTS

NOTES:
1. Sample values are presented as Milligrams per kilogram (mg/kg).
2. Sample where RDL Exceeds applicable CCME Guidelines shaded in GREY.
3. Sample Exceeding applicable CCME Guidelines shaded in YELLOW.

NOTES:
1. PLAN BASED ON GOLDER ASSOCIATES 1660199_2000_2017-BASE DATA DWG. & CAN-AM GEOMATICS 20172100AB3B_0_STP DWG.
2. THIS DRAWING IS FOR GENERAL INFORMATION ONLY. LOT BOUNDARIES AND FEATURES ARE APPROXIMATE.

PLOT SCALE: 1:1 DRAWN BY: DK CADD FILE: Clients\PWGSC\00338 Steamboat\03-Additional Investigations\4-Figures\Fig3C 3D-Soil Analytical-R0.dwg\Layout2

5m 0 25m
SCALE: 1:500(approx.)

core6 ENVIRONMENTAL
ARCADIS Design & Consultancy for natural and built assets

ADDRESS & CLIENT:
Steamboat Maintenance Camp, Kilometre 537.9
Alaska Highway, BC
Public Services and Procurement Canada

FIGURE TITLE:
Soil Analytical Results
CCME - Metals

REV:	DATE:	PROJECT No:	FIGURE No:
00	Mar. 2018	00338/102516	Figure 3D

APPENDIX A
Site Photos

Photo 1: Site access

Photo 2: Slope on east side of Site

Photo 3: Site Layout

Photo 4: Maintenance Garage

Photo 5: Salt Shed

Photo 6: Trailers

APPENDIX B
Analytical Results

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	AH16-03	AH16-04	AH16-07	BH10-04	BH10-05	BH10-06	BH10-07	BH16-01	BH16-01	BH16-01	BH16-02	BH16-03
Sample Control Number										AH16-03/S1	AH16-04/S1	AH16-07/S1	21694-03	21694-10	21695-03	21695-09	02022-01	02022-02	02022-04	02022-05	02022-09
Sample Date (Day-Month-Year)										5-Nov-16	5-Nov-16	5-Nov-16	10-Oct-10	10-Oct-10	11-Oct-10	11-Oct-10	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16
Depth of Sample (mbgs)										0.5-0.6 m	0.45-0.5 m	0.8-0.9 m	0.9-1.2 m	1.5-1.8 m	0.9-1.1 m	0.7-0.9 m	0.3-0.61 m	1.21-1.52 m	3.64-3.94 m	0.3-0.61 m	0.15-0.45 m
QA/QC																					FDA
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		7.09	7.31	7.82	5.13	5.88	5.33	4.7	7.22	6.7	7.17	5.57	6.2
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		77.8	73.5	53.3	44.4	41.2	45.7	38.3	49.5	54.1	53.2	65.9	48.6
Chloride	mg/kg	100	DW	100	DW	-		**-**		63.5	193	252	304	630	1170	620	8.3	8.3	137	380	15
Sodium	mg/kg	200	TOX	1000	TOX	-		-		115	175	50.4	59.6	132	564	374	10.5	16.9	51.8	< 330	21
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		10800	8090	5650	-	-	-	-	5440	6170	6820	8350	7030
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.57	1.47	2.9	0.6	0.64	0.61	0.52	0.55	0.39	0.56	0.47	0.45
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		10	9.34	7.78	11.4	**12.1**	11.3	8.61	8.78	5.59	9.66	8.12	7.97
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		147	307	468	903	1340	1320	1390	687	580	927	527	169
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	0.42	0.42	0.54	0.65	0.6	0.66	0.54	0.48	< 0.40	0.75	0.53	< 0.40
Bismuth	mg/kg	-		-		-		-		0.21	0.16	0.1	-	-	-	-	< 0.10	< 0.10	0.13	0.11	0.12
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.151	0.3	0.407	0.16	0.31	0.14	< 0.10	0.233	0.186	0.533	0.207	0.288
Calcium	mg/kg	-		-		-		-		2820	8510	13600	-	-	-	-	1540	1510	2600	2430	1430
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		16.4	13.1	9	18.8	13.7	15.8	7.95	7.7	9	10.3	10.4	9.2
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	5.05	5.34	5.75	7.21	9.07	9.67	4.08	6.29	4.06	8.1	5.53	2.57
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		10.1	11.2	12.3	19.3	17.9	19.5	9.87	9.09	7.62	15.9	9.06	5.14
Iron	mg/kg	35000		150000		-		-		21700	21000	15900	-	-	-	-	14400	11400	19000	15800	16600
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		13.9	12.7	11.5	12.5	11.6	12.2	9.29	9.85	7.04	11.1	11	9.41
Lithium	mg/kg	30	HH	450	HH	-		-		8.4	8.3	8.7	-	-	-	-	7.7	8.7	9.8	8.3	5
Magnesium	mg/kg	-		-		-		-		2460	3960	5330	-	-	-	-	1190	1080	1550	1670	977
Manganese	mg/kg	1500	DW	1500	DW	-		-		141	208	332	-	-	-	-	118	67.3	212	89.2	68.1
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.050	< 0.050	< 0.050	0.0694	0.0678	0.0688	0.0353	< 0.050	< 0.050	0.058	< 0.050	< 0.050
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	1.43	1.66	1.47	1.77	1.51	1.41	1.04	1.19	0.63	1.17	1.28	1.09
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		12	14.8	16.2	27.2	27.2	28.9	12.7	14	12.4	23.4	13.5	6.92
Phosphorus	mg/kg	-		-		-		-		620	802	609	-	-	-	-	547	517	683	539	495
Potassium	mg/kg	-		-		-		-		1110	951	754	-	-	-	-	864	983	1350	794	628
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	< 0.50	< 0.50	0.54	0.48	0.52	0.42	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.157	0.14	0.08	0.13	0.18	0.13	< 0.10	0.06	0.066	0.265	0.131	0.151
Sodium	mg/kg	200	TOX	1000	TOX	-		-		832	375	< 100	59.6	132	564	374	< 100	< 100	158	378	142
Strontium	mg/kg	9500	HH	150000	HH	-		-		20.1	24.8	26.4	-	-	-	-	17.9	19.1	35.9	16.5	11.6
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.15	0.141	0.128	0.148	0.146	0.157	0.085	0.092	0.089	0.146	0.11	0.105
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.71	0.63	0.67	< 2.0	< 2.0	< 2.0	< 2.0	0.25	0.26	0.35	0.38	0.37
Titanium	mg/kg	-		-		-		-		44.9	35.1	21.8	-	-	-	-	38.9	17.7	32.9	32.4	39.6
Uranium	mg/kg	30	DW	30	DW	23		**300**		0.69	0.748	0.769	0.972	0.845	0.89	0.777	0.83	0.641	0.963	0.599	0.413
Vanadium	mg/kg	100	DW	100	DW	130		**130**		46.6	35.4	23.3	31.2	27	32	20.4	21.1	21.7	24.2	29.1	35.5
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		65.6	87	110	115	125	118	79.9	78.7	66.6	116	69.3	39
Zirconium	mg/kg	15	HH	20	HH	-		-		1.01	1.01	1.46	-	-	-	-	1.63	2.04	3	0.7	< 0.50

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	BH16-03	BH16-03	BH16-04	BH16-04	BH16-05	BH16-06	BH16-06	BH16-07	BH16-07	BH16-08	BH16-08	BH16-09
Sample Control Number										02022-10	02023-01	02023-03	02023-06	02023-11	02021-01	02021-03	02021-04	02021-06	02021-07	02021-09	02021-10
Sample Date (Day-Month-Year)										6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16
Depth of Sample (mbgs)										0.15-0.45 m	3.94-4.24 m	0.3-0.61 m	3.94-4.24 m	3.03-3.18 m	0.3-0.61 m	2.12-2.42 m	0.15-0.45 m	2.27-2.58 m	0.05-0.35 m	1.82-2.12 m	0.15-0.45 m
QA/QC										FD											
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		6.31	7.68	6.73	6.78	6.53	4.44	5.99	4.21	4.53	8.54	5.71	4.21
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		58.3	53.4	52.1	53.3	50.2	48.1	54.9	65.7	61.3	50	71	51
Chloride	mg/kg	100	DW	100	DW	-		**-**		15.7	56.6	297	58.4	137	912	7910	5800	1360	2230	5340	3040
Sodium	mg/kg	200	TOX	1000	TOX	-		-		22.9	41.1	< 260	8.7	31	535	4930	2420	768	1540	3220	2060
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		8070	7010	8590	7420	8030	7050	7670	9600	8360	4150	11400	5490
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.51	0.38	0.58	0.55	0.46	0.4	0.39	0.51	0.43	0.41	0.61	0.39
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		5.6	6.65	9.9	10.2	7.97	6.41	6.08	8.33	7.94	4.87	10.1	6.64
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		162	237	821	790	514	354	183	477	120	222	527	404
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	< 0.40	0.45	0.62	0.56	0.62	0.49	< 0.40	0.8	0.43	< 0.40	0.89	0.47
Bismuth	mg/kg	-		-		-		-		0.11	0.11	0.11	0.14	0.2	< 0.10	0.13	0.16	< 0.10	< 0.10	0.19	< 0.10
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.184	0.501	0.254	0.532	0.524	0.204	0.192	0.413	0.186	0.714	0.488	0.22
Calcium	mg/kg	-		-		-		-		2810	3210	2940	2830	2960	653	2490	2980	685	71100	2870	983
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		10.1	12.1	11.6	11.3	12.5	7.2	10	15	9.2	13.9	18.5	8
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	2.65	6.88	7.13	8.93	9.26	5.14	3.39	9.4	3.76	4.14	11.5	7.2
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		5.55	13.5	13	17.1	27.1	7.4	8.25	20	8.23	11.5	25.1	9.71
Iron	mg/kg	35000		150000		-		-		13800	14900	19100	17900	13800	14400	12800	18800	14900	12000	23900	12600
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		8.89	8.99	11	11.6	14.5	8.04	11	11.5	8.05	5.66	14.7	9
Lithium	mg/kg	30	HH	450	HH	-		-		6.4	8.2	10.5	10.1	12.8	9.9	7.7	9.4	11.3	9.3	12.6	7.2
Magnesium	mg/kg	-		-		-		-		1840	2280	1800	1830	1830	1390	1850	2080	1090	21500	2700	957
Manganese	mg/kg	1500	DW	1500	DW	-		-		73.5	235	177	201	131	63.9	73	214	52.2	473	369	120
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.050	< 0.050	0.052	0.067	0.051	< 0.050	< 0.050	0.058	< 0.050	< 0.050	0.072	< 0.050
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	0.92	1.07	1.17	1.18	2.05	0.67	1.15	1.35	1.01	1.95	1.8	0.88
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		7.23	17.7	19	22.6	28.2	14.1	8.48	22.8	12.5	14.5	31.3	12.3
Phosphorus	mg/kg	-		-		-		-		341	472	625	645	655	366	337	527	412	1340	665	537
Potassium	mg/kg	-		-		-		-		615	1070	1310	1290	1720	658	746	1020	663	891	1390	837
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	< 0.50	< 0.50	< 0.50	0.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.207	0.127	0.138	0.25	0.268	0.062	0.143	0.102	0.103	0.068	0.121	0.074
Sodium	mg/kg	200	TOX	1000	TOX	-		-		149	175	373	< 100	113	706	6880	3080	886	2030	6350	2090
Strontium	mg/kg	9500	HH	150000	HH	-		-		11.7	24.1	29.8	35	36.8	7.87	16.5	27.2	8.34	62.5	25.5	14.2
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.131	0.152	0.135	0.144	0.128	0.071	0.104	0.148	0.093	0.154	0.254	0.077
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.39	0.33	0.35	0.36	0.37	0.3	0.36	0.41	0.25	0.17	0.48	0.24
Titanium	mg/kg	-		-		-		-		42.3	57.8	31.8	33.6	11.1	46.5	27.8	28.1	19.9	61.6	40.8	25.6
Uranium	mg/kg	30	DW	30	DW	23		**300**		0.369	0.687	0.883	0.956	0.954	0.509	0.396	1.03	0.444	0.944	1.19	0.794
Vanadium	mg/kg	100	DW	100	DW	130		**130**		32.9	21.2	29.8	24.6	28.1	21.6	26.6	28.5	22.9	26.9	33.6	20.2
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		40.9	61.5	99.2	111	139	86.4	57	86.3	87.2	40.9	115	75.6
Zirconium	mg/kg	15	HH	20	HH	-		-		< 0.50	3.67	2.34	3.72	2.68	1.15	0.78	3.43	1.28	1.41	4.11	1.75

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	BH16-09	BH16-10	BH16-10	BH16-10	BH16-11	BH16-11	BH16-12	BH16-12	BH16-13	BH16-13	BH16-13	BH16-14
Sample Control Number										02021-11	02026-01	02026-02	02026-03	02026-04	02026-06	02026-07	02026-10	01132-02	01132-03	01132-06	01132-08
Sample Date (Day-Month-Year)										6-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16
Depth of Sample (mbgs)										1.06-1.36 m	0-0.3 m	0.9-1.3 m	0.9-1.3 m	0.16-0.46 m	2.12-2.42 m	0.3-0.6 m	2.72-3.03 m	0.9-1.2 m	0.9-1.2 m	4.5-4.8 m	0-0.3 m
QA/QC												FDA	FD								
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		4.56	8.35	8.41	8.57	9.22	5.99	6.26	7.4	6.12	5.95	7.99	7.4
Anions																					
Chloride (leachable)	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	-		-		-		-		43.2	40.5	38.5	39.8	42.4	71.6	55.1	52.4	60.2	63.3	57	72.8
Chloride	mg/kg	100	DW	100	DW	-		-		2150	2780	2250	2190	491	1190	1410	78.4	70.4	54.4	383	20.7
Sodium	mg/kg	200	TOX	1000	TOX	-		-		1340	2040	1370	1390	347	841	819	31.8	16.3	13	18.9	30.8
Sodium Adsorption Ratio	none	-		-		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		5130	5950	5070	5370	4930	8650	7510	6460	10600	11500	5830	8670
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.36	0.41	0.72	1.1	0.42	0.62	0.54	0.57	0.6	0.55	0.37	0.63
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		5.72	6.45	5.51	5.15	4.86	10.6	9.24	10.2	9.3	9.76	5.91	9.05
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		779	327	313	327	296	325	1190	869	737	732	230	831
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	0.44	0.44	< 0.40	< 0.40	< 0.40	0.52	0.63	0.61	0.75	0.81	< 0.40	0.66
Bismuth	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.12	0.12	0.12	0.17	0.2	0.11	0.14
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.227	0.65	0.663	0.712	0.705	0.346	0.366	0.515	0.444	0.535	0.497	0.3
Calcium	mg/kg	-		-		-		-		1600	46000	54100	58600	58300	1800	2910	2590	2490	2730	9380	3820
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		7.3	13	11	12.7	11.3	13.7	10.8	9.7	17.2	19.1	11.4	12.1
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	5.3	5.46	4.46	4.46	4.18	8.04	8.64	8.46	9.07	10.1	6.02	8.09
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		7.48	10.3	10	10.8	9.38	15.3	16.5	15	19.8	23.1	13.3	17
Iron	mg/kg	35000		150000		-		-		14700	15200	13900	14000	12800	18800	19300	17500	26800	21000	13500	18100
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		7.23	8.99	6.6	6.74	5.71	10.8	11	11.3	12.4	13.4	8.52	14.4
Lithium	mg/kg	30	HH	450	HH	-		-		7	10	9.4	10.5	9.4	8.3	9.7	9.8	11.6	11.8	6.7	9.9
Magnesium	mg/kg	-		-		-		-		1240	15400	17100	18500	18000	2010	1950	1520	2290	2570	3620	1900
Manganese	mg/kg	1500	DW	1500	DW	-		-		114	446	673	598	635	215	187	165	346	298	177	156
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.064	0.052	0.063	0.073	0.072	0.055	0.162
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	0.76	1.74	1.78	1.81	1.59	1.1	1.14	1.08	1.75	1.6	1.05	1.34
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		12	15.5	15.5	15.6	14.8	19.1	24.2	21.5	29.7	31	16.8	22.1
Phosphorus	mg/kg	-		-		-		-		561	1150	1240	1270	1270	505	629	653	671	613	499	659
Potassium	mg/kg	-		-		-		-		701	1020	968	1050	1050	980	1080	1270	1490	1610	876	931
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.56	0.51	< 0.50	< 0.50
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.078	0.07	0.061	0.074	0.072	0.103	0.154	0.281	0.128	0.144	0.116	0.063
Sodium	mg/kg	200	TOX	1000	TOX	-		-		1660	3340	2360	2310	918	1960	1320	115	< 100	111	< 100	156
Strontium	mg/kg	9500	HH	150000	HH	-		-		16.8	47.6	55.2	60.3	64.1	18.3	31.1	35.7	33.1	38	26.4	24.3
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.074	0.134	0.143	0.142	0.135	0.194	0.12	0.131	0.229	0.23	0.17	0.152
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.2	1.36	0.23	0.24	0.28	0.35	0.39	0.34	0.5	0.54	0.3	0.47
Titanium	mg/kg	-		-		-		-		26	42.9	70.1	73.4	63.9	61.7	25.8	25.9	41.6	45.9	61.4	27.4
Uranium	mg/kg	30	DW	30	DW	23		**300**		0.656	0.934	1.02	0.974	0.958	0.916	0.828	0.86	1.1	1.05	0.848	0.969
Vanadium	mg/kg	100	DW	100	DW	130		**130**		18.4	27.7	28.9	31.8	26.5	26.4	25.6	23	36.5	38	21.4	29.6
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		67.5	62.5	52.7	54.1	49.3	73.2	109	115	106	105	57.2	113
Zirconium	mg/kg	15	HH	20	HH	-		-		1.78	1.67	1.67	1.77	1.84	3.9	3.18	2.78	3.86	4.7	4.85	2.67

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	BH16-15	BH16-15	BH16-15	BH16-16	BH16-16	BH16-17	BH16-17	MW09-03	MW09-03	MW09-04	MW09-05	MW09-05
Sample Control Number										01133-01	01133-02	01133-04	01133-05	01133-07	01133-08	01133-09	09-020143-09	09-020143-10	09-020144-01	09-020144-04	09-020144-05
Sample Date (Day-Month-Year)										9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	6-Oct-09	6-Oct-09	7-Oct-09	8-Oct-09	8-Oct-09
Depth of Sample (mbgs)										0-0.3 m	0.91-1.21 m	4.85-5.15 m	0-0.3 m	2.27-2.58 m	0.15-0.45 m	1.21-1.52 m	1.5-2 m	1.5-2 m	1.8-2.1 m	1.2-1.5 m	2.1-2.4 m
QA/QC																	FDA	FD			
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		7.35	7.96	8.26	7.37	5.64	6.77	6.17	5.72	5.66	6.03	5.13	-
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	23	24.7	329	400	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		49.1	55.7	62.4	49.2	53.6	53.2	59.9	-	-	44.9	30.9	40.3
Chloride	mg/kg	100	DW	100	DW	-		**-**		8.4	6.1	87.6	16.8	16.7	2360	1190	~~23~~	~~24.7~~	664	468	153
Sodium	mg/kg	200	TOX	1000	TOX	-		-		4.5	7.2	7	20	7.1	1290	446	-	-	209	246	34.4
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		7940	6400	8080	7920	9660	8220	8070	-	-	-	-	-
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.63	0.54	0.44	0.68	0.49	0.56	0.76	< 10	< 10	< 10	< 10	-
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		8.97	7.23	12	7.62	9.28	9.54	10.7	9	9.7	10.5	9.1	-
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		471	243	418	482	832	891	1070	967	1070	712	335	-
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	0.55	0.45	0.55	0.53	0.58	0.65	0.58	0.62	0.66	0.7	0.54	-
Bismuth	mg/kg	-		-		-		-		0.1	< 0.10	0.15	0.11	0.13	0.11	0.12	-	-	-	-	-
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.263	0.328	0.486	0.325	0.278	0.319	0.408	< 0.50	< 0.50	< 0.50	< 0.50	-
Calcium	mg/kg	-		-		-		-		3220	12400	10600	3530	1850	3760	3140	-	-	-	-	-
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		11.6	11.5	14.3	10.8	14.4	11	10.6	12.9	13.6	18.1	12.7	-
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	6.3	4.64	8.77	6.49	8	7.44	8.45	7.1	8.4	9	6.9	-
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		12.2	12.5	18.5	11.2	15.2	13	14.2	15.7	15.6	22.2	10.9	-
Iron	mg/kg	35000		150000		-		-		16400	18200	18500	16600	17200	17700	21000	-	-	-	-	-
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		11.1	11	11.6	10.5	10.8	11.2	11.5	< 30	< 30	< 30	< 30	-
Lithium	mg/kg	30	HH	450	HH	-		-		9.3	7.5	10.8	9.8	10.1	9.8	11.7	-	-	-	-	-
Magnesium	mg/kg	-		-		-		-		1900	5000	4350	1780	2000	2150	1760	-	-	-	-	-
Manganese	mg/kg	1500	DW	1500	DW	-		-		129	146	226	131	167	161	178	-	-	-	-	-
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.050	< 0.050	0.051	0.055	0.056	0.055	0.064	0.0605	0.0634	0.06	0.0272	-
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	1.1	1.18	1.17	1.05	1.18	1.14	1.68	< 4.0	< 4.0	< 4.0	< 4.0	-
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		15.3	12.5	19.7	16.3	19.9	20	24.7	19.8	20.7	26.9	14	-
Phosphorus	mg/kg	-		-		-		-		423	627	663	523	509	593	656	-	-	-	-	-
Potassium	mg/kg	-		-		-		-		839	682	1330	1040	1080	1200	1050	-	-	-	-	-
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.6	< 2.0	< 2.0	< 2.0	< 3.0	-
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.207	0.094	0.213	0.093	0.105	0.111	0.128	< 2.0	< 2.0	< 2.0	< 2.0	-
Sodium	mg/kg	200	TOX	1000	TOX	-		-		< 100	< 100	< 100	108	< 100	1920	615	< 200	< 200	1640	680	-
Strontium	mg/kg	9500	HH	150000	HH	-		-		18.1	20.4	38	22.9	28.2	30.1	30.7	-	-	-	-	-
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.112	0.104	0.142	0.123	0.141	0.131	0.119	< 1.0	< 1.0	< 1.0	< 1.0	-
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.37	0.41	0.38	0.35	0.38	0.37	0.34	< 5.0	< 5.0	< 5.0	< 5.0	-
Titanium	mg/kg	-		-		-		-		26.8	25.5	47.5	28.7	32	35.3	31.5	-	-	-	-	-
Uranium	mg/kg	30	DW	30	DW	23		**300**		0.74	0.606	0.982	0.822	0.872	0.925	1.01	-	-	-	-	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		26.6	25.1	25.8	26.5	28.8	29.2	29	29.2	33.1	32.2	31.6	-
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		82.1	72.6	91.4	92.9	86.3	105	123	94.8	97.9	100	83.2	-
Zirconium	mg/kg	15	HH	20	HH	-		-		1.44	1.14	4.91	1.75	3.13	2.48	2.7	-	-	-	-	-

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	MW09-06	MW10-01S	MW10-02	MW10-02	MW10-03	MW16-01	MW16-02	MW16-02	MW16-03	MW16-03	MW16-04	MW16-04
Sample Control Number										09-020144-08	24418-01	24418-04	24418-05	24419-02	MW16-01/SA1	MW16-02/SA1	MW16-02/SA3	MW16-03/SA1	MW16-03/SA3	MW16-04/SA1	MW16-04/SA2
Sample Date (Day-Month-Year)										8-Oct-09	20-Sep-10	22-Sep-10	22-Sep-10	27-Sep-10	31-Aug-16	1-Sep-16	1-Sep-16	1-Sep-16	1-Sep-16	2-Sep-16	2-Sep-16
Depth of Sample (mbgs)										1.5-1.8 m	0.8-1.1 m	1.5-1.8m	3.0-3.2m	1.5-1.8m	0.33-0.66 m	0.33-0.66 m	1.97-2.3 m	0.16-0.33 m	2.3-2.63 m	0.16-0.49 m	1.64-1.97 m
QA/QC																					
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		8.68	6.9	5.8	-	5.39	7.53	8.85	7.49	7.67	6.26	8.59	5.82
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		27.8	35.4	-	33.6	57.1	38.6	53.6	48.2	64	53.4	55.9	49.4
Chloride	mg/kg	100	DW	100	DW	-		**-**		113	34.3	-	251	296	4.4	541	908	13.3	10.2	7.2	13.9
Sodium	mg/kg	200	TOX	1000	TOX	-		-		94	41.7	-	160	35.6	4.5	341	548	9.5	17.4	6.7	17
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		-	-	-	-	-	4260	5050	6230	7520	6290	3830	8740
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	< 10	< 10	< 10	-	< 10	0.25	0.37	0.38	0.46	0.46	0.32	0.36
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		< 5.0	< 5.0	7.5	-	**12.3**	4.91	4.21	6.55	7.76	7.6	5.29	6.82
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		755	123	1370	-	675	165	239	240	462	976	227	195
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	0.72	< 0.50	< 0.50	-	0.84	< 0.40	< 0.40	< 0.40	0.45	0.48	< 0.40	0.55
Bismuth	mg/kg	-		-		-		-		-	-	-	-	-	< 0.10	< 0.10	< 0.10	0.12	< 0.10	< 0.10	0.11
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		< 0.50	< 0.50	0.51	-	0.8	0.282	0.575	0.2	0.259	0.297	0.839	0.237
Calcium	mg/kg	-		-		-		-		-	-	-	-	-	1890	53900	2580	8370	2380	52900	1390
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		10.9	8.5	7.1	-	19.8	9.5	14.1	8.5	12.3	8.5	10.6	12.2
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	6.5	5.8	8.8	-	9.8	5.02	4.06	5.7	5.25	6.5	4.33	6.64
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		6.1	7	7.3	-	26.7	6.89	10.3	8.64	10.4	11.8	9.98	12.5
Iron	mg/kg	35000		150000		-		-		-	-	-	-	-	10900	12200	13400	14100	14000	14500	14800
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		< 30	< 30	< 30	-	< 30	6.23	9.16	9.35	9.8	9.32	4.57	9.25
Lithium	mg/kg	30	HH	450	HH	-		-		-	-	-	-	-	5.3	8.9	6.4	8.8	7.7	8.7	10.6
Magnesium	mg/kg	-		-		-		-		-	-	-	-	-	1660	17300	1380	2950	1620	17500	2010
Manganese	mg/kg	1500	DW	1500	DW	-		-		-	-	-	-	-	230	472	108	192	130	582	182
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.050	0.015	0.0355	-	0.0727	< 0.050	< 0.050	< 0.050	< 0.050	0.058	< 0.050	< 0.050
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	< 4.0	< 4.0	< 4.0	-	< 4.0	0.67	1.9	0.79	1.39	0.97	1.7	0.83
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		22.9	12.1	15.3	-	28	13.1	14.6	12.5	14.1	19.4	16.1	13.7
Phosphorus	mg/kg	-		-		-		-		-	-	-	-	-	291	984	452	783	546	1360	321
Potassium	mg/kg	-		-		-		-		-	-	-	-	-	524	870	731	819	918	610	682
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 2.0	< 2.0	< 2.0	-	< 2.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	< 2.0	< 2.0	< 2.0	-	< 2.0	< 0.050	0.09	0.065	0.111	0.129	0.066	0.053
Sodium	mg/kg	200	TOX	1000	TOX	-		-		-	41.7	-	-	35.6	< 100	1350	1680	< 100	< 100	< 100	124
Strontium	mg/kg	9500	HH	150000	HH	-		-		-	-	-	-	-	10.1	54	12.6	25.1	25.9	55.8	12.2
Thallium	mg/kg	2	HH	2	HH	1		**1**		-	< 1.0	< 1.0	-	< 1.0	0.102	0.123	0.076	0.148	0.123	0.128	0.127
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	< 5.0	< 5.0	< 5.0	-	< 5.0	0.19	0.23	0.29	0.38	0.32	0.15	0.33
Titanium	mg/kg	-		-		-		-		-	-	-	-	-	59.8	49.9	39.4	45.9	25.5	46.3	46.1
Uranium	mg/kg	30	DW	30	DW	23		**300**		-	0.691	0.804	-	0.912	0.64	0.861	0.616	0.718	0.907	0.76	0.894
Vanadium	mg/kg	100	DW	100	DW	130		**130**		29.1	15.1	16.9	-	30.1	14.1	27.2	25.5	29.1	22	22.4	22.9
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		118	54	84.7	-	110	38.1	47.3	68.3	69.9	95.3	49.3	51.3
Zirconium	mg/kg	15	HH	20	HH	-		-		-	-	-	-	-	2.21	1.6	0.92	< 0.50	2.14	1.4	2.92

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	MW16-04	MW16-05	MW16-06	MW16-06	MW16-06	MW16-07	MW16-07	SB-BH-05	SB-BH-07	SSURS-30	SSURS-31	SSURS-32
Sample Control Number										MW16-04/SA4	MW16-05/SA1	MW16-06/SA1	MW16-06/SA4	MW16-06/SA4 (FD)	MW16-07/SA1	MW16-07/SA1 (FD)	SBBH-05-01	SBBH-07-03	SS URS-30	SS URS-31	SS URS-32
Sample Date (Day-Month-Year)										2-Sep-16	3-Sep-16	4-Sep-16	4-Sep-16	4-Sep-16	4-Sep-16	4-Sep-16	3-Feb-03	3-Feb-03	3-Aug-06	3-Aug-06	3-Aug-06
Depth of Sample (mbgs)										3.78-4.11 m	0.16-0.49 m	0.33-0.66 m	2.8-3.13 m	2.8-3.13 m	0.16-0.49 m	0.16-0.49 m	1.2-1.5 m	3.3-3.4 m	0-0.2 m	0-0.2 m	0-0.2 m
QA/QC													FDA	FD	FDA	FD					
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		7.26	5.01	7.58	6.37	7.17	8.21	8.1	6.86	5.68	-	-	-
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		62.9	60.2	63	47.2	49.9	57.6	49.3	-	-	-	-	-
Chloride	mg/kg	100	DW	100	DW	-		**-**		110	154	14	266	239	8.1	7	-	-	208	879	21
Sodium	mg/kg	200	TOX	1000	TOX	-		-		20	61.6	21	115	123	13	13.3	-	-	268	531	32.3
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	0.07	< 0.02	< 0.02
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		7190	12200	7290	8170	9070	7690	6680	-	-	-	-	-
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.4	0.7	0.44	0.46	0.45	0.57	0.53	< 10	< 10	-	-	-
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		7.84	10.5	8.66	7.32	6.96	7.89	6.7	12	**13**	-	-	-
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		247	759	122	501	361	595	478	1140	941	-	-	-
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	0.51	0.87	< 0.40	0.57	0.56	0.68	0.52	1	1	-	-	-
Bismuth	mg/kg	-		-		-		-		0.14	0.15	0.12	0.12	0.13	0.11	0.1	-	-	-	-	-
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.568	0.307	0.188	0.362	0.546	0.362	0.516	< 0.5	< 0.5	-	-	-
Calcium	mg/kg	-		-		-		-		3150	1980	2820	2390	3660	16800	25000	-	-	-	-	-
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		13.5	14.9	11	13.7	13.8	12.8	21.8	**99**	32	-	-	-
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	7.75	8.37	3.34	6.46	6.77	6.62	5.99	7	8	-	-	-
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		18.4	18.3	8.25	13.8	16.6	13.8	12.7	13	15	-	-	-
Iron	mg/kg	35000		150000		-		-		16800	20300	14800	16100	17200	17600	15600	-	-	-	-	-
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		10.5	12.2	9.78	9	9.79	9.99	9.98	< 30	< 30	-	-	-
Lithium	mg/kg	30	HH	450	HH	-		-		9.3	12	7.1	8.7	9.4	10.1	9.6	-	-	-	-	-
Magnesium	mg/kg	-		-		-		-		2340	2030	1720	1980	2690	6090	9300	-	-	-	-	-
Manganese	mg/kg	1500	DW	1500	DW	-		-		276	139	66.7	166	209	227	282	-	-	-	-	-
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		0.056	0.084	< 0.050	0.061	0.063	0.058	< 0.050	0.062	0.067	-	-	-
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	1.14	1.29	1.28	0.98	1	1.25	1.55	< 4	< 4	-	-	-
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		23.1	22.3	10.9	18.5	21.4	18.2	16.7	22	24	-	-	-
Phosphorus	mg/kg	-		-		-		-		575	626	289	518	518	655	728	-	-	-	-	-
Potassium	mg/kg	-		-		-		-		1030	1580	608	1150	1270	1120	996	-	-	-	-	-
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	0.8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 2	< 2	-	-	-
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.137	0.064	0.082	0.148	0.169	0.096	0.101	< 2	< 2	-	-	-
Sodium	mg/kg	200	TOX	1000	TOX	-		-		< 100	215	112	298	391	192	131	-	-	-	-	-
Strontium	mg/kg	9500	HH	150000	HH	-		-		24.8	30.5	12.7	27	28	31.8	35.2	-	-	-	-	-
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.2	0.199	0.112	0.162	0.174	0.144	0.139	< 1	< 1	-	-	-
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.35	0.46	0.39	0.35	0.37	0.38	0.31	< 5	< 5	-	-	-
Titanium	mg/kg	-		-		-		-		57.7	29.8	26.1	55.3	77.6	37.9	35.9	-	-	-	-	-
Uranium	mg/kg	30	DW	30	DW	23		**300**		0.893	1.07	0.402	0.836	0.906	0.82	0.765	-	-	-	-	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		23.5	36.9	29	25.1	26.1	26.7	27.3	89	75	-	-	-
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		76.9	117	65.5	77.2	71.8	89.5	110	101	99	-	-	-
Zirconium	mg/kg	15	HH	20	HH	-		-		4.36	2.61	1.09	3.81	5.36	2.42	2.03	-	-	-	-	-

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location																						
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		CCME Soil Industrial		SSURS-33 SS URS-33	SSURS-34 SS URS-34	SSURS-35 SS URS-35	SS1 SS-1	SS10 02026-12	SS11 02026-11	SS11 02026-11	SS2 SS-2	SS3 SS-3	SS4 SS-4A	SS4 SS-4B	SS5 SS-5
Sample Date (Day-Month-Year)										3-Aug-06	3-Aug-06	3-Aug-06	31-Aug-16	9-Sep-16	9-Sep-16	9-Sep-16	31-Aug-16	31-Aug-16	31-Aug-16	31-Aug-16	31-Aug-16
Depth of Sample (mbgs)										0-0.2 m	0-0.2 m	0-0.2 m	0.5-0.5 m	0.15-0.45 m	0.15-0.45 m	0.15-0.45 m	0.5-0.5 m	0.5-0.5 m	0.5-0.5 m	0.5-0.5 m	0.5-0.5 m
QA/QC	Units		MCS		MCS		MCS		MCS										FDA	FD	
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		-	-	-	8.27	4.6	8.5	-	8.6	8.63	8.38	8.41	8.93
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		-	-	-	47.7	54.4	34	-	45.4	39.9	47.5	51.1	40.1
Chloride	mg/kg	100	DW	100	DW	-		**-**		729	3310	4280	128	1070	2060	-	15.2	4.1	7.9	10.6	1750
Sodium	mg/kg	200	TOX	1000	TOX	-		-		404	2350	3120	54	657	1340	-	14.4	3.7	10.9	2.9	1260
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		< 0.02	< 0.02	< 0.02	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		-	-	-	5510	7880	4920	-	4970	3560	3570	3740	3620
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	-	-	-	0.78	0.47	0.37	-	0.68	0.35	0.49	0.46	0.29
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		-	-	-	7.38	9.94	5.23	-	6.47	4.39	4.3	4.82	3.79
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		-	-	-	315	190	295	-	277	223	207	249	194
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	-	-	-	0.41	< 0.40	< 0.40	-	0.4	< 0.40	< 0.40	< 0.40	< 0.40
Bismuth	mg/kg	-		-		-		-		-	-	-	< 0.10	0.11	< 0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		-	-	-	1.97	0.158	0.817	-	1.53	0.771	0.783	0.71	0.608
Calcium	mg/kg	-		-		-		-		-	-	-	28200	759	67000	-	47900	56900	53400	53800	53000
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		-	-	-	18.1	10.3	11	-	13.7	10.8	10.1	8.9	9.4
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	-	-	-	5.81	3.38	4.54	-	5.03	3.92	3.81	3.88	3.54
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		-	-	-	13.4	6.92	9.1	-	13.5	9.43	10.7	11	8.48
Iron	mg/kg	35000		150000		-		-		-	-	-	13100	16100	14200	-	12300	10900	10700	10600	10600
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		-	-	-	7.31	9.33	4.96	-	6.23	3.92	5.39	5.5	3.86
Lithium	mg/kg	30	HH	450	HH	-		-		-	-	-	9.2	7.8	10.3	-	9.1	8.9	8.3	8.4	9.5
Magnesium	mg/kg	-		-		-		-		-	-	-	10000	1060	19800	-	15600	17700	17500	18600	17100
Manganese	mg/kg	1500	DW	1500	DW	-		-		-	-	-	445	63.7	797	-	550	779	456	401	483
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		-	-	-	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	-	-	-	4.31	1.14	1.85	-	3.61	1.72	1.6	1.72	1.46
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		-	-	-	24.7	9.27	15.5	-	22.2	16.4	14.6	14.9	13.8
Phosphorus	mg/kg	-		-		-		-		-	-	-	2490	494	1370	-	2030	1280	1160	1130	1240
Potassium	mg/kg	-		-		-		-		-	-	-	854	757	990	-	838	572	611	688	684
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		-	-	-	0.58	< 0.50	< 0.50	-	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	-	-	-	0.116	0.078	0.053	-	0.111	0.059	0.06	0.08	0.064
Sodium	mg/kg	200	TOX	1000	TOX	-		-		-	-	-	143	891	2250	-	< 100	< 100	< 100	< 100	1460
Strontium	mg/kg	9500	HH	150000	HH	-		-		-	-	-	56.8	13.4	70	-	64.1	55.2	54.5	53.8	52.2
Thallium	mg/kg	2	HH	2	HH	1		**1**		-	-	-	0.284	0.108	0.14	-	0.266	0.159	0.13	0.138	0.104
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	-	-	-	0.26	0.33	0.19	-	0.23	0.15	0.3	0.26	0.14
Titanium	mg/kg	-		-		-		-		-	-	-	21.2	33.7	70.6	-	35.7	55	42.9	45	62
Uranium	mg/kg	30	DW	30	DW	23		**300**		-	-	-	1.68	0.445	0.903	-	1.37	0.792	0.814	0.848	0.814
Vanadium	mg/kg	100	DW	100	DW	130		**130**		-	-	-	73.8	29.6	28.7	-	59	23.5	24.7	27.4	26.1
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		-	-	-	92.9	58.9	46.8	-	74.6	41.9	63.6	66.2	39.6
Zirconium	mg/kg	15	HH	20	HH	-		-		-	-	-	0.63	0.77	2.07	-	0.95	1.21	0.76	0.78	1.44

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	SS6	SS7	SS8	SS9	SSURS-1	SSURS-1	SSURS-2	SSURS-3	SSURS-4	SSURS-5	SSURS-6	SSURS-7
Sample Control Number										SS-6	SS-7	SS-8	SS-9	SSURS-1	SS DUP	SSURS-2	SSURS-3	SSURS-4	SSURS-5	SSURS-6	SSURS-7
Sample Date (Day-Month-Year)										31-Aug-16	31-Aug-16	31-Aug-16	31-Aug-16	22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05
Depth of Sample (mbgs)										0.5-0.5 m	0.5-0.5 m	0.5-0.5 m	0.5-0.5 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m
QA/QC														FDA	FD						
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		9.46	8.71	8.46	8.68	-	-	-	-	-	-	-	-
Anions																					
Chloride (leachable)	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	-		-		-		-		42.1	41.8	53	38.3	55	52	15	16	19	18	19	17
Chloride	mg/kg	100	DW	100	DW	-		-		496	88.3	4.8	8.1	25	25	839	3888	1640	988	2147	2584
Sodium	mg/kg	200	TOX	1000	TOX	-		-		316	47.3	12.5	6.8	7.7	10.4	513	2304	1056	511	1243	1613
Sodium Adsorption Ratio	none	-		-		5		**12**		-	-	-	-	0.4	0.5	**108**	**200**	**140**	**32.4**	**53**	**89.7**
Cyanide																					
Cyanide	mg/kg	-		-		-		-		-	-	-	-	0.05	0.06	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Thiocyanate and Cyanide	mg/kg	-		-		-		-		-	-	-	-	0.11	0.13	0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		3320	3960	7940	3780	-	-	-	-	-	-	-	-
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.31	0.32	0.48	0.31	-	-	-	-	-	-	-	-
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		3.81	4.7	9.13	3.85	-	-	-	-	-	-	-	-
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		171	198	795	174	-	-	-	-	-	-	-	-
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	< 0.40	< 0.40	0.54	< 0.40	-	-	-	-	-	-	-	-
Bismuth	mg/kg	-		-		-		-		< 0.10	< 0.10	0.14	< 0.10	-	-	-	-	-	-	-	-
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.599	0.657	0.38	0.578	-	-	-	-	-	-	-	-
Calcium	mg/kg	-		-		-		-		53700	49200	1700	51300	-	-	-	-	-	-	-	-
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		9.1	10.7	11.5	9.7	-	-	-	-	-	-	-	-
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	3.54	4.29	8.96	3.96	-	-	-	-	-	-	-	-
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		8.22	10.1	13.4	9.19	-	-	-	-	-	-	-	-
Iron	mg/kg	35000		150000		-		-		9860	11600	17400	11500	-	-	-	-	-	-	-	-
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		3.78	4.43	11.5	4.31	-	-	-	-	-	-	-	-
Lithium	mg/kg	30	HH	450	HH	-		-		7.9	9.3	9.6	9.2	-	-	-	-	-	-	-	-
Magnesium	mg/kg	-		-		-		-		17100	17500	1750	16400	-	-	-	-	-	-	-	-
Manganese	mg/kg	1500	DW	1500	DW	-		-		420	415	311	334	-	-	-	-	-	-	-	-
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.050	< 0.050	< 0.050	< 0.050	-	-	-	-	-	-	-	-
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	1.43	1.54	1.16	1.19	-	-	-	-	-	-	-	-
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		12.7	15.3	24.5	14.2	-	-	-	-	-	-	-	-
Phosphorus	mg/kg	-		-		-		-		1240	1260	432	1310	-	-	-	-	-	-	-	-
Potassium	mg/kg	-		-		-		-		708	717	833	560	-	-	-	-	-	-	-	-
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	< 0.50	< 0.50	< 0.50	-	-	-	-	-	-	-	-
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.058	0.07	0.117	< 0.050	-	-	-	-	-	-	-	-
Sodium	mg/kg	200	TOX	1000	TOX	-		-		545	137	1320	< 100	-	-	-	-	-	-	-	-
Strontium	mg/kg	9500	HH	150000	HH	-		-		55.5	50.8	18	50.7	-	-	-	-	-	-	-	-
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.102	0.143	0.225	0.106	-	-	-	-	-	-	-	-
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.13	0.16	0.43	0.14	-	-	-	-	-	-	-	-
Titanium	mg/kg	-		-		-		-		52	51.6	45.6	51.3	-	-	-	-	-	-	-	-
Uranium	mg/kg	30	DW	30	DW	23		**300**		0.885	0.788	0.861	0.868	-	-	-	-	-	-	-	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		22.5	26.6	27.1	23.6	-	-	-	-	-	-	-	-
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		35.7	43.9	95.5	41	-	-	-	-	-	-	-	-
Zirconium	mg/kg	15	HH	20	HH	-		-		1.47	1.52	2.06	1.37	-	-	-	-	-	-	-	-

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location																							
Sample Control Number		BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	SSURS-8	SSURS-9	SSURS-10	SSURS-11	SSURS-13	SSURS-14	SSURS-15	SSURS-18	SSURS-19	SSURS-20	SSURS-21	SSURS-22
Sample Date (Day-Month-Year)										SSURS-8	SSURS-9	SSURS-10	SSURS-11	SSURS-13	SSURS-14	SSURS-15	SSURS-18	SSURS-19	SSURS-20	SSURS-21	SSURS-22
Depth of Sample (mbgs)										22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05	22-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05
QA/QC	Units									0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m
																					FDA
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		-	-	-	-	-	-	-	-	-	-	9.11	-
Anions																					
Chloride (leachable)	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	-		-		-		-		18	22	15	16	15	13	13	15	15	20	17	18
Chloride	mg/kg	100	DW	100	DW	-		-		5	3542	67	9568	28	31	19	248	30	1082	18	8
Sodium	mg/kg	200	TOX	1000	TOX	-		-		19	2288	93	6016	32	25.6	25	167	57	674	32	13
Sodium Adsorption Ratio	none	-		-		5		**12**		-	**98**	-	**308**	-	-	-	-	-	**83.9**	-	-
Cyanide																					
Cyanide	mg/kg	-		-		-		-		< 0.02	0.03	< 0.02	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Thiocyanate and Cyanide	mg/kg	-		-		-		-		< 0.04	0.1	< 0.04	< 0.04	< 0.04	-	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04	< 0.04
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		-	-	-	-	-	-	-	-	-	-	4070	-
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	-	-	-	-	-	-	-	-	-	-	0.3	-
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		-	-	-	-	-	-	-	-	-	-	4.1	-
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		-	-	-	-	-	-	-	-	-	-	187	-
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	-	-	-	-	-	-	-	-	-	-	0.3	-
Bismuth	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	< 0.1	-
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		-	-	-	-	-	-	-	-	-	-	0.6	-
Calcium	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	79500	-
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		-	-	-	-	-	-	-	-	-	-	9	-
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	-	-	-	-	-	-	-	-	-	-	5.6	-
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		-	-	-	-	-	-	-	-	-	-	9	-
Iron	mg/kg	35000		150000		-		-		-	-	-	-	-	-	-	-	-	-	14600	-
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		-	-	-	-	-	-	-	-	-	-	4.3	-
Lithium	mg/kg	30	HH	450	HH	-		-		-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	22800	-
Manganese	mg/kg	1500	DW	1500	DW	-		-		-	-	-	-	-	-	-	-	-	-	597	-
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		-	-	-	-	-	-	-	-	-	-	< 0.05	-
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	-	-	-	-	-	-	-	-	-	-	1.6	-
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		-	-	-	-	-	-	-	-	-	-	18.4	-
Phosphorus	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	1530	-
Potassium	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	464	-
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		-	-	-	-	-	-	-	-	-	-	< 0.5	-
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	-	-	-	-	-	-	-	-	-	-	0.06	-
Sodium	mg/kg	200	TOX	1000	TOX	-		-		-	-	-	-	-	-	-	-	-	-	161	-
Strontium	mg/kg	9500	HH	150000	HH	-		-		-	-	-	-	-	-	-	-	-	-	66.5	-
Thallium	mg/kg	2	HH	2	HH	1		**1**		-	-	-	-	-	-	-	-	-	-	0.12	-
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	-	-	-	-	-	-	-	-	-	-	0.2	-
Titanium	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	37	-
Uranium	mg/kg	30	DW	30	DW	23		**300**		-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		-	-	-	-	-	-	-	-	-	-	20	-
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		-	-	-	-	-	-	-	-	-	-	51	-
Zirconium	mg/kg	15	HH	20	HH	-		-		-	-	-	-	-	-	-	-	-	-	3.1	-

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	SSURS-22	SSURS-23	SSURS-24	SSURS-25	SSURS-30	SSURS-31	SSURS-32	SSURS-33	SSURS-34	SSURS-35	TP16-01	TP16-01
Sample Control Number										SS DUP2	SSURS-23	SSURS-24	SSURS-25	SSURS-30	SSURS-31	SSURS-32	SSURS-33	SSURS-34	SSURS-35	02025-01	02025-03
Sample Date (Day-Month-Year)										24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	6-Sep-16	6-Sep-16
Depth of Sample (mbgs)										0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0-0.2 m	0.5-0.5 m	2.5-2.5 m
QA/QC										FD											
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		-	-	-	-	-	-	-	-	-	-	4.75	-
Anions																					
Chloride (leachable)	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	-		-		-		-		17	18	18	15	40	15	14	13	13	13	46.7	31.7
Chloride	mg/kg	100	DW	100	DW	-		-		9	871	7	3	208	879	21	729	3310	4280	1640	1510
Sodium	mg/kg	200	TOX	1000	TOX	-		-		15	536	19	6	268	531	32.3	404	2350	3120	898	1030
Sodium Adsorption Ratio	none	-		-		5		**12**		-	-	-	-	**38.3**	**47.3**	11.3	**33.8**	**173**	**217**	-	-
Cyanide																					
Cyanide	mg/kg	-		-		-		-		< 0.02	< 0.02	< 0.02	< 0.02	0.07	<0.02	<0.02	<0.02	<0.02	<0.02	-	-
Thiocyanate and Cyanide	mg/kg	-		-		-		-		< 0.04	< 0.04	< 0.04	< 0.04	0.2	0.03	0.03	<0.02	<0.02	<0.02	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		-	-	-	-	-	-	-	-	-	-	6220	-
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	-	-	-	-	-	-	-	-	-	-	0.56	-
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		-	-	-	-	-	-	-	-	-	-	11.3	-
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		-	-	-	-	-	-	-	-	-	-	199	-
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	-	-	-	-	-	-	-	-	-	-	0.55	-
Bismuth	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	< 0.10	-
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		-	-	-	-	-	-	-	-	-	-	0.199	-
Calcium	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	1340	-
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		-	-	-	-	-	-	-	-	-	-	8	-
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	-	-	-	-	-	-	-	-	-	-	6.51	-
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		-	-	-	-	-	-	-	-	-	-	10.1	-
Iron	mg/kg	35000		150000		-		-		-	-	-	-	-	-	-	-	-	-	16300	-
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		-	-	-	-	-	-	-	-	-	-	10.6	-
Lithium	mg/kg	30	HH	450	HH	-		-		-	-	-	-	-	-	-	-	-	-	8.3	-
Magnesium	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	1300	-
Manganese	mg/kg	1500	DW	1500	DW	-		-		-	-	-	-	-	-	-	-	-	-	106	-
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		-	-	-	-	-	-	-	-	-	-	< 0.050	-
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	-	-	-	-	-	-	-	-	-	-	0.97	-
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		-	-	-	-	-	-	-	-	-	-	13.4	-
Phosphorus	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	501	-
Potassium	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	797	-
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		-	-	-	-	-	-	-	-	-	-	0.55	-
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	-	-	-	-	-	-	-	-	-	-	0.056	-
Sodium	mg/kg	200	TOX	1000	TOX	-		-		-	-	-	-	-	-	-	-	-	-	1250	-
Strontium	mg/kg	9500	HH	150000	HH	-		-		-	-	-	-	-	-	-	-	-	-	13.4	-
Thallium	mg/kg	2	HH	2	HH	1		**1**		-	-	-	-	-	-	-	-	-	-	0.091	-
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	-	-	-	-	-	-	-	-	-	-	0.26	-
Titanium	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	35	-
Uranium	mg/kg	30	DW	30	DW	23		**300**		-	-	-	-	-	-	-	-	-	-	0.85	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		-	-	-	-	-	-	-	-	-	-	21.5	-
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		-	-	-	-	-	-	-	-	-	-	80.1	-
Zirconium	mg/kg	15	HH	20	HH	-		-		-	-	-	-	-	-	-	-	-	-	1.55	-

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	TP16-02	TP16-02	TP16-03	TP16-03	TP16-03	TP16-04	TP16-04	TP16-05	TP16-06	TP16-06	TP16-07	TP16-08
Sample Control Number										02025-04	02025-06	02025-07	02025-08	02025-09	01129-01	01129-02	01129-03	01129-04	01129-05	01129-06	02028-01
Sample Date (Day-Month-Year)										6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16
Depth of Sample (mbgs)										0.5-0.5 m	2.5-2.5 m	0.5-0.5 m	0.5-0.5 m	1.5-1.5 m	0.5-0.5 m	1.65-1.65 m	0.5-0.5 m	0.5-0.5 m	0.5-0.5 m	0.5-0.5 m	0.5-0.5 m
QA/QC												FDA	FD					FDA	FD		
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		8.96	6.56	7.65	8.14	6.11	6.92	5.97	8.08	7.61	7.47	8.33	9.49
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		48.3	51.4	65.3	72	46.8	52.7	48.3	48	43.6	46.5	45.4	54.1
Chloride	mg/kg	100	DW	100	DW	-		**-**		237	1020	32	29.7	276	18.1	99.1	5.1	14.2	5.7	8.6	176
Sodium	mg/kg	200	TOX	1000	TOX	-		-		51.8	90.8	35.9	40.7	< 230	15.8	63.3	11.1	16	6.9	12.9	< 270
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		4570	6350	8890	9200	6200	8800	8050	9160	7980	7280	5940	5040
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.37	0.62	0.58	0.61	0.64	0.46	0.59	0.61	0.6	0.52	0.45	0.49
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		4.68	9.35	8.72	9.65	10.6	8.15	7.23	9.88	8.95	8.86	5.76	5.58
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		228	1210	471	474	358	866	**2420**	1420	1130	1200	1520	278
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	< 0.40	0.46	0.65	0.73	0.48	0.77	0.74	0.79	0.69	0.62	0.51	< 0.40
Bismuth	mg/kg	-		-		-		-		< 0.10	0.11	0.14	0.16	0.12	0.14	0.14	0.13	0.11	0.12	< 0.10	< 0.10
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.755	0.379	0.329	0.346	0.2	0.321	0.28	0.387	0.297	0.256	0.523	0.713
Calcium	mg/kg	-		-		-		-		61700	2830	2900	3160	2110	1840	1740	4190	2270	2020	41600	67000
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		10.1	6.7	12.6	14	8.8	13.3	8.4	13.5	11.3	10.5	9.2	11.7
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	3.98	8.39	10	9.22	6.19	9.07	7.99	11.3	9.99	9.78	6.31	4.49
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		10.5	12.7	17.2	19.5	13.5	16.5	10.9	16.4	15.5	14.7	9.2	12.1
Iron	mg/kg	35000		150000		-		-		14100	16000	18400	19500	16900	18100	15600	19700	18400	17300	13500	15100
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		5.97	11	12.4	13.4	11.3	11.9	17.7	12.3	11.2	11.1	8.19	7.76
Lithium	mg/kg	30	HH	450	HH	-		-		8.5	8.8	10.3	10.8	8.1	8.8	11.1	10.7	8.7	8.1	9.1	10.2
Magnesium	mg/kg	-		-		-		-		18600	1580	2100	2280	1680	2100	1800	2210	1640	1650	11600	20800
Manganese	mg/kg	1500	DW	1500	DW	-		-		570	139	213	210	128	222	104	238	203	211	322	540
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.050	0.085	0.066	0.061	0.06	0.052	0.066	0.068	0.057	0.054	< 0.050	< 0.050
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	1.72	1.11	1.24	1.35	1.2	1.12	0.64	1.27	1.21	1.07	1.38	1.79
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		14	20.5	21.6	22.5	15.4	19.7	22.4	34.1	24.9	24	17.2	16.6
Phosphorus	mg/kg	-		-		-		-		1130	546	547	549	540	430	377	642	501	461	888	1310
Potassium	mg/kg	-		-		-		-		860	1030	1050	1080	758	898	1190	1380	1000	836	988	1020
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	< 0.50	< 0.50	< 0.50	0.62	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.088	0.29	0.103	0.104	0.054	0.104	0.251	0.199	0.077	0.09	0.123	0.089
Sodium	mg/kg	200	TOX	1000	TOX	-		-		1930	198	1400	1890	1860	872	296	352	355	424	121	774
Strontium	mg/kg	9500	HH	150000	HH	-		-		57.1	41	19.2	20.6	15.1	20.7	39.7	35.3	24.7	23.4	45	65.7
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.145	0.133	0.135	0.144	0.098	0.144	0.171	0.161	0.139	0.133	0.137	0.137
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.21	0.34	0.42	0.44	0.31	0.38	0.55	0.39	0.32	0.33	0.29	0.26
Titanium	mg/kg	-		-		-		-		74.5	25.4	35.6	29.9	33.7	40.1	113	34.7	39.4	34	74.2	65.2
Uranium	mg/kg	30	DW	30	DW	23		**300**		0.864	0.655	0.929	1.01	0.945	1.02	1.19	0.995	1.02	0.993	0.973	0.97
Vanadium	mg/kg	100	DW	100	DW	130		**130**		23.4	20.2	27.6	28.2	21.9	26.6	30.1	31	27	24.3	24.5	26.7
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		45.5	121	163	139	96.4	79.8	124	128	102	96.7	70.3	54.9
Zirconium	mg/kg	15	HH	20	HH	-		-		1.94	2.75	3.07	3.52	2.12	2.83	3.26	2.89	2.69	2.46	1.69	1.72

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	TP16-08	TP16-11	TP16-11	TP16-12	TP16-12	TP16-12	TP16-13	TP16-13	TP16-14	TP16-14	TP16-15	TP16-18
Sample Control Number										02028-04	02028-07	02028-09	02028-10	02028-11	02028-12	02029-01	02029-02	02029-05	02029-07	TP16-15-S1	TP16-18-S1
Sample Date (Day-Month-Year)										7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	6-Nov-16	6-Nov-16
Depth of Sample (mbgs)										3.4-3.4 m	1-1 m	3-3 m	0.5-0.5 m	0.5-0.5 m	1.5-1.5 m	0.5-0.5 m	1.5-1.5 m	0.5-0.5 m	2.5-2.5 m	1-1.2 m	1-1.2 m
QA/QC													FDA	FD							
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		6.18	7.59	6.47	7.22	7.16	5.29	9.52	4.73	8.79	6.52	8.57	8.21
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		56.6	51.8	54.5	58.4	56.4	48.1	50.9	62.5	47.5	46.8	50.5	110
Chloride	mg/kg	100	DW	100	DW	-		**-**		4080	77.2	151	163	183	422	64	3130	1280	4090	65.2	117
Sodium	mg/kg	200	TOX	1000	TOX	-		-		2580	80.2	79.8	< 290	< 280	265	82.7	2270	959	2690	56.2	178
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		7210	9530	7570	8670	8650	7550	3830	11100	4650	5380	5370	11400
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.65	0.59	0.56	0.48	0.49	0.64	0.36	0.48	0.47	0.6	0.55	0.96
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		9.68	10.2	9.93	8.35	8.03	10.6	4.85	8.11	5.4	10.1	6.89	11.5
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		580	568	512	194	190	955	185	159	241	342	359	397
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	0.51	0.62	0.58	0.42	0.51	0.65	< 0.40	0.72	0.41	0.57	< 0.40	0.79
Bismuth	mg/kg	-		-		-		-		0.11	0.15	0.16	0.15	0.14	0.12	< 0.10	0.17	0.11	< 0.10	< 0.10	0.19
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.324	0.501	0.602	0.194	0.304	0.384	0.649	0.24	0.935	0.32	0.478	1.06
Calcium	mg/kg	-		-		-		-		5380	7920	2800	4620	7560	1880	72200	1330	60000	2190	32300	12700
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		10.9	14.6	12.4	12.2	12.8	10.4	9.6	18.7	10.7	8.4	10.1	18.8
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	7.71	8.03	10	5.82	6.06	8.58	3.95	6.37	4.55	8.9	4.63	8.75
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		15.3	16.9	19.3	13.4	15.2	16.3	8.74	18.3	10.5	10.7	11.9	22.2
Iron	mg/kg	35000		150000		-		-		17300	21500	20100	17000	17000	20000	13700	21100	13500	15600	13700	23000
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		11.3	13	12.1	11.1	10.9	11.4	5.06	11.8	6.01	9.61	10.4	21.1
Lithium	mg/kg	30	HH	450	HH	-		-		8.6	10.7	9.5	9	10.1	9.5	9.8	12.2	9.9	7.3	8.7	15.9
Magnesium	mg/kg	-		-		-		-		2820	3570	2180	2600	3780	1560	22400	2820	19300	1480	9800	3850
Manganese	mg/kg	1500	DW	1500	DW	-		-		193	262	282	127	177	219	434	148	511	184	345	567
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		0.063	0.076	0.065	< 0.050	< 0.050	0.066	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.059
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	1.37	1.45	1.21	1.28	1.18	1.44	1.49	1.16	1.86	1.2	1.63	3.19
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		20.2	22.4	27	13.5	14.9	24.1	11.5	17.7	14.6	15.9	15	25.2
Phosphorus	mg/kg	-		-		-		-		605	693	631	445	538	638	1330	391	1250	509	851	1350
Potassium	mg/kg	-		-		-		-		1080	1230	1150	865	882	1040	822	1050	1000	923	828	1700
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.71
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.123	0.173	0.216	0.085	0.08	0.111	0.059	0.071	0.132	0.079	0.078	0.324
Sodium	mg/kg	200	TOX	1000	TOX	-		-		3880	459	271	769	778	522	378	3870	2010	3890	< 100	820
Strontium	mg/kg	9500	HH	150000	HH	-		-		23.3	29.6	31.3	20.2	22.4	32	63.5	17.9	59.8	17.3	36.4	39.8
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.141	0.18	0.185	0.12	0.101	0.147	0.135	0.164	0.16	0.11	0.141	0.241
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.34	0.42	0.38	0.36	0.36	0.33	0.22	0.5	0.24	0.29	0.38	0.78
Titanium	mg/kg	-		-		-		-		39.2	54.8	45.3	37.6	33	27.2	73.3	53.6	60.9	38.9	33.6	31.2
Uranium	mg/kg	30	DW	30	DW	23		**300**		0.974	0.886	0.919	0.799	0.962	0.975	1.02	1.32	0.919	0.937	1.59	1.38
Vanadium	mg/kg	100	DW	100	DW	130		**130**		24.8	32	24.1	29.3	27.5	24.9	25.2	35.1	30.9	22.4	23.9	46.3
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		94.3	99.8	104	70.1	75.7	113	38.5	69.9	48.7	84.1	67.6	140
Zirconium	mg/kg	15	HH	20	HH	-		-		2.74	2.58	4.04	1.24	1.42	2.66	1.42	2.98	1.31	1.81	0.82	0.61

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	TP16-31	TP16-31	TP16-31	TP16-32	URS-BH03	URS-BH04	URS-BH04	URS-BH04	URS-BH05	URS-BH05	URS-BH06	URS-BH06
Sample Control Number										TP16-31-S1	TP16-31-S2	TP16-31-S2 FD	TP16-32-S1	URS BH03-3.3	URSBH04-0.3	URS BH04-0.7	URSBH04-1.8	URS BH05-0.3	URS BH05-0.8	URS BH06-0.4	URS BH06-0.8
Sample Date (Day-Month-Year)										7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05
Depth of Sample (mbgs)										0.8-0.9	1.8-1.9	1.8-1.9	0.8-0.9	3.2-3.4 m	0.2-0.4 m	0.6-0.8 m	1.7-1.9 m	0.2-0.4 m	0.7-0.9 m	0.3-0.5 m	0.7-0.9 m
QA/QC											FDA	FD					FDA				
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		8.89	6.3	6.38	8.27	7.03	-	-	6.54	-	7.65	7.21	-
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		75.7	69	68.3	-	-	55	46	37	20	20	34	29
Chloride	mg/kg	100	DW	100	DW	-		**-**		9.9	1410	1370	-	-	2228	1170	476	2640	3180	5508	3530
Sodium	mg/kg	200	TOX	1000	TOX	-		-		9.4	760	791	-	-	869	398	158	1640	<0.1	3288	<0.1
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	< 0.02	-	-	< 0.02	-	0.06	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	-	-	-	-	< 0.04	-	-	< 0.04	-	0.15	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	~~< 0.02~~	-	~~0.06~~	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		4900	7860	8620	4310	7760	-	-	7070	-	3830	5910	-
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.46	0.47	0.51	0.51	0.5	-	-	0.6	-	0.1	0.4	-
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		5.1	7.78	8.36	4.88	10.1	-	-	12	-	2	7.4	-
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		218	304	304	200	559	-	-	843	-	107	418	-
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	< 0.40	0.63	0.63	< 0.40	0.5	-	-	0.5	-	0.2	0.4	-
Bismuth	mg/kg	-		-		-		-		< 0.10	0.18	0.19	< 0.10	0.2	-	-	0.1	-	<0.1	<0.1	-
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.825	0.498	0.437	0.832	0.19	-	-	0.35	-	0.16	0.11	-
Calcium	mg/kg	-		-		-		-		52500	3410	3480	49500	5990	-	-	2730	-	14200	8570	-
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		10.5	15.6	16.7	15.8	13	-	-	11	-	11	9	-
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	4.64	9.98	9.27	4.75	8.4	-	-	11.6	-	2.4	6.1	-
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		10.1	21	21.7	15.8	17.9	-	-	18.9	-	4.2	11.7	-
Iron	mg/kg	35000		150000		-		-		13600	18300	19700	13300	24900	-	-	26400	-	8190	15400	-
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		5.78	11.6	11.9	5.73	11	-	-	12.4	-	4.7	8.6	-
Lithium	mg/kg	30	HH	450	HH	-		-		10.2	10.2	11.2	9.9	-	-	-	-	-	-	-	-
Magnesium	mg/kg	-		-		-		-		15700	2820	3080	15600	2770	-	-	1870	-	5170	3650	-
Manganese	mg/kg	1500	DW	1500	DW	-		-		443	383	322	486	242	-	-	247	-	152	143	-
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.050	< 0.050	0.05	< 0.050	0.08	-	-	0.08	-	< 0.05	< 0.05	-
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	2.22	1.26	1.31	2.4	1.6	-	-	1.7	-	1.4	1.4	-
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		17.1	34	34.5	17.6	22.5	-	-	29.2	-	8.3	14.1	-
Phosphorus	mg/kg	-		-		-		-		1390	559	543	1570	627	-	-	796	-	636	538	-
Potassium	mg/kg	-		-		-		-		800	1000	1150	747	989	-	-	1030	-	537	684	-
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.50	< 0.50	< 0.50	< 0.50	0.6	-	-	0.6	-	< 0.5	< 0.5	-
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.06	0.094	0.101	0.068	0.16	-	-	0.27	-	< 0.05	0.06	-
Sodium	mg/kg	200	TOX	1000	TOX	-		-		< 100	1470	1420	< 100	252	-	-	124	-	2630	3890	-
Strontium	mg/kg	9500	HH	150000	HH	-		-		55.6	30.6	31	55.8	26.5	-	-	35	-	18.1	16.8	-
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.196	0.242	0.221	0.18	0.18	-	-	0.17	-	0.06	0.1	-
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.27	0.58	0.57	0.44	0.4	-	-	0.4	-	0.2	0.3	-
Titanium	mg/kg	-		-		-		-		53.1	34.6	47.8	42	96	-	-	38	-	20	39	-
Uranium	mg/kg	30	DW	30	DW	23		**300**		1.02	0.867	0.901	1.07	-	-	-	-	-	-	-	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		32.4	25.3	27.9	30.8	26	-	-	26	-	13	20	-
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		53.1	73.4	78.4	54.6	98	-	-	140	-	35	80	-
Zirconium	mg/kg	15	HH	20	HH	-		-		1.15	5.39	5.11	1.41	6.9	-	-	6	-	4.6	2.9	-

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	URS-BH06	URS-BH07	URS-BH08	URS-BH09	URS-BH09	URS-BH09	URS-BH10	URS-BH12	URS-BH14	URS-BH14	URS-BH14	URS-BH14
Sample Control Number										URS BH06-1.4	URS BH07-0.3	URS BH08-0.2	URS BH 09-0.3	URSBH DUP4	URSBH 09- 1.5	URSBH 10 0.4	URS BH12-0.2	URSBH14-0.3	URSBH DUP6	URSBH 14-3.5	URSBH 14-4.3
Sample Date (Day-Month-Year)										23-Nov-05	23-Nov-05	23-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05
Depth of Sample (mbgs)										1.3-1.5 m	0.2-0.4 m	0.1-0.3 m	0.2-0.4 m	0.2-0.4 m	1.4-1.6 m	0.3-0.5 m	0.1-0.3 m	0.2-0.4 m	0.2-0.4 m	3.4-3.6 m	4.2-4.4 m
QA/QC													FDA	FD				FDA	FD		
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		-	-	5.94	6.11	6.44	6.51	5.48	6.17	5.83	5.74	7.76	7.84
Anions																					
Chloride (leachable)	mg/kg	-		-		-		**-**		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	**-**		**-**		**-**		**-**		41	25	-	-	-	-	-	-	-	-	-	-
Chloride	mg/kg	100	DW	100	DW	-		**-**		2900	250	-	-	-	-	-	-	-	-	-	-
Sodium	mg/kg	200	TOX	1000	TOX	-		-		1470	116	-	-	-	-	-	-	-	-	-	-
Sodium Adsorption Ratio	none	**-**		**-**		5		**12**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanide																					
Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	0.3	-	-	-	-	-	-	-	-	-	-
Thiocyanate and Cyanide	mg/kg	**-**		**-**		**-**		**-**		-	0.5	-	-	-	-	-	-	-	-	-	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	~~0.3~~	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		-	-	8150	8220	9290	6490	10300	7420	7270	6280	6270	5780
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	-	-	0.5	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.6	0.5
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		-	-	8.3	8.8	9.1	10	9.3	8.9	8.4	8.8	10.1	8.5
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		-	-	797	396	435	737	250	590	261	347	759	560
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	-	-	0.6	0.4	0.5	0.5	0.6	0.5	0.4	0.4	0.5	0.5
Bismuth	mg/kg	-		-		-		-		-	-	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.2	0.1
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		-	-	0.08	0.11	0.1	0.25	0.11	0.07	0.1	0.1	0.3	0.34
Calcium	mg/kg	-		-		-		-		-	-	1740	2030	1750	2450	389	1500	679	825	5240	4940
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		-	-	12	11	12	12	14	10	9	8	10	10
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	-	-	7.3	5.9	5.3	9	7.5	8.8	6.5	7	9.1	9.5
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		-	-	17.3	14.5	11.3	18.1	18.5	16.6	10.9	12	18.4	18.4
Iron	mg/kg	35000		150000		-		-		-	-	19100	18900	25700	20400	21200	18700	17300	18500	20100	20500
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		-	-	10.6	11.1	11.6	11.7	12.1	11.4	9.3	9.9	11.2	10.6
Lithium	mg/kg	30	HH	450	HH	-		-		-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/kg	-		-		-		-		-	-	1710	1650	1810	1720	1820	1870	1470	1420	2170	2470
Manganese	mg/kg	1500	DW	1500	DW	-		-		-	-	131	98.9	88.4	194	126	172	153	173	188	220
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		-	-	0.06	< 0.05	0.07	0.06	< 0.05	0.07	< 0.05	0.05	0.07	< 0.05
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	-	-	1.5	1.3	1.4	1.6	1.3	1.1	1	1.1	1.5	1.5
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		-	-	21.8	15	14.5	24	16.9	17.9	14.5	14.4	25.2	26.8
Phosphorus	mg/kg	-		-		-		-		-	-	622	418	445	681	417	504	463	505	716	639
Potassium	mg/kg	-		-		-		-		-	-	786	610	693	887	702	625	589	556	1050	894
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		-	-	0.6	0.6	0.6	< 0.5	< 0.5	< 0.5	0.5	0.5	0.7	0.5
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	-	-	0.07	0.09	0.13	0.2	0.09	0.07	0.07	0.07	0.28	0.25
Sodium	mg/kg	200	TOX	1000	TOX	-		-		-	-	210	284	271	220	<100	975	< 100	131	< 100	< 100
Strontium	mg/kg	9500	HH	150000	HH	-		-		-	-	25.8	13.7	12	28.4	14.2	17.8	11.3	12	34.3	31.1
Thallium	mg/kg	2	HH	2	HH	1		**1**		-	-	0.12	0.14	0.18	0.18	0.14	0.14	0.11	0.11	0.16	0.15
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	-	-	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3
Titanium	mg/kg	-		-		-		-		-	-	31	27	39	39	32	55	43	50	40	27
Uranium	mg/kg	30	DW	30	DW	23		**300**		-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		-	-	26	26	32	22	28	24	22	21	22	20
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		-	-	107	94	95	118	80	92	72	73	121	110
Zirconium	mg/kg	15	HH	20	HH	-		-		-	-	4.2	2.8	2.2	7	4.9	4.5	1.2	1.3	6.1	5.7

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	URS-BH15	URS-BH15	URS-BH17	URS-BH17	URS-BH18	UTP-A	UTP-A	UTP-B	UTP-B	UTP-B	UTP-B	UTP-F
Sample Control Number										URSBH 15-0.4	URSBH 15-1.7	URSBH 17-0.3	URSBH 17-2.4	URS BH 18-0.3	UTP-A 0.3	UTP-A 0.9	UTP-B 0.2	UTP-B 0.7	UTP-B 1.5	UTP-B 2.6	UTP-F 0.4
Sample Date (Day-Month-Year)										24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06
Depth of Sample (mbgs)										0.3-0.5 m	1.6-1.8 m	0.2-0.4 m	2.3-2.5 m	0.2-0.4 m	0.2-0.4 m	0.8-1 m	0.1-0.3 m	0.6-0.8 m	1.4-1.6 m	2.5-2.7 m	0.3-0.5 m
QA/QC																					
Lab Measurements																					
pH	pH units	-		-		6 to 8		**6 to 8**		9.45	7.72	5.63	7.2	-	8.4	7.96	7.48	9	-	-	9.39
Anions																					
Chloride (leachable)	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																					
Saturation	%	-		-		-		-		-	-	-	-	57	18	-	22	17	46	45	-
Chloride	mg/kg	100	DW	100	DW	-		-		-	-	-	-	2430	46	-	4020	2240	6750	12200	-
Sodium	mg/kg	200	TOX	1000	TOX	-		-		-	-	-	-	462	39.5	-	2700	1590	4890	9010	-
Sodium Adsorption Ratio	none	-		-		5		**12**		-	-	-	-	-	9.1	-	**108**	**138**	**211**	**229**	-
Cyanide																					
Cyanide	mg/kg	-		-		-		-		-	-	-	-	-	< 0.02	-	0.02	< 0.02	< 0.02	< 0.02	-
Thiocyanate and Cyanide	mg/kg	-		-		-		-		-	-	-	-	-	< 0.02	-	0.13	0.87	0.1	0.04	-
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminum	mg/kg	40000	HH	250000	HH	-		-		3890	7080	6760	5460	-	6310	7940	5780	4510	-	-	4280
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.3	0.3	0.6	0.6	-	0.5	0.6	0.4	0.4	-	-	0.4
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		4.1	4.1	9.4	10.1	-	7.3	9.8	5.3	4	-	-	5.3
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		216	**3490**	1010	771	-	437	618	260	148	-	-	204
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	0.3	0.4	0.6	0.5	-	0.5	0.7	0.4	0.3	-	-	0.3
Bismuth	mg/kg	-		-		-		-		<0.1	<0.1	0.1	0.1	-	<0.1	0.1	<0.1	<0.1	-	-	<0.1
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.42	< 0.05	0.12	0.26	-	0.51	0.25	0.54	0.45	-	-	0.61
Calcium	mg/kg	-		-		-		-		88500	1120	2270	2770	-	46300	10900	77900	95500	-	-	72600
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		11	8	12	8	-	10	11	10	10	-	-	9
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	4.2	4	8.1	9.1	-	6.7	8.3	4.8	4.5	-	-	4.9
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		11	6.1	19.4	15.7	-	13.8	17.5	10.9	12.9	-	-	10.2
Iron	mg/kg	35000		150000		-		-		14500	9660	21100	20200	-	18400	22400	14600	12700	-	-	12900
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		4.9	10.1	10.8	11	-	9.2	11.3	6.9	4.7	-	-	4.5
Lithium	mg/kg	30	HH	450	HH	-		-		-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/kg	-		-		-		-		27300	1360	1630	1610	-	12000	5230	25800	26000	-	-	25500
Manganese	mg/kg	1500	DW	1500	DW	-		-		685	44	161	184	-	417	259	492	339	-	-	882
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.05	< 0.05	0.06	0.06	-	0.05	0.08	< 0.05	< 0.05	-	-	< 0.05
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	2.8	0.8	1.7	1.2	-	1.9	1.7	1.7	1.8	-	-	1.7
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		16.5	14	25.5	23.1	-	20.9	24.3	16.4	18.3	-	-	17.2
Phosphorus	mg/kg	-		-		-		-		1070	349	737	707	-	1010	879	1180	1470	-	-	2000
Potassium	mg/kg	-		-		-		-		578	675	949	961	-	714	865	739	630	-	-	748
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		< 0.5	< 0.5	0.7	0.5	-	< 0.5	0.7	0.7	0.6	-	-	< 0.5
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.1	0.21	0.14	0.28	-	0.11	0.13	0.16	0.05	-	-	< 0.05
Sodium	mg/kg	200	TOX	1000	TOX	-		-		583	2530	1770	<100	-	353	351	7470	4030	-	-	1610
Strontium	mg/kg	9500	HH	150000	HH	-		-		71.2	11.8	31.1	33.6	-	48.9	28.7	58.8	75.9	-	-	60.2
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.13	0.09	0.14	0.15	-	0.17	0.15	0.14	0.2	-	-	0.2
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.2	0.4	0.5	0.3	-	0.5	0.6	0.4	0.4	-	-	0.4
Titanium	mg/kg	-		-		-		-		46	53	33	33	-	45	38	45	59	-	-	43
Uranium	mg/kg	30	DW	30	DW	23		**300**		-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		20	19	24	21	-	26	25	23	25	-	-	21
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		42	76	120	115	-	81	111	56	51	-	-	47
Zirconium	mg/kg	15	HH	20	HH	-		-		3.7	3.4	5.8	7.6	-	11.8	15.5	6.5	8	-	-	8.7

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B1 Results of Soil Analyses - Metals and Salt
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location																				
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		CCME Soil Industrial		UTP-G UTP-G 0.3	UTP-G UTP-G 0.7	UTP-G UTP-G 1.6	UTP-G UTP-G 2.3	UTP-G DUP 1	UTP-H UTP-H 0.1	UTP-I UTP-I 0.3	UTP-I UTP-I 0.9	UTP-I UTP-I 1.5	UTP-J UTP-J 0.2	UTP-K UTP-K 0.3	UTP-L DUP4	UTP-L UTP-L 0.3
Sample Date (Day-Month-Year)										2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06
Depth of Sample (mbgs)										0.2-0.4 m	0.6-0.8 m	1.5-1.7 m	2.3 m	2.3 m	0-0.2 m	0.2-0.4 m	0.8-1 m	1.4-1.6 m	0.1-0.3 m	0.2-0.4 m	0.2-0.4 m	0.2-0.4 m
QA/QC	Units		MCS		MCS		MCS		MCS													
Lab Measurements																						
pH	pH units	-		-		6 to 8		**6 to 8**		9.55	-	-	-	-	8.78	8.88	6.73	5.39	8.5	8.26	9.48	9
Anions																						
Chloride (leachable)	mg/kg	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium and Chloride, Saturated Paste Method																						
Saturation	%	-		-		-		-		14	51	59	33	37	18	14	-	-	14	-	-	17
Chloride	mg/kg	100	DW	100	DW	-		-		311	6940	1860	498	596	3	2	-	-	7	-	-	25
Sodium	mg/kg	200	TOX	1000	TOX	-		-		250	4580	420	76.6	80.2	7.3	6.5	-	-	11.6	-	-	59.3
Sodium Adsorption Ratio	none	-		-		5		**12**		**85.7**	**81.9**	5.5	2.4	2.1	1.4	2.2	-	-	4	-	-	**26.5**
Cyanide																						
Cyanide	mg/kg	-		-		-		-		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	<0.02	-	-	<0.02
Thiocyanate and Cyanide	mg/kg	-		-		-		-		<0.02	0.03	<0.02	<0.02	<0.02	0.03	<0.02	-	-	<0.02	-	-	0.05
Cyanide (WAD)	mg/kg	1.5	AW	1.5	AW	0.9		**8**		-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																						
Aluminum	mg/kg	40000	HH	250000	HH	-		-		4170	-	-	-	-	3800	3170	10500	10400	3970	6860	3860	3770
Antimony	mg/kg	20	EH	40	EH	20	I	**40**	I	0.3	-	-	-	-	0.3	0.2	0.7	0.5	0.4	0.4	0.3	0.4
Arsenic	mg/kg	10/15	DW/d	10/15	DW/d	12		**12**		4.2	-	-	-	-	3.5	3	7.8	8.3	4.4	8.2	3.9	4.6
Barium	mg/kg	350/600	DW/d	350/600	DW	500		**2000**		209	-	-	-	-	167	107	508	550	172	510	165	216
Beryllium	mg/kg	1-85	DW/HH	1-350	HH/EH	4	I	**8**	I	0.3	-	-	-	-	0.3	0.2	0.7	0.8	0.4	0.5	0.4	0.3
Bismuth	mg/kg	-		-		-		-		<0.1	-	-	-	-	<0.1	<0.01	0.2	0.2	<0.1	0.1	<0.1	<0.1
Cadmium	mg/kg	1-85	DW/HH	1-350	HH/EH	10		**22**		0.55	-	-	-	-	0.59	0.36	1.62	0.11	0.62	0.25	0.51	0.76
Calcium	mg/kg	-		-		-		-		90700	-	-	-	-	81400	88000	9020	1600	60400	18000	87100	80500
Chromium	mg/kg	60^{VI}, 100^{total}	V	60^{VI}, 250^{total}	V	64		**87**		9	-	-	-	-	8	8	14	14	8	9	9	9
Cobalt	mg/kg	25/30	DW/d	25/30	DW/d	50	I	**300**	I	4	-	-	-	-	3.7	3.6	6.9	9.7	4.1	6.5	3.9	4.4
Copper	mg/kg	70-150	AW/T/pH	70-300	AW/T/pH	63		**91**		12.4	-	-	-	-	7.9	7.5	22.2	21	9.2	12.6	9	10.7
Iron	mg/kg	35000		150000		-		-		13300	-	-	-	-	12700	10500	19600	22800	14500	18600	19500	16400
Lead	mg/kg	120	I	120-1000	DW/T/pH	140		**600**		4.7	-	-	-	-	4.3	3.5	17.6	12.2	5.6	9.2	4.3	4.2
Lithium	mg/kg	30	HH	450	HH	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-
Magnesium	mg/kg	-		-		-		-		28600	-	-	-	-	27100	28700	2880	2400	21100	6710	24700	25100
Manganese	mg/kg	1500	DW	1500	DW	-		-		703	-	-	-	-	722	353	426	251	600	248	551	1300
Mercury	mg/kg	10	INT	75	TOX	6.6		**50**		< 0.05	-	-	-	-	< 0.05	< 0.05	0.06	0.07	< 0.05	< 0.05	< 0.05	< 0.05
Molybdenum	mg/kg	15	DW	15	DW	10	I	**40**	I	1.9	-	-	-	-	1.4	1.1	2.4	1.4	1.7	1.3	1.8	2.7
Nickel	mg/kg	70-150	DW/pH/T	70-250	DW/pH/T	45		**89**		15.4	-	-	-	-	15	12.8	25.2	22.8	15.3	17.3	16.2	20.1
Phosphorus	mg/kg	-		-		-		-		1850	-	-	-	-	1510	1110	979	598	1470	901	1150	1420
Potassium	mg/kg	-		-		-		-		637	-	-	-	-	499	522	1170	851	600	703	542	637
Selenium	mg/kg	1	DW	1	DW	1		**2.9**		0.8	-	-	-	-	0.6	< 0.5	1	0.9	< 0.5	0.9	< 0.5	0.7
Silver	mg/kg	20	EH	40	EH	20	I	**40**	I	0.07	-	-	-	-	0.05	0.05	0.45	0.09	0.06	0.09	0.06	0.05
Sodium	mg/kg	200	TOX	1000	TOX	-		-		960	-	-	-	-	102	112	1010	1020	141	188	497	452
Strontium	mg/kg	9500	HH	150000	HH	-		-		68.2	-	-	-	-	58.4	58.2	24.9	22.2	49.2	26.8	58.9	64.7
Thallium	mg/kg	2	HH	2	HH	1		**1**		0.3	-	-	-	-	0.16	0.11	0.33	0.19	0.13	0.13	0.12	0.17
Tin	mg/kg	50	EH	300	EH	50	I	**300**	I	0.5	-	-	-	-	0.4	0.3	0.8	0.6	0.4	0.5	0.5	0.4
Titanium	mg/kg	-		-		-		-		43	-	-	-	-	60	61	47	32	43	39	57	48
Uranium	mg/kg	30	DW	30	DW	23		**300**		-	-	-	-	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	100	DW	100	DW	130		**130**		20	-	-	-	-	18	16	44	27	18	21	19	24
Zinc	mg/kg	150-450	DW/AW/T/pH	150-450	DW/AW/T/pH	200		**360**		41	-	-	-	-	39	34	94	99	48	92	42	48
Zirconium	mg/kg	15	HH	20	HH	-		-		9.4	-	-	-	-	9.4	8.8	8.7	14.5	7.1	6.1	10.8	9.4

Notes:
All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.
land (IL). CCME notes include: F = Free Cyanide refers to the sum of molecular HCN and the cyanide anion; I = Interim Guideline
Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW).
QA/QC = Quality Assurance, Quality Control
FDA = Field Duplicate Available; FD = Field Duplicate.
SCN = Sample Control Number; MCS = Most Conservative Standard
Italics = indicates that the detection limit exceeds one or more criteria.
* = CSR standard for sodium ion conservatively applied to total sodium concentrations
S = Schedule 10
pH = Standard is pH dependant; d = depth dependent; WAD = weak acid dissociable.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	AH16-01	AH16-01	AH16-02	AH16-02	AH16-03	AH16-03	AH16-04	AH16-05	AH16-05	AH16-06	AH16-07	AH16-08	BH10-04	BH10-05
Sample Control Number									AH16-01/S1	AH16-01/S2	AH16-02/S1	AH16-02/S2	AH16-03/S1	AH16-03/S2	AH16-04/S1	AH16-05/S1	AH16-05/S2	AH16-06/S1	AH16-07/S1	AH16-08/S1	21694-03	21694-10
Sample Date (Day-Month-Year)									5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	10-Oct-10	10-Oct-10
Depth of Sample (mbgs)									0.2-0.3 m	0.9-1 m	0.5-0.6 m	0.8-0.9 m	0.5-0.6 m	0.8-0.9 m	0.45-0.5 m	0.35-0.45 m	0.75-0.85 m	0.85-0.95 m	0.8-0.9 m	0.3-0.4 m	0.9-1.2 m	1.5-1.8 m
QA/QC																						
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		**0.012**	0.0058	< 0.0050	< 0.0050	< 0.0050	**0.013**	< 0.0050	< 0.0050	**0.0079**	< 0.0050	< 0.0050	< 0.0050	**0.0083**	**0.0238**
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		0.018	0.01	< 0.010	< 0.010	< 0.010	**0.026**	< 0.010	< 0.010	**0.033**	**0.037**	**0.023**	< 0.010	**0.229**	**0.805**
Styrene	5	EH	50	EH	5		**50**		< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.050	< 0.050
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		0.056	0.036	0.028	0.035	< 0.020	**0.09**	0.026	0.031	0.065	0.063	0.065	0.028	< 0.050	< 0.050
m,p-Xylenes	-		-		-		-		0.04	< 0.040	< 0.040	< 0.040	< 0.040	0.093	< 0.040	< 0.040	0.12	0.19	0.091	< 0.040	1.54	5.02
o-Xylene	-		-		-		-		< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	0.047	< 0.040	< 0.040	0.058	0.079	0.042	< 0.040	0.375	0.13
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		0.04	< 0.040	< 0.040	< 0.040	< 0.040	0.14	< 0.040	< 0.040	0.18	0.27	0.13	< 0.040	1.92	**5.15**
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20	< 0.20
VH (C6-C10)	-		-		-		-		< 10	< 10	< 10	< 10	18	< 10	< 10	< 10	< 10	< 10	< 10	< 10	-	-
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	< 10	< 10	< 10	18	< 10	< 10	< 10	< 10	< 10	< 10	< 10	-	-
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.0050	< 0.0050	< 0.0050	0.045	< 0.0050	< 0.0050	0.0076	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.20	-
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.060	-
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.0040	< 0.0040	< 0.0040	0.014	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.040	-
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.010	-
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.010	-
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.024	-
Benzo(g,h,i)perylene	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.018	-
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.010	-
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.005	-
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.010	-
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	**0.274**	-
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.010	-
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	< 0.010	0.012	< 0.010	**0.017**	< 0.010	**0.022**	**0.083**	< 0.010	< 0.010	**0.018**	< 0.010	**0.017**	**1.32**	-
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	0.012	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.029	< 0.010	0.041	< 0.010	0.019	0.011	**0.469**	-
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.032	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.010	-
2-methylnaphthalene	60	HH	950	HH	-		-		< 0.020	< 0.020	< 0.020	0.057	< 0.020	0.034	0.22	< 0.020	0.022	0.033	< 0.020	0.031	4.61	-
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		< 0.050	< 0.050	< 0.050	0.13	< 0.050	0.056	0.34	< 0.050	0.063	0.052	< 0.050	0.059	-	-
PAH, High Molecular Weight	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	-
PAH, Total	-		-		-		-		< 0.050	< 0.050	< 0.050	0.13	< 0.050	0.056	0.37	< 0.050	0.063	0.052	< 0.050	0.059	-	-
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	-	-
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	-	-
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	< 100	< 100	1900	< 100	< 100	970	< 100	< 100	< 100	100	< 100	1290	-
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	< 100	< 100	1900	< 100	< 100	970	< 100	< 100	< 100	100	< 100	1290	-
EPH (C19-C32)	1000 *		5000 *		-		-		240	< 100	< 100	< 100	< 100	< 100	580	< 100	< 100	< 100	350	970	< 200	-
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		240	< 100	< 100	< 100	< 100	< 100	580	< 100	< 100	< 100	350	970	< 200	-
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	< 10	18	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**191**	**181**
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	< 10	18	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**189**	**175**
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	39	< 10	< 10	**1700**	17	< 10	**520**	15	18	< 10	21	11	**503**	**615**
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	**502**	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	110	26	44	290	42	22	540	18	32	34	470	910	329	494
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	329	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	12	< 10	32	< 10	< 10	< 10	19	< 10	< 10	< 10	52	120	-	-
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location			BC CSR		CCME															
Sample Control Number	BC CSR Soil Low Density Residential	MCS	Soil Industrial	MCS	Soil Residential	MCS	**CCME Soil Industrial**	MCS	BH10-06 21695-03	BH10-07 21695-09	BH16-01 02022-01	BH16-01 02022-02	BH16-02 02022-05	BH16-02 02022-07	BH16-03 02022-09	BH16-03 02022-10	BH16-03 02022-11	BH16-03 02023-01	BH16-04 02023-03	BH16-04 02023-04	BH16-04 02023-06	BH16-05 02023-08
Sample Date (Day-Month-Year)									11-Oct-10	11-Oct-10	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16
Depth of Sample (mbgs)									0.9-1.1 m	0.7-0.9 m	0.3-0.61 m	1.21-1.52 m	0.3-0.61 m	1.82-2.12 m	0.15-0.45 m FDA	0.15-0.45 m FD	0.91-1.21 m	3.94-4.24 m	0.3-0.61 m	1.52-1.82 m	3.94-4.24 m	1.06-1.36 m
QA/QC																						
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		**0.132**	**0.109**	< 0.010	**0.022**	< 0.010	< 0.010	< 0.010	< 0.010	**0.023**	0.011	< 0.010	< 0.010	< 0.010	< 0.010
Styrene	5	EH	50	EH	5		**50**		< 0.050	< 0.050	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		< 0.050	< 0.050	**0.58**	**0.15**	**0.34**	**0.19**	**0.091**	< 0.020	**1.2**	**0.58**	0.063	< 0.020	0.021	**0.11**
m,p-Xylenes	-		-		-		-		1.25	0.205	0.074	0.075	0.083	0.061	0.097	0.052	0.14	0.079	0.05	< 0.040	0.052	0.062
o-Xylene	-		-		-		-		0.601	< 0.050	< 0.040	0.048	0.047	< 0.040	< 0.040	< 0.040	0.063	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		1.85	0.205	0.074	0.12	0.13	0.061	0.097	0.052	0.2	0.079	0.05	< 0.040	0.052	0.062
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**		< 0.20	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.14	< 0.10	0.1	0.11	< 0.10	< 0.10	< 0.10
VH (C6-C10)	-		-		-		-		-	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		-	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	-	< 0.30	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Acenaphthylene	-		-		320	AW	**320**	AW	-	< 0.090	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	-	< 0.080	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	-	< 0.010	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	-	< 0.010	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	0.018	0.024	0.028	< 0.020	0.03	< 0.020	< 0.020	< 0.020	< 0.020	0.026	< 0.020	0.024	0.023
Benzo(g,h,i)perylene	-		-		-		-		-	0.013	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	< 0.010	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Chrysene	40	HH	900	HH	6.2	EI	-		-	< 0.010	< 0.020	< 0.020	< 0.020	0.024	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.02	0.024	< 0.020
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	-	< 0.0050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	-	< 0.010	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	-	**0.734**	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	-	< 0.010	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	-	< 1.0	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	**0.037**	< 0.010	< 0.010	< 0.010	**0.036**	< 0.010
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	-	**0.729**	0.019	0.022	0.019	0.02	0.01	< 0.010	**0.058**	< 0.010	0.021	0.021	**0.049**	0.022
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
2-methylnaphthalene	60	HH	950	HH	-		-		-	4.43	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.026	< 0.020	< 0.020	< 0.020	0.044	< 0.020
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.12	< 0.050	< 0.050	< 0.050	0.13	< 0.050
PAH, High Molecular Weight	-		-		-		-		-	-	< 0.050	< 0.050	< 0.050	0.054	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
PAH, Total	-		-		-		-		-	-	< 0.050	0.05	< 0.050	0.073	< 0.050	< 0.050	0.12	< 0.050	< 0.050	< 0.050	0.18	< 0.050
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	-	-	0.042	0.043	0.041	0.043	0.041	0.041	0.041	0.041	0.042	0.041	0.042	0.042
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	-	-	0.39	0.42	0.31	0.44	0.31	0.31	0.31	0.31	0.41	0.31	0.4	0.39
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		-	3260	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		-	3260	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		-	< 200	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		-	< 200	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	75	**208**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	73	**207**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	**496**	**911**	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	**911**	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	293	511	27	23	45	21	65	44	37	30	46	22	37	19
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	510	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	-	-	< 10	< 10	22	< 10	14	14	< 10	< 10	10	< 10	< 10	< 10
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location								BH16-05	BH16-06	BH16-06	BH16-07	BH16-07	BH16-08	BH16-08	BH16-09	BH16-09	BH16-10	BH16-10	BH16-10	BH16-11	BH16-11
Sample Control Number	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	MCS	02023-11	02021-01	02021-03	02021-04	02021-06	02021-07	02021-09	02021-10	02021-11	02026-01	02026-02	02026-03	02026-04	02026-06
Sample Date (Day-Month-Year)									6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16
Depth of Sample (mbgs)									3.03-3.18 m	0.3-0.61 m	2.12-2.42 m	0.15-0.45 m	2.27-2.58 m	0.05-0.35 m	1.82-2.12 m	0.15-0.45 m	1.06-1.36 m	0-0.3 m	0.9-1.3 m FDA	0.9-1.3 m FD	0.16-0.46 m	2.12-2.42 m
QA/QC																						
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.010	< 0.0050
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		< 0.010	**0.03**	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.020	< 0.010
Styrene	5	EH	50	EH	5		**50**		< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.060	< 0.030
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		0.052	**3.5**	< 0.020	**0.12**	0.031	**0.095**	**0.31**	0.077	**0.11**	**0.19**	**1.5**	**0.48**	**3.5**	< 0.020
m,p-Xylenes	-		-		-		-		< 0.040	0.21	< 0.040	< 0.040	< 0.040	< 0.040	0.055	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
o-Xylene	-		-		-		-		< 0.040	0.087	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.080	< 0.040
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.040	0.3	< 0.040	< 0.040	< 0.040	< 0.040	0.055	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20	< 0.10
VH (C6-C10)	-		-		-		-		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.031	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	0.018	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	0.022	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	0.12	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.025	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(g,h,i)perylene	-		-		-		-		0.1	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Chrysene	40	HH	900	HH	6.2	EI	-		0.063	< 0.020	0.023	0.04	< 0.020	0.029	< 0.020	0.025	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	0.037	< 0.020	< 0.020	< 0.020	< 0.020	0.023	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.029	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	**0.036**	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	**0.21**	0.013	0.03	**0.077**	0.02	**0.1**	0.013	0.026	0.019	< 0.010	0.013	< 0.010	0.011	< 0.010
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	0.041	< 0.020	< 0.020	< 0.020	< 0.020	0.12	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.026	< 0.020	< 0.020
2-methylnaphthalene	60	HH	950	HH	-		-		0.11	< 0.020	< 0.020	< 0.020	< 0.020	0.026	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		0.35	< 0.050	< 0.050	0.077	< 0.050	0.21	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
PAH, High Molecular Weight	-		-		-		-		0.38	< 0.050	< 0.050	< 0.050	< 0.050	0.17	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
PAH, Total	-		-		-		-		0.73	< 0.050	0.052	0.12	< 0.050	0.38	< 0.050	0.076	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	0.065	0.041	0.041	0.041	0.041	0.041	0.041	0.043	0.041	0.041	0.041	0.041	0.041	0.041
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	1	0.31	0.31	0.32	0.31	0.32	0.31	0.41	0.31	0.31	0.31	0.31	0.31	0.31
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	< 100	< 100	< 100	< 100	230	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	< 100	< 100	< 100	< 100	230	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	< 100	< 100	< 100	< 100	330	< 100	< 100	< 100	< 100	< 100	160	150	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	< 100	< 100	< 100	< 100	330	< 100	< 100	< 100	< 100	< 100	160	150	< 100
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	14	< 10	< 10	< 10	< 10	76	18	< 10	< 10	< 10	15	< 10	12	< 10
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	50	36	15	38	13	620	74	22	17	60	110	220	230	26
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 10	18	< 10	< 10	< 10	150	23	11	< 10	20	43	29	98	21
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR		BC CSR		CCME		CCME Soil		BH16-12	BH16-12	BH16-13	BH16-13	BH16-13	BH16-14	BH16-14	BH16-15	BH16-15	BH16-15	BH16-15	BH16-16	BH16-16	BH16-17
Sample Control Number									02026-07	02026-10	01132-02	01132-03	01132-06	01132-08	01132-11	01133-01	01133-01	01133-02	01133-04	01133-05	01133-07	01133-08
Sample Date (Day-Month-Year)	Soil		Soil		Soil		Industrial		9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16
Depth of Sample (mbgs)	Low Density		Industrial		Residential				0.3-0.6 m	2.72-3.03 m	0.9-1.2 m	0.9-1.2 m	4.5-4.8 m	0-0.3 m	3.63-3.9 m	0-0.3 m	0-0.3 m	0.91-1.21 m	4.85-5.15 m	0-0.3 m	2.27-2.58 m	0.15-0.45 m
QA/QC	Residential	MCS		MCS		MCS		MCS														
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.0050	< 0.0050	< 0.0050	**0.013**	< 0.0050	< 0.0050	0.0063	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		< 0.010	< 0.010	< 0.010	0.015	< 0.010	< 0.010	< 0.010	< 0.010	-	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Styrene	5	EH	50	EH	5		**50**		< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	-	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		**1.1**	< 0.020	0.022	0.044	< 0.020	< 0.020	**0.1**	**0.48**	-	**1.1**	**1.5**	**0.17**	0.056	**0.24**
m,p-Xylenes	-		-		-		-		< 0.040	< 0.040	< 0.040	0.057	< 0.040	< 0.040	< 0.040	< 0.040	-	< 0.040	0.06	< 0.040	< 0.040	< 0.040
o-Xylene	-		-		-		-		< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	-	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.040	< 0.040	< 0.040	0.057	< 0.040	< 0.040	< 0.040	< 0.040	-	< 0.040	0.06	< 0.040	< 0.040	< 0.040
Methyl tert-Butyl Ether	800	HH	3500	HH	-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
VH (C6-C10)	-		-		-		-		< 10	< 10	< 10	17	12	43	< 10	< 10	-	< 10	< 10	< 10	< 10	< 10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	< 10	< 10	16	12	43	< 10	< 10	-	< 10	< 10	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	**0.39**	0.2	< 0.0050	0.0082	-	< 0.0050	< 0.0050	< 0.0050	0.16	< 0.0050
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.12	< 0.0050	< 0.0050	0.0076	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.0040	< 0.0040	< 0.0040	< 0.0040	0.038	0.037	< 0.0040	< 0.0040	-	< 0.0040	< 0.0040	< 0.0040	0.045	< 0.0040
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	0.026	< 0.020
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	0.023	0.022	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	0.035	< 0.020	0.034	< 0.020
Benzo(g,h,i)perylene	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.020	0.022	< 0.020	< 0.020	< 0.020	0.021	< 0.020	< 0.020	-	0.023	0.037	< 0.020	0.043	< 0.020
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.063	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	0.11	< 0.020
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.020	< 0.020	0.026	< 0.020	**0.84**	**0.48**	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	0.098	< 0.020
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	< 0.010	< 0.010	< 0.010	< 0.010	**2.1**	**0.077**	< 0.010	< 0.010	-	< 0.010	**0.038**	< 0.010	**0.91**	< 0.010
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	0.013	0.024	**0.057**	**0.053**	**1.4**	**0.56**	< 0.010	0.024	-	0.019	**0.081**	0.019	**0.23**	0.015
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.020	< 0.020	< 0.020	< 0.020	0.071	0.31	< 0.020	0.024	-	< 0.020	0.025	< 0.020	0.075	< 0.020
2-methylnaphthalene	60	HH	950	HH	-		-		< 0.020	< 0.020	0.065	0.036	8.6	1.1	0.025	0.042	-	0.027	0.084	< 0.020	0.2	< 0.020
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		< 0.050	< 0.050	0.15	0.089	14	2.6	< 0.050	0.081	-	< 0.050	0.2	< 0.050	1.6	< 0.050
PAH, High Molecular Weight	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	0.071	0.39	< 0.050	< 0.050	-	< 0.050	0.097	< 0.050	0.29	< 0.050
PAH, Total	-		-		-		-		< 0.050	0.07	0.17	0.089	14	3	< 0.050	0.1	-	0.069	0.3	< 0.050	1.9	< 0.050
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	0.041	0.042	0.042	0.041	0.041	0.041	0.041	0.041	-	0.041	0.044	0.041	0.045	0.041
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	0.31	0.4	0.38	0.31	0.31	0.31	0.31	0.31	-	0.31	0.48	0.31	0.53	0.31
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	< 100	600	480	2600	4800	< 100	-	390	330	< 100	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	< 100	600	480	2600	4800	< 100	390	-	330	< 100	< 100	< 100	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	< 100	< 100	< 100	330	2400	< 100	-	520	390	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	< 100	< 100	< 100	330	2400	< 100	520	-	390	< 100	< 100	< 100	< 100
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	18	13	47	< 10	< 10	-	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	18	13	47	< 10	< 10	-	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	< 10	< 10	**450**	**370**	**2100**	**3400**	< 10	-	120	140	19	47	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	40	41	260	210	820	**4100**	18	-	1100	720	96	110	49	26
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	22	13	< 10	< 10	90	740	< 10	-	44	150	32	25	15	< 10
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location			BH16-17	MW09-03	MW09-03	MW09-04	MW09-05	MW10-01S	MW10-02	MW10-03	MW16-02	MW16-02	MW16-05	MW16-05	MW16-06	MW16-06
Sample Control Number	BC CSR Soil Low Density Residential	MCS	01133-09	09-020143-09	09-020143-10	09-020144-01	09-020144-04	24418-01	24418-04	24419-02	MW16-02/SA2	MW16-02/SA3	MW16-05/SA2	MW16-05/SA4	MW16-06/SA4	MW16-06/SA4 (FD)
Sample Date (Day-Month-Year)			9-Sep-16	6-Oct-09	6-Oct-09	7-Oct-09	8-Oct-09	20-Sep-10	22-Sep-10	27-Sep-10	1-Sep-16	1-Sep-16	3-Sep-16	3-Sep-16	4-Sep-16	4-Sep-16
Depth of Sample (mbgs)			1.21-1.52 m	1.5-2 m	1.5-2 m	1.8-2.1 m	1.2-1.5 m	0.8-1.1 m	1.5-1.8m	1.5-1.8m	0.99-1.32 m	1.97-2.3 m	1.15-1.48 m	3.78-4.11 m	2.8-3.13 m	2.8-3.13 m
QA/QC				FDA	FD										FDA	FD
Volatile Petroleum Hydrocarbons																
Benzene	0.03 DW		< 0.0050	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.0050	< 0.0050	< 0.010	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	10 DW		< 0.010	< 0.050	< 0.050	< 0.050	< 0.050	< 0.015	< 0.015	< 0.015	< 0.010	< 0.010	< 0.020	**0.099**	< 0.010	< 0.010
Styrene	5 EH		< 0.030	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.030	< 0.030	< 0.060	< 0.030	< 0.030	< 0.030
Toluene	0.3 AW		0.064	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.020	< 0.020	0.051	0.04	< 0.020	< 0.020
m,p-Xylenes	-		< 0.040	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.05	< 0.040	< 0.040	0.22	< 0.040	< 0.040
o-Xylene	-		< 0.040	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.040	< 0.040	0.14	0.089	< 0.040	< 0.040
Xylenes, Total	4.5 DW		< 0.040	< 0.10	< 0.10	< 0.10	< 0.10	< 0.071	< 0.071	< 0.071	0.05	< 0.040	0.14	0.31	< 0.040	< 0.040
Methyl tert-Butyl Ether	800 HH		< 0.10	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.10	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10
VH (C6-C10)	-		< 10	-	-	-	-	-	-	-	< 10	< 10	< 20	120	< 10	< 10
VPH (C6-C10)	200 EH/HH		< 10	-	-	-	-	-	-	-	< 10	< 10	< 20	120	< 10	< 10
Total Polychlorinated Biphenyls	1.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																
Acenaphthene	950 HH		< 0.0050	-	-	-	-	-	-	-	< 0.0050	< 0.0050	< 0.0050	0.073	< 0.0050	< 0.0050
Acenaphthylene	-		< 0.0050	-	-	-	-	-	-	-	< 0.0050	< 0.0050	< 0.0050	< 0.023	< 0.0050	< 0.0050
Anthracene	2.5 T		< 0.0040	-	-	-	-	-	-	-	< 0.0040	< 0.0040	< 0.0040	< 0.022	< 0.0040	< 0.0040
Benzo(a)anthracene	1 EH		< 0.020	-	-	-	-	-	-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(a)pyrene	5 INT		< 0.020	-	-	-	-	-	-	-	0.022	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(b)fluoranthene	1 EH		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1 EH		0.021	-	-	-	-	-	-	-	0.035	< 0.020	0.022	< 0.020	< 0.020	< 0.020
Benzo(g,h,i)perylene	-		< 0.050	-	-	-	-	-	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(k)fluoranthene	1 EH		< 0.020	-	-	-	-	-	-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Chrysene	40 HH		< 0.020	-	-	-	-	-	-	-	0.05	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Dibenzo(a,h)anthracene	1 EH		< 0.050	-	-	-	-	-	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Fluoranthene	50 T		< 0.020	-	-	-	-	-	-	-	0.023	< 0.020	< 0.020	0.027	< 0.020	< 0.020
Fluorene	600 HH		< 0.020	-	-	-	-	-	-	-	< 0.020	< 0.020	< 0.020	0.17	< 0.020	< 0.020
Indeno(1,2,3-c,d)pyrene	1 EH		< 0.050	-	-	-	-	-	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Naphthalene	0.6 TOX		< 0.010	-	-	-	-	-	-	-	0.013	< 0.010	< 0.010	**1.1**	< 0.010	< 0.010
Phenanthrene	5 EH		0.019	-	-	-	-	-	-	-	0.034	0.015	0.016	**0.32**	< 0.010	< 0.010
Pyrene	10 EH		< 0.020	-	-	-	-	-	-	-	0.073	< 0.020	< 0.020	0.05	< 0.020	< 0.020
2-methylnaphthalene	60 HH		< 0.020	-	-	-	-	-	-	-	0.03	< 0.020	< 0.020	0.15	< 0.020	< 0.020
Total PAH and B(a)P Calculation																
PAH, Low Molecular Weight	-		< 0.050	-	-	-	-	-	-	-	0.076	< 0.020	< 0.020	1.8	< 0.020	< 0.020
PAH, High Molecular Weight	-		< 0.050	-	-	-	-	-	-	-	0.2	< 0.050	< 0.050	0.077	< 0.050	< 0.050
PAH, Total	-		< 0.050	-	-	-	-	-	-	-	0.28	< 0.050	< 0.050	1.9	< 0.050	< 0.050
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		0.042	-	-	-	-	-	-	-	0.055	0.041	0.042	0.041	0.041	0.041
Index of Additive Cancer Risk Calc.																
Index of Additive Cancer Risk (IACR)	-		0.38	-	-	-	-	-	-	-	0.51	0.31	0.39	0.31	0.31	0.31
Extractable Petroleum Hydrocarbons																
EPH (C10-C19)	1000 *		< 100	-	-	-	-	-	-	-	120	< 100	< 100	600	< 100	< 100
LEPH (C10-C19) Less PAHs	1000 EH/HH		< 100	-	-	-	-	-	-	-	120	< 100	< 100	600	< 100	< 100
EPH (C19-C32)	1000 *		< 100	-	-	-	-	-	-	-	570	< 100	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000 EH/HH		< 100	-	-	-	-	-	-	-	570	< 100	< 100	< 100	< 100	< 100
CCME Hydrocarbon Fractions																
Petroleum Hydrocarbons - F1 (C6-C10)	200 * G		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	120	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 * G		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 20	120	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 * G		< 10	< 30	< 30	< 30	< 30	< 20	< 20	< 20	68	< 10	< 10	**550**	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 * G		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 * G		28	< 50	< 50	203	< 50	< 20	< 20	< 20	960	38	180	230	18	17
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 * G		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		< 10	-	-	-	-	-	-	-	1000	18	230	< 10	< 10	< 10
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	MCS
Volatile Petroleum Hydrocarbons						
Benzene	0.03	DW	0.0068		**0.0068**	
Ethylbenzene	10	DW	0.018		**0.018**	
Styrene	50	EH	5		**50**	
Toluene	0.3	AW	0.08		**0.08**	
m,p-Xylenes	-		-		-	
o-Xylene	-		-		-	
Xylenes, Total	4.5	DW	2.4		**2.4**	
Methyl tert-Butyl Ether	3500	HH	-		**-**	
VH (C6-C10)	-		-		-	
VPH (C6-C10)	200	EH/HH	-		-	
Total Polychlorinated Biphenyls	35		1.3		**33**	
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	15000	HH	0.28	AW	**0.28**	AW
Acenaphthylene	-		320	AW	**320**	AW
Anthracene	30	T	2.5	SC	**32**	SC
Benzo(a)anthracene	10	EH	1	Int	**10**	Int
Benzo(a)pyrene	50	INT	0.6	EI	**1.4**	Int
Benzo(b)fluoranthene	10	EH	1	Int	**10**	Int
Benzo(b,j) fluoranthene	10	EH	1	Int	**10**	Int
Benzo(g,h,i)perylene	-		-		-	
Benzo(k)fluoranthene	10	EH	1	Int	**10**	Int
Chrysene	900	HH	6.2	EI	-	
Dibenzo(a,h)anthracene	10	EH	1	Int	**10**	Int
Fluoranthene	200	T	15.4	EI	**180**	SC
Fluorene	9500	HH	0.25	AW	**0.25**	AW
Indeno(1,2,3-c,d)pyrene	10	EH	1	Int	**10**	Int
Naphthalene	20	TOX	0.013	AW	**0.013**	AW
Phenanthrene	50	EH	0.046	AW	**0.046**	AW
Pyrene	100	EH	7.7	EI/R	**100**	Int
2-methylnaphthalene	950	HH	-		-	
Total PAH and B(a)P Calculation						
PAH, Low Molecular Weight	-		-		-	
PAH, High Molecular Weight	-		-		-	
PAH, Total	-		-		-	
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		0.60	Int	**0.60**	Int
Index of Additive Cancer Risk Calc.						
Index of Additive Cancer Risk (IACR)	-		1	PW	**1**	PW
Extractable Petroleum Hydrocarbons						
EPH (C10-C19)	2000 *		-		-	
LEPH (C10-C19) Less PAHs	2000	EH/HH	-		-	
EPH (C19-C32)	5000 *		-		-	
HEPH (C19-C32) Less PAHs	5000	EH/HH	-		-	
CCME Hydrocarbon Fractions						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	G	30	C	**170**	F/P
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	G	30	C	**170**	F/P
Petroleum Hydrocarbons - F2 (C10-C16)	2000 *	G	150		**230**	F/P
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	2000 *	G	150		**230**	F/P
Petroleum Hydrocarbons - F3 (C16-C34)	5000 *	G	300	C	**1700**	C
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	5000 *	G	300	C	**1700**	C
Petroleum Hydrocarbons - F4 (C34-C50)	-		2800	C	**3300**	C
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-	

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location									MW16-06	MW16-07	MW16-07	MW16-08	MW16-08	MW16-08	MW16-08	SB-BH-02	SB-BH-03	SB-BH-04	SB-BH-05	SB-BH-06	SB-BH-07	SB-BH-07
Sample Control Number	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	MCS	MW16-06/SA5	MW16-07/SA3	MW16-07/SA5	MW16-08/SA2	MW16-08/SA2	MW16-08/SA4	MW16-08/SA4 (FD)	SBBH-02-02	SBBH-03-01	SBBH-04-01	SBBH-05-01	SBBH-06-01	SBBH-07-01	SBBH-07-03
Sample Date (Day-Month-Year)									4-Sep-16	4-Sep-16	4-Sep-16	5-Sep-16	5-Sep-16	5-Sep-16	5-Sep-16	1-Feb-03	1-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03
Depth of Sample (mbgs)									3.95-4.28 m	2.63-2.96 m	4.93-5.39 m	0.82-1.15 m	0.82-1.15 m	1.97-2.3 m	1.97-2.3 m	2.7-3 m	1.2-1.5 m	0.9-1.2 m	1.2-1.5 m	1.5-1.8 m	1.2-1.5 m	3.3-3.4 m
QA/QC														FDA	FD							
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.0050	< 0.0050	< 0.010	-	< 0.0050	**0.025**	**0.02**	-	-	-	-	-	-	< 0.2
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		< 0.010	< 0.010	< 0.020	-	< 0.010	**0.72**	**0.33**	-	-	-	-	-	-	< 0.2
Styrene	5	EH	50	EH	5		**50**		< 0.030	< 0.030	< 0.060	-	< 0.030	< 0.030	< 0.030	-	-	-	-	-	-	< 0.2
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		< 0.020	< 0.020	**0.23**	-	< 0.020	**0.091**	0.059	-	-	-	-	-	-	< 0.2
m,p-Xylenes	-		-		-		-		< 0.040	< 0.040	< 0.040	-	< 0.040	1.8	0.92	-	-	-	-	-	-	< 0.2
o-Xylene	-		-		-		-		< 0.040	< 0.040	< 0.080	-	< 0.040	1.5	0.77	-	-	-	-	-	-	< 0.2
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.040	< 0.040	< 0.040	-	< 0.040	**3.3**	1.7	-	-	-	-	-	-	< 0.4
Methyl tert-Butyl Ether	800	HH	3500	HH	-		-		< 0.10	< 0.10	< 0.20	-	< 0.10	< 0.10	< 0.10	-	-	-	-	-	-	-
VH (C6-C10)	-		-		-		-		< 10	< 10	< 20	-	11	60	33	-	-	-	-	-	-	-
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	< 10	< 20	11	-	56	31	-	-	-	-	-	-	-
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.05
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.0050	0.027	< 0.0050	0.27	-	0.015	0.0074	< 0.04	**2.96**	**52**	< 0.04	< 0.04	< 0.04	-
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.0050	0.0073	< 0.0050	0.021	-	< 0.0050	< 0.0050	< 0.05	0.29	0.91	< 0.05	< 0.05	< 0.05	-
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.0040	< 0.0040	< 0.0040	0.022	-	< 0.0040	< 0.0040	< 0.05	1.42	**36.6**	< 0.05	< 0.05	< 0.05	-
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	0.054	-	< 0.020	< 0.020	< 0.05	1.35	**26.2**	< 0.05	< 0.05	< 0.05	-
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.020	0.021	< 0.020	0.076	-	< 0.020	< 0.020	< 0.05	0.69	**19.3**	< 0.05	< 0.05	< 0.05	-
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	< 0.05	1.17	**33**	< 0.05	< 0.05	< 0.05	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	0.046	< 0.020	0.14	-	< 0.020	< 0.020	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	-		-		-		-		< 0.050	< 0.050	< 0.050	0.071	-	< 0.050	< 0.050	< 0.05	0.32	8.28	< 0.05	0.06	< 0.05	-
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	0.028	-	< 0.020	< 0.020	< 0.05	0.48	**10.5**	< 0.05	< 0.05	< 0.05	-
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.020	0.03	< 0.020	0.32	-	0.023	< 0.020	< 0.05	2.27	32.3	< 0.05	< 0.05	< 0.05	-
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.05	0.09	2.46	< 0.05	< 0.05	< 0.05	-
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.020	< 0.020	< 0.020	0.12	-	< 0.020	< 0.020	< 0.05	8.64	90.1	< 0.05	< 0.05	< 0.05	-
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.020	< 0.020	< 0.020	0.061	-	0.022	< 0.020	< 0.05	**2.92**	**41**	< 0.05	< 0.05	< 0.05	-
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.05	0.41	**10.5**	< 0.05	< 0.05	< 0.05	-
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	< 0.010	< 0.010	0.011	< 0.010	-	**0.22**	**0.18**	< 0.05	**9.96**	**96.3**	**0.07**	< 0.05	< 0.05	-
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	0.01	0.013	0.03	**0.15**	-	0.037	0.024	< 0.05	**11.1**	**141**	**0.06**	**0.06**	< 0.05	-
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.020	0.083	< 0.020	0.24	-	< 0.020	< 0.020	< 0.05	5.73	68.1	< 0.05	< 0.05	< 0.05	-
2-methylnaphthalene	60	HH	950	HH	-		-		< 0.020	0.021	< 0.020	0.04	-	0.42	0.31	-	-	-	-	-	-	-
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		< 0.020	0.068	< 0.050	0.56	-	0.72	0.52	-	-	-	-	-	-	-
PAH, High Molecular Weight	-		-		-		-		< 0.050	0.18	< 0.050	1.1	-	< 0.050	< 0.050	-	-	-	-	-	-	-
PAH, Total	-		-		-		-		< 0.050	0.25	< 0.050	1.6	-	0.74	0.52	-	-	-	-	-	-	-
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	0.041	0.056	0.041	0.13	-	0.041	0.041	-	-	-	-	-	-	-
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	0.31	0.57	0.31	**1.7**	-	0.31	0.31	-	-	-	-	-	-	-
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	700	< 100	2200	-	320	180	< 200	336	1510	< 200	< 200	< 200	-
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	700	< 100	2200	-	320	180	< 200	315	1270	< 200	< 200	< 200	-
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	270	< 100	5400	-	190	140	< 200	542	2090	< 200	< 200	266	-
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	270	< 100	5400	-	190	140	< 200	532	1920	< 200	< 200	266	-
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	G	200 *	G	30	C	**170**	F/P	< 10	< 10	< 20	-	12	63	39	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	G	200 *	G	30	C	**170**	F/P	< 10	< 10	< 20	12	-	59	37	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	G	2000 *	G	150		**230**	F/P	< 10	**320**	< 10	**1000**	-	**280**	150	33	103	**792**	< 20	26	30	-
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	G	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	33	93	**696**	<20	26	30	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	G	5000 *	G	300	C	**1700**	C	36	700	44	**6300**	-	320	220	221	918	**3070**	101	128	536	-
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	G	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	221	888	**2670**	101	128	536	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	12	38	< 10	2400	-	110	72	102	406	829	74	77	334	-
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	1150	1570	-	-	<500	-

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
ppm = parts per million; m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.
Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.
High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	MCS	SB-BH-07	SB-BH-08	SB-BH-08	SB-BH-10	SB-BH-11	SB-BH-12	SB-BH-13	SB-BH-14	SB-BH-15	SB-BH-16	SB-BH-17	SB-BH-18	SB-BH-19	SS10
Sample Control Number									SBBH-07-04	SBBH-08-01	SBBH-08-02	SBBH-10-01	SBBH-11-01	SBBH-12-01	SBBH-13-01	SBBH-14-01	SBBH-15-01	SBBH-16-01	SBBH-17-01	SBBH-18-01	SBBH-19-01	02026-12
Sample Date (Day-Month-Year)									3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	3-Feb-03	9-Sep-16
Depth of Sample (mbgs)									3.4 m	1.2-1.5 m	2.7-3.1 m	1.2-1.5 m	0.9-1.2 m	0.7-0.9 m	0.7-0.9 m	0.5-0.7 m	0.3-0.6 m	0.4-0.6 m	1.5-1.8 m	0.9-1.2 m	1.2-1.5 m	0.15-0.45 m
QA/QC																						
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		-	-	-	< 0.04	~~<0.04~~	< 0.04	-	< 0.04	< 0.04	-	-	-	-	< 0.0050
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		-	-	-	**0.32**	~~**1.05**~~	**1.05**	-	< 0.05	< 0.05	-	-	-	-	< 0.010
Styrene	5	EH	50	EH	5		**50**		-	-	-	< 0.05	~~<0.05~~	< 0.05	-	< 0.05	< 0.05	-	-	-	-	< 0.030
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		-	-	-	< 0.05	~~<0.05~~	< 0.05	-	< 0.05	< 0.05	-	-	-	-	**0.42**
m,p-Xylenes	-		-		-		-		-	-	-	0.42	-	6.28	-	0.26	0.39	-	-	-	-	< 0.040
o-Xylene	-		-		-		-		-	-	-	0.13	-	5.01	-	0.62	0.43	-	-	-	-	< 0.040
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		-	-	-	0.6	**6.28**	**11.3**	-	0.9	0.8	-	-	-	-	< 0.040
Methyl tert-Butyl Ether	800	HH	3500	HH	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.10
VH (C6-C10)	-		-		-		-		-	-	-	137	-	651	-	< 100	121	-	-	-	-	< 10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		-	-	-	136	-	639	-	< 100	120	-	-	-	-	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.04	0.08	< 0.04	0.08	< 0.04	**0.81**	< 0.04	0.09	0.14	< 0.04	< 0.04	< 0.04	< 0.04	< 0.0050
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.23	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.0050
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.05	0.12	0.06	< 0.05	< 0.05	0.18	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.0040
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.020
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.020
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.020
Benzo(g,h,i)perylene	-		-		-		-		<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.050
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.020
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.020
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.050
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	0.08	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.020
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.05	0.22	0.05	0.12	< 0.05	**1.12**	< 0.05	0.18	0.07	< 0.05	< 0.05	< 0.05	< 0.05	< 0.020
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.050
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	< 0.05	**0.24**	**0.05**	**0.76**	< 0.05	**4.45**	< 0.05	**0.07**	**0.76**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.010
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	< 0.05	**0.32**	**0.26**	**0.16**	< 0.05	**1.66**	< 0.05	**0.29**	**0.18**	< 0.05	< 0.05	< 0.05	< 0.05	0.016
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.05	0.18	0.06	< 0.05	< 0.05	0.24	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.020
2-methylnaphthalene	60	HH	950	HH	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.020
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.050
PAH, High Molecular Weight	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.050
PAH, Total	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.050
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	0.041
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	-	-	-	-	-	-	-	-	-	-	-	-	-	0.31
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 200	2180	389	999	< 200	7150	< 200	936	1790	< 200	< 200	< 200	< 200	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 200	2180	389	998	< 200	7140	< 200	936	1790	< 200	< 200	< 200	< 200	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		< 200	2320	587	< 200	< 200	522	< 200	< 200	< 200	< 200	< 200	< 200	< 200	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 200	2320	587	< 200	< 200	522	< 200	< 200	< 200	< 200	< 200	< 200	< 200	< 100
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	< 20	**1310**	102	**877**	< 20	**6090**	< 20	**740**	**1480**	< 20	56	< 20	< 20	< 10
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	< 20	**1310**	102	**876**	<20	**6090**	< 20	**740**	**1480**	< 20	56	< 20	< 20	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	51	**3510**	946	344	90	**2090**	102	459	538	< 50	87	< 50	< 50	35
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	51	**3510**	946	344	90	**2090**	102	459	538	< 50	87	< 50	< 50	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 50	1330	381	58	70	256	73	< 50	< 50	< 50	< 50	< 50	< 50	< 10
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	4340	751	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR		BC CSR		CCME		CCME Soil		SS11	SS11	SSURS-10	TP-1	TP-3	TP-4	TP-6	TP-6	TP-7	TP-8	TP-10	TP-13	TP-14	TP-14
Sample Control Number									02026-11	02026-11	SSURS-10	SB-01-03	SB-03-01	SB-04-01	SB-06-01	SB-06-02	SB-07-02	SB-08-01	SB-10-02	SB-13-02	SB-14-00	SB-14-02
Sample Date (Day-Month-Year)	Soil		Soil		Soil		Industrial		9-Sep-16	9-Sep-16	22-Nov-05	12-Aug-01	12-Aug-01	12-Aug-01	12-Aug-01	12-Aug-01	12-Aug-01	12-Aug-01	12-Aug-01	12-Aug-01	12-Aug-01	12-Aug-01
Depth of Sample (mbgs)	Low Density		Industrial		Residential				0.15-0.45 m	0.15-0.45 m	0-0.2 m	3 m	1 m	-	1 m	3.2 m	0.8 m	-	-	-	3.2 m	4.6 m
QA/QC	Residential	MCS		MCS		MCS		MCS														
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.0050	-	0.002	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		< 0.010	-	< 0.003	-	-	-	-	-	-	-	-	-	-	-
Styrene	5	EH	50	EH	5		**50**		< 0.030	-	< 0.1	-	-	-	-	-	-	-	-	-	-	-
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		**1.3**	-	< 0.01	-	-	-	-	-	-	-	-	-	-	-
m,p-Xylenes	-		-		-		-		< 0.040	-	< 0.1	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-		-		-		-		< 0.040	-	< 0.1	-	-	-	-	-	-	-	-	-	-	-
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.040	-	< 0.1	-	-	-	-	-	-	-	-	-	-	-
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**		< 0.10	-	-	-	-	-	-	-	-	-	-	-	-	-
VH (C6-C10)	-		-		-		-		< 10	-	-	-	-	-	-	-	-	-	-	-	-	-
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	-	-	-	-	-	-	-	-	-	-	-	< 100	-
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	<0.05	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.0050	-	< 0.01	< 0.07	-	-	-	<0.005	< 0.03	-	-	-	0.09	-
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.0050	-	< 0.01	< 0.02	-	-	-	<0.005	< 0.007	-	-	-	< 0.05	-
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.0040	-	< 0.01	< 0.3	-	-	-	< 0.01	< 0.02	-	-	-	< 0.05	-
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	-	< 0.01	< 0.02	-	-	-	< 0.01	< 0.01	-	-	-	< 0.05	-
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.020	-	< 0.01	< 0.01	-	-	-	< 0.01	< 0.01	-	-	-	< 0.05	-
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	< 0.03	-	-	-	< 0.02	< 0.01	-	-	-	< 0.05	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	-	< 0.01	-	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	-		-		-		-		< 0.050	-	< 0.02	0.01	-	-	-	0.01	<0.01	-	-	-	< 0.05	-
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	-	< 0.01	< 0.01	-	-	-	< 0.01	< 0.01	-	-	-	< 0.05	-
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.020	-	< 0.01	< 0.08	-	-	-	< 0.01	< 0.01	-	-	-	< 0.05	-
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	-	< 0.02	< 0.005	-	-	-	< 0.005	< 0.005	-	-	-	< 0.05	-
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.020	-	< 0.01	< 0.03	-	-	-	< 0.01	< 0.02	-	-	-	< 0.05	-
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.020	-	< 0.01	0.14	-	-	-	< 0.01	< 0.08	-	-	-	0.18	-
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	-	< 0.02	< 0.01	-	-	-	< 0.01	< 0.01	-	-	-	< 0.05	-
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	< 0.010	-	< 0.01	< 0.04	-	-	-	< 0.01	< 0.08	-	-	-	**0.07**	-
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	< 0.010	-	< 0.01	**0.36**	-	-	-	0.02	**0.1**	-	-	-	**0.29**	-
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.020	-	0.01	< 0.3	-	-	-	< 0.01	0.03	-	-	-	< 0.05	-
2-methylnaphthalene	60	HH	950	HH	-		-		< 0.020	-	-	0.12	-	-	-	< 0.01	0.12	-	-	-	-	-
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		< 0.050	-	<0.01	-	-	-	-	-	-	-	-	-	-	-
PAH, High Molecular Weight	-		-		-		-		< 0.050	-	<0.02	-	-	-	-	-	-	-	-	-	-	-
PAH, Total	-		-		-		-		< 0.050	-	<0.02	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	0.041	-	-	-	-	-	-	-	-	-	-	-	-	-
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	0.31	-	-	-	-	-	-	-	-	-	-	-	-	-
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		-	< 100	< 100	1060	270	< 200	< 200	< 200	317	< 200	< 200	< 200	-	< 200
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	-	< 100	-	-	-	-	< 200	317	-	-	-	-	-
EPH (C19-C32)	1000 *		5000 *		-		-		-	< 100	359	1550	857	< 200	< 200	< 200	< 200	280	230	< 200	-	< 200
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	-	359	-	-	-	-	< 200	< 200	-	-	-	-	-
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	11	-	< 10	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	-	< 10	< 50	**563**	151	< 50	< 50	< 50	221	< 50	54	71	**740**	< 50
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	18	281	**2910**	**1950**	< 50	< 50	69	178	486	450	76	459	< 50
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	-	< 10	137	2560	2010	< 50	< 50	< 50	< 50	< 50	263	< 50	< 50	< 50
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
ppm = parts per million; m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.
Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.
High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR		BC CSR		CCME		CCME Soil		TP-15	TP-15	TP16-01	TP16-01	TP16-02	TP16-02	TP16-03	TP16-03	TP16-03	TP16-08	TP16-08	TP16-11	TP16-11	TP16-12
Sample Control Number	Soil		Soil		Soil		Industrial		SB-15-02	SB-15-05	02025-01	02025-03	02025-04	02025-06	02025-09	02025-10	02025-11	02028-02	02028-04	02028-08	02028-09	02028-10
Sample Date (Day-Month-Year)	Low Density		Industrial		Residential				12-Aug-01	12-Aug-01	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16
Depth of Sample (mbgs)	Residential	MCS		MCS		MCS		MCS	1.8 m	4.6 m	0.5-0.5 m	2.5-2.5 m	0.5-0.5 m	2.5-2.5 m	1.5-1.5 m	2.5-2.5 m	3.5-3.5 m	1.5-1.5 m	3.4-3.4 m	2-2 m	3-3 m	0.5-0.5 m
QA/QC																						FDA
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		-	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	**0.017**	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		-	-	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	**0.028**	**0.11**	< 0.010	< 0.010	< 0.010
Styrene	5	EH	50	EH	5		**50**		-	-	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.076	0.065	0.034	**0.22**
m,p-Xylenes	-		-		-		-		-	-	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	0.081	0.49	< 0.040	< 0.040	< 0.040
o-Xylene	-		-		-		-		-	-	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	0.046	0.078	< 0.040	< 0.040	< 0.040
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		-	-	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	0.13	0.57	< 0.040	< 0.040	< 0.040
Methyl tert-Butyl Ether	800	HH	3500	HH	-		-		-	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
VH (C6-C10)	-		-		-		-		-	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	240	62	< 10	< 10	< 10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		-	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	240	61	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	-	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.27	0.12	< 0.0050	< 0.0050	0.05
Acenaphthylene	-		-		320	AW	**320**	AW	-	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.062	0.047	< 0.0050	< 0.0050	0.018
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	-	-	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	0.025	0.025	< 0.0040	< 0.0040	0.0069
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.020	< 0.020	< 0.020	< 0.020	0.021	< 0.020	< 0.020	< 0.020	< 0.020	0.023	< 0.020	< 0.020
Benzo(g,h,i)perylene	-		-		-		-		-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Chrysene	40	HH	900	HH	6.2	EI	-		-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.046	< 0.020	< 0.020	< 0.020	< 0.020
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	**0.58**	**0.32**	< 0.020	< 0.020	0.079
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	-	-	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	**1.3**	**1.1**	< 0.010	< 0.010	**0.031**
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	-	-	0.019	0.021	**0.057**	0.016	0.016	< 0.010	0.011	**0.61**	**0.42**	0.015	0.017	**0.074**
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.098	0.022	< 0.020	< 0.020	< 0.020
2-methylnaphthalene	60	HH	950	HH	-		-		-	-	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	1.6	3	< 0.020	< 0.020	0.32
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		-	-	< 0.050	< 0.050	0.057	< 0.050	< 0.050	< 0.050	< 0.050	4.5	5	< 0.050	< 0.050	0.57
PAH, High Molecular Weight	-		-		-		-		-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.14	< 0.050	< 0.050	< 0.050	< 0.050
PAH, Total	-		-		-		-		-	-	< 0.050	< 0.050	0.057	< 0.050	< 0.050	< 0.050	< 0.050	4.7	5.1	< 0.050	< 0.050	0.57
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	-	-	0.041	0.041	0.041	0.041	0.042	0.041	0.041	0.041	0.041	0.042	0.041	0.041
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	-	-	0.31	0.31	0.31	0.31	0.38	0.31	0.31	0.31	0.31	0.39	0.31	0.31
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 200	< 200	< 100	< 100	< 100	< 100	< 100	< 100	< 100	4800	1300	< 100	< 100	1000
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		-	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	4800	1200	< 100	< 100	1000
EPH (C19-C32)	1000 *		5000 *		-		-		< 200	< 200	< 100	< 100	< 100	< 100	< 100	< 100	< 100	370	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		-	-	< 100	< 100	< 100	< 100	< 100	< 100	< 100	370	< 100	< 100	< 100	< 100
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	G	200 *	G	30	C	**170**	F/P	-	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**250**	76	< 10	18	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	G	200 *	G	30	C	**170**	F/P	-	-	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**250**	76	< 10	18	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	G	2000 *	G	150		**230**	F/P	< 50	< 50	< 10	< 10	13	< 10	< 10	< 10	< 10	**4300**	**1200**	< 10	< 10	**1000**
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	G	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	G	5000 *	G	300	C	**1700**	C	70	< 50	22	28	140	25	20	20	30	930	320	22	27	200
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	G	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 50	< 50	< 10	< 10	36	< 10	< 10	< 10	< 10	< 50	< 10	< 10	< 10	11
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR		BC CSR		CCME														
Sample Control Number								TP16-12	TP16-12	TP16-13	TP16-13	TP16-13	TP16-14	TP16-14	TP16-14	TP16-15	TP16-15	TP16-15	TP16-16	TP16-16	TP16-16
								02028-11	02028-12	02029-01	02029-02	02029-04	02029-05	02029-06	02029-07	TP16-15-S1	TP16-15-S2	TP16-15-S2	TP16-16-S1	TP16-16-S2	TP16-16-S3
Sample Date (Day-Month-Year)	Soil		Soil		Soil			7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16
Depth of Sample (mbgs)	Low Density		Industrial		Residential		**Soil Industrial**	0.5-0.5 m	1.5-1.5 m	0.5-0.5 m	1.5-1.5 m	2.5-2.5 m	0.5-0.5 m	1.5-1.5 m	2.5-2.5 m	1-1.2 m	2.3-2.5 m	2.3-2.5 m	0.8-1 m	3-3.2 m	5.2-5.4 m
QA/QC	Residential	MCS		MCS		MCS		FD													
Volatile Petroleum Hydrocarbons																					
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	10	DW	10	DW	0.018		**0.018**	< 0.010	< 0.010	< 0.010	**0.15**	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	-	0.011	< 0.010	< 0.010
Styrene	5	EH	50	EH	5		**50**	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	-	< 0.030	< 0.030	< 0.030
Toluene	0.3	AW	0.3	AW	0.08		**0.08**	< 0.020	< 0.020	0.033	0.051	0.045	0.034	< 0.020	< 0.020	< 0.020	< 0.020	-	0.042	< 0.020	< 0.020
m,p-Xylenes	-		-		-		-	< 0.040	0.05	< 0.040	0.26	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	-	0.056	< 0.040	0.071
o-Xylene	-		-		-		-	< 0.040	0.077	< 0.040	0.11	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	-	< 0.040	< 0.040	0.049
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**	< 0.040	0.13	< 0.040	0.36	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	-	0.056	< 0.040	0.12
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	-	< 0.10	< 0.10	< 0.10
VH (C6-C10)	-		-		-		-	< 10	< 10	< 10	31	< 10	< 10	< 10	< 10	< 10	< 10	-	< 10	< 10	< 10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-	< 10	< 10	< 10	30	< 10	< 10	< 10	< 10	< 10	< 10	-	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																					
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	0.069	< 0.0050	< 0.0050	0.01	< 0.0050	0.011	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	< 0.0050	< 0.0050	0.0076
Acenaphthylene	-		-		320	AW	**320**	AW	0.023	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	0.0087	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	-	< 0.0040	< 0.0040	< 0.0040
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	0.022
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	0.031
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	0.023	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.023	-	0.023	0.032	0.057
Benzo(g,h,i)perylene	-		-		-		-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	0.087
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	0.032
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	0.044
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	0.1	< 0.020	< 0.020	0.028	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	**0.14**	**0.028**	< 0.010	**0.25**	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	-	< 0.010	0.013	**0.15**
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	**0.11**	0.018	0.01	0.028	< 0.010	< 0.010	0.012	0.017	0.017	0.024	-	0.02	0.03	**0.19**
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	0.065
2-methylnaphthalene	60	HH	950	HH	-		-		0.78	0.074	< 0.020	0.37	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	< 0.020	0.3
Total PAH and B(a)P Calculation																					
PAH, Low Molecular Weight	-		-		-		-		1.2	0.12	< 0.050	0.69	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	0.65
PAH, High Molecular Weight	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	< 0.050	0.34
PAH, Total	-		-		-		-		1.2	0.14	< 0.050	0.69	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	0.075	0.99
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	0.041	0.042	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.042	-	0.042	0.043	0.068
Index of Additive Cancer Risk Calc.																					
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	0.31	0.39	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.39	-	0.39	0.45	0.71
Extractable Petroleum Hydrocarbons																					
EPH (C10-C19)	1000 *		2000 *		-		-		1300	< 100	< 100	200	< 100	100	< 100	< 100	< 100	< 100	-	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		1300	< 100	< 100	200	< 100	100	< 100	< 100	< 100	< 100	-	< 100	< 100	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		110	< 100	110	< 100	< 100	170	< 100	< 100	390	< 100	-	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		110	< 100	110	< 100	< 100	170	< 100	< 100	390	< 100	-	< 100	< 100	< 100
CCME Hydrocarbon Fractions																					
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	G	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	31	< 10	< 10	< 10	< 10	< 10	< 10	-	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	G	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	30	< 10	< 10	< 10	< 10	< 10	< 10	-	< 10	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	G	2000 *	G	150		**230**	F/P	**1300**	45	11	180	< 10	55	< 10	28	14	-	< 10	< 10	< 10	30
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	G	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	G	5000 *	G	300	C	**1700**	C	290	31	150	61	25	300	16	59	610	-	17	26	37	100
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	G	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	27	< 10	37	12	< 10	25	< 10	< 10	93	-	< 10	< 10	15	21
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
ppm = parts per million; m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.
Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.
High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR		BC CSR		CCME			TP16-17	TP16-17	TP16-17	TP16-18	TP16-18	TP16-19	TP16-19	TP16-19	TP16-20	TP16-20	TP16-20	TP16-21	TP16-21	TP16-22
Sample Control Number	Soil		Soil		Soil		**CCME Soil**	TP16-17-S1	TP16-17-S2	TP16-17-S2	TP16-18-S1	TP16-18-S2	TP16-19-S1	TP16-19-S2	TP16-19-S2	TP16-20-S1	TP16-20-S1	TP16-20-S3	TP16-21-S1	TP16-21-S2	TP16-22-S1
Sample Date (Day-Month-Year)	Low Density		Industrial		Residential		**Industrial**	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16
Depth of Sample (mbgs)	Residential	MCS		MCS		MCS	MCS	0.9-1.1 m	4.2-4.4 m	4.2-4.4 m	1-1.2 m	2.3-2.5 m	1.3-1.5 m	2.3-2.5 m	2.3-2.5 m	1.1-1.3 m	1.1-1.3 m	4.1-4.3 m	1-1.2 m	2-2.2 m	1-1.2 m
QA/QC																					
Volatile Petroleum Hydrocarbons																					
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**	< 0.0050	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	10	DW	10	DW	0.018		**0.018**	0.014	**0.037**	-	< 0.010	< 0.010	< 0.010	**0.033**	-	0.012	-	**0.025**	< 0.010	< 0.010	< 0.010
Styrene	5	EH	50	EH	5		**50**	< 0.030	< 0.030	-	< 0.030	< 0.030	< 0.030	< 0.030	-	< 0.030	-	< 0.030	< 0.030	< 0.030	< 0.030
Toluene	0.3	AW	0.3	AW	0.08		**0.08**	0.049	0.069	-	0.035	< 0.020	0.026	0.067	-	0.04	-	0.066	0.022	< 0.020	< 0.020
m,p-Xylenes	-		-		-		-	< 0.040	0.19	-	< 0.040	< 0.040	< 0.040	0.17	-	0.055	-	0.12	< 0.040	< 0.040	< 0.040
o-Xylene	-		-		-		-	< 0.040	0.073	-	< 0.040	< 0.040	< 0.040	0.079	-	< 0.040	-	0.055	< 0.040	< 0.040	< 0.040
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**	< 0.040	0.26	-	< 0.040	< 0.040	< 0.040	0.25	-	0.055	-	0.18	< 0.040	< 0.040	< 0.040
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**	< 0.10	< 0.10	-	< 0.10	< 0.10	< 0.10	< 0.10	-	< 0.10	-	< 0.10	< 0.10	< 0.10	< 0.10
VH (C6-C10)	-		-		-		-	< 10	< 10	-	< 10	< 10	< 10	< 10	-	< 10	-	< 10	< 10	< 10	< 10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-	< 10	< 10	-	< 10	< 10	< 10	< 10	-	< 10	-	< 10	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																					
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28** AW	< 0.0050	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Acenaphthylene	-		-		320	AW	**320** AW	< 0.0050	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	< 0.0050	-	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Anthracene	2.5	T	30	T	2.5	SC	**32** SC	< 0.0040	< 0.0040	-	< 0.0040	< 0.0040	0.011	< 0.0040	-	< 0.0040	-	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10** Int	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4** Int	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10** Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10** Int	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	0.027	-	< 0.020	-	< 0.020	< 0.020	0.052	< 0.020
Benzo(g,h,i)perylene	-		-		-		-	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10** Int	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020
Chrysene	40	HH	900	HH	6.2	EI	-	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	-	< 0.020	< 0.020	0.035	< 0.020
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10** Int	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050
Fluoranthene	50	T	200	T	15.4	EI	**180** SC	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020
Fluorene	600	HH	9500	HH	0.25	AW	**0.25** AW	< 0.020	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020	-	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10** Int	< 0.050	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050	-	< 0.050	-	< 0.050	< 0.050	< 0.050	< 0.050
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013** AW	< 0.010	< 0.010	-	< 0.010	< 0.010	**0.014**	< 0.010	-	< 0.010	-	< 0.010	< 0.010	**0.021**	< 0.010
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046** AW	< 0.010	< 0.010	-	0.017	0.019	0.029	0.025	-	0.012	-	0.021	0.018	0.038	< 0.010
Pyrene	10	EH	100	EH	7.7	EI/R	**100** Int	< 0.020	< 0.020	-	0.025	< 0.020	0.14	< 0.020	-	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020
2-methylnaphthalene	60	HH	950	HH	-		-	< 0.020	< 0.020	-	< 0.020	< 0.020	0.03	< 0.020	-	< 0.020	-	< 0.020	< 0.020	< 0.020	< 0.020
Total PAH and B(a)P Calculation																					
PAH, Low Molecular Weight	-		-		-		-	< 0.050	< 0.050	-	< 0.050	< 0.050	0.084	< 0.050	-	< 0.050	-	< 0.050	< 0.050	0.059	< 0.050
PAH, High Molecular Weight	-		-		-		-	< 0.050	< 0.050	-	< 0.050	< 0.050	0.14	< 0.050	-	< 0.050	-	< 0.050	< 0.050	0.087	< 0.050
PAH, Total	-		-		-		-	< 0.050	< 0.050	-	< 0.050	< 0.050	0.23	0.052	-	< 0.050	-	< 0.050	< 0.050	0.15	< 0.050
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60** Int	0.041	0.041	-	0.041	0.041	0.041	0.043	-	0.041	-	0.041	0.041	0.045	0.041
Index of Additive Cancer Risk Calc.																					
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1** PW	0.31	0.31	-	0.31	0.31	0.31	0.42	-	0.31	-	0.31	0.31	0.58	0.31
Extractable Petroleum Hydrocarbons																					
EPH (C10-C19)	1000 *		2000 *		-		-	< 100	< 100	-	100	< 100	1100	< 100	-	< 100	-	< 100	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-	< 100	< 100	-	100	< 100	1100	< 100	-	< 100	-	< 100	< 100	< 100	< 100
EPH (C19-C32)	1000 *		5000 *		-		-	140	< 100	-	910	< 100	12000	120	-	210	-	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-	140	< 100	-	910	< 100	12000	120	-	210	-	< 100	< 100	< 100	< 100
CCME Hydrocarbon Fractions																					
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	G	200 *	G	30	C	**170** F/P	< 10	< 10	-	< 10	< 10	< 10	< 10	-	< 10	-	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	G	200 *	G	30	C	**170** F/P	< 10	< 10	-	< 10	< 10	< 10	< 10	-	< 10	-	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	G	2000 *	G	150		**230** F/P	< 10	-	< 10	13	< 10	**420**	-	12	-	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	G	2000 *	G	150		**230** F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	G	5000 *	G	300	C	**1700** C	71	-	13	1100	20	**12000**	-	610	-	250	82	< 10	22	58
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	G	5000 *	G	300	C	**1700** C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300** C	11	-	< 10	300	< 10	**7400**	-	230	-	100	71	< 10	< 10	12
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	TP16-22	TP16-23	TP16-23	TP16-24	TP16-24	TP16-25	TP16-25	TP16-26	TP16-26	TP16-27	TP16-27	TP16-28	TP16-28	TP16-29
Sample Control Number									TP16-22-S2	TP16-23-S1	TP16-23-S2	TP16-24-S1	TP16-24-S2	TP16-25-S1	TP16-25-S2	TP16-26-S1	TP16-26-S2	TP16-27-S1	TP16-27-S2	TP16-28-S1	TP16-28-S2	TP16-29-S1
Sample Date (Day-Month-Year)									6-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16
Depth of Sample (mbgs)									2.1-2.3 m	0.8-1 m	1.8-2 m	0.8-1 m	1.7-1.9 m	0.8-1 m	1.6-1.8 m	0.9-1.1 m	2.6-2.8 m	0.9-1.1 m	3.9-4.1 m	1.5-1.7 m	3.7-3.9 m	1-1.2 m
QA/QC																						
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.0050	< 0.0050	**0.013**	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		< 0.010	< 0.010	**0.058**	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.01	< 0.010
Styrene	5	EH	50	EH	5		**50**		< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		0.026	< 0.020	0.073	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.023	< 0.020	0.034	0.021	0.033	< 0.020
m,p-Xylenes	-		-		-		-		< 0.040	< 0.040	0.3	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
o-Xylene	-		-		-		-		< 0.040	< 0.040	0.1	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.040	< 0.040	0.4	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
Methyl tert-Butyl Ether	800	HH	3500	HH	-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
VH (C6-C10)	-		-		-		-		< 10	18	15	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	18	14	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	0.033	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	0.0073	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	0.027	< 0.020	< 0.020	< 0.020	0.021	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Benzo(g,h,i)perylene	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.024	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.035	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.026	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	0.012	**0.1**	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	0.019	0.029	0.016	< 0.010	0.029	0.017	0.02	0.02	**0.092**	< 0.010	0.021	< 0.010	0.014	< 0.010
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.027	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
2-methylnaphthalene	60	HH	950	HH	-		-		< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	0.046	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.31	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
PAH, High Molecular Weight	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.11	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
PAH, Total	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	0.055	< 0.050	< 0.050	< 0.050	0.41	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	0.041	0.041	0.041	0.041	0.043	0.041	0.041	0.041	0.042	0.041	0.041	0.041	0.041	0.041
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	0.31	0.31	0.31	0.31	0.41	0.31	0.31	0.31	0.38	0.31	0.31	0.31	0.31	0.31
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	19	14	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	19	13	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	54	49	24	40	42	27	19	58	49	30	36	16	25	34
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 10	16	< 10	12	< 10	< 10	< 10	25	46	11	< 10	< 10	< 10	< 10
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR		BC CSR		CCME		CCME Soil		TP16-29	TP16-29	TP16-30	TP16-30	TP16-33	TP16-33	TP16-34	TP16-34	TP-17	TP-18	TP-19	TP-21	TP-22	TP-23
Sample Control Number									TP16-29-S3	TP16-29-S3 FD	TP16-30-S1	TP16-30-S2	TP16-33/S1	TP16-33/S3	TP16-34/S1	TP16-34/S2	SB-17-01	SB-18-02	SB-19-01	SB-21-01	SB-22-02	SB-23-02
Sample Date (Day-Month-Year)	Soil		Soil		Soil		Industrial		7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	13-Aug-01	13-Aug-01	13-Aug-01	13-Aug-01	13-Aug-01	13-Aug-01
Depth of Sample (mbgs)	Low Density		Industrial		Residential				3-3.2 m	3-3.2 m	2.1-2.2 m	3.7-3.9 m	1-1.2 m	2.8-3 m	1-1.2 m	1.8-2 m	0.8 m	3.6 m	1 m	3.0 m	3.5 m	3.1 m
QA/QC	Residential	MCS		MCS		MCS		MCS	FDA	FD												
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	-	-	-	-	-
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		< 0.010	< 0.010	< 0.010	**0.03**	< 0.010	< 0.010	< 0.010	< 0.010	-	-	-	-	-	-
Styrene	5	EH	50	EH	5		**50**		< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	< 0.030	-	-	-	-	-	-
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
m,p-Xylenes	-		-		-		-		< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	-	-	-	-	-	-
o-Xylene	-		-		-		-		< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	-	-	-	-	-	-
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	-	-	-	-	-	-
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	-	-	-	-	-	-
VH (C6-C10)	-		-		-		-		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	-	-	-	-	-	-
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	-	-	-	-	-	-
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	-	-	-	-	-
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	-	-	-	-	-	-
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	-	-	-	-	-	-
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	0.023	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
Benzo(g,h,i)perylene	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	-	-	-	-	-
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	-	-	-	-	-
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	-	-	-	-	-
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	< 0.010	-	-	-	-	-	-
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	< 0.010	< 0.010	0.027	0.02	< 0.010	0.02	< 0.010	< 0.010	-	-	-	-	-	-
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
2-methylnaphthalene	60	HH	950	HH	-		-		< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	< 0.020	-	-	-	-	-	-
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	-	-	-	-	-
PAH, High Molecular Weight	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	-	-	-	-	-
PAH, Total	-		-		-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	-	-	-	-	-	-
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	0.041	0.041	0.042	0.041	0.041	0.041	0.041	0.041	-	-	-	-	-	-
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	0.31	0.31	0.39	0.31	0.31	0.31	0.31	0.31	-	-	-	-	-	-
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 200	< 200	< 200	< 200	< 200	< 200
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	-	-	-	-	-	-
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	< 100	< 100	< 100	< 100	< 100	210	< 100	< 200	< 200	< 200	< 200	< 200	< 200
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	< 100	< 100	< 100	< 100	< 100	210	< 100	-	-	-	-	-	-
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	G	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	-	-	-	-	-	-
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	G	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	-	-	-	-	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	G	2000 *	G	150		**230**	F/P	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 50	< 50	< 50	< 50	< 50	< 50
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	G	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	G	5000 *	G	300	C	**1700**	C	35	15	34	15	48	20	260	110	200	< 50	146	< 50	102	52
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	G	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 10	< 10	< 10	< 10	11	< 10	110	11	121	< 50	< 50	< 50	< 50	< 50
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
ppm = parts per million; m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.
Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.
High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location								URS-BH01	URS-BH01	URS-BH01	URS-BH02	URS-BH03	URS-BH03	URS-BH04	URS-BH04	URS-BH04	URS-BH05	URS-BH06	URS-BH07	URS-BH07	URS-BH08
Sample Control Number	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	URS BH01-0.8	URS BH01-1.7	URS BH01-3.5	URS BH02-0.9	URS BH03-0.7	URS BH03-2.2	URS BH04-0.7	URSBH04-1.8	URS BH DUP2	URS BH05-0.8	URS BH06-0.8	URSBH07-1.1	URS BH DUP3	URS BH08-0.2
Sample Date (Day-Month-Year)								23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05	23-Nov-05
Depth of Sample (mbgs)								0.7-0.9 m	1.6-1.8 m	3.4-3.6 m	0.8-1 m	0.6-0.8 m	2.1-2.3 m	0.6-0.8 m	1.7-1.9 m	1.7-1.9 m	0.7-0.9 m	0.7-0.9 m	1-1.2 m	1-1.2 m	0.1-0.3 m
QA/QC															FDA	FD			FDA	FD	
Volatile Petroleum Hydrocarbons																					
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**	0.003	0.003	0.003	**0.011**	0.003	0.002	0.003	**0.01**	0.003	0.002	0.004	0.004	0.003	0.004
Ethylbenzene	10	DW	10	DW	0.018		**0.018**	0.005	0.012	0.003	0.006	0.004	< 0.003	0.004	0.015	0.003	0.003	0.005	0.005	0.003	0.005
Styrene	5	EH	50	EH	5		**50**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.3	AW	0.3	AW	0.08		**0.08**	0.02	0.02	0.02	0.01	0.01	< 0.01	0.01	0.05	0.02	0.01	0.02	0.02	0.01	0.02
m,p-Xylenes	-		-		-		-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	-	< 0.1
o-Xylene	-		-		-		-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	-	< 0.1	< 0.1	< 0.1	-	< 0.1
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Methyl tert-Butyl Ether	800	HH	3500	HH	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VH (C6-C10)	-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																					
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.01	< 0.02	-	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.01	0.04	-	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.01	0.02	-	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	0.01	0.06	-	0.02	0.03	0.01	0.03	-	-	< 0.01	0.02	0.02	0.02	0.03
Benzo(g,h,i)perylene	-		-		-		-		< 0.02	0.03	-	< 0.02	0.02	< 0.02	0.03	-	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.01	0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.01	0.05	-	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	-	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.01	0.1	-	0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.01	0.04	-	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	-	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	0.01	**0.07**	-	< 0.02	**0.02**	0.01	0.01	-	-	< 0.01	**0.02**	0.01	**0.02**	**0.02**
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	0.04	< 0.07	-	0.04	< 0.03	0.01	0.02	-	-	< 0.01	0.03	0.03	0.03	0.03
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	0.01	0.16	-	0.01	0.05	< 0.01	< 0.01	-	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2-methylnaphthalene	60	HH	950	HH	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PAH and B(a)P Calculation																					
PAH, Low Molecular Weight	-		-		-		-		0.05	0.12	-	0.04	<0.03	0.02	0.03	-	-	<0.01	0.05	0.04	0.05	0.04
PAH, High Molecular Weight	-		-		-		-		0.02	0.48	-	0.04	0.1	<0.02	0.05	-	-	<0.02	<0.02	0.02	0.02	0.03
PAH, Total	-		-		-		-		0.07	0.59	-	0.08	0.12	0.03	0.09	-	-	<0.02	0.07	0.06	0.07	0.07
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Index of Additive Cancer Risk Calc.																					
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extractable Petroleum Hydrocarbons																					
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	537	-	< 100	< 100	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	537	-	< 100	< 100	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	< 100	-	< 100	401	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	< 100	-	< 100	401	< 100	< 100	-	-	< 100	< 100	< 100	< 100	< 100
CCME Hydrocarbon Fractions																					
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	18	< 10	11	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	< 50	**676**	< 50	**370**	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	349	427	60	97	702	< 50	< 50	53	57	99	< 50	< 50	< 50	< 50
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	89	< 50	< 50	< 50	230	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

ppm = parts per million; m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.

High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR		BC CSR		CCME		CCME Soil		URS-BH09	URS-BH09	URS-BH09	URS-BH09	URS-BH09	URS-BH10	URS-BH10	URS-BH11	URS-BH12	URS-BH12	URS-BH13	URS-BH13	URS-BH14	URS-BH14
Sample Control Number	Soil Low Density Residential	MCS	Soil Industrial	MCS	Soil Residential	MCS	Industrial	MCS	URS BH 09-0.3	URSBH DUP4	URS BH 09-0.9	URSBH 09- 1.5	URS BH09 2.8	URS BH 10 0.9	URSBH 10 0.4	URS BH 11-1.7	URS BH12-0.2	URS BH12-1.8	URS BH13-1.4	URS BH13-3.3	URS BH 14-1.7	URSBH 14-3.5
Sample Date (Day-Month-Year)									24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05
Depth of Sample (mbgs)									0.2-0.4 m	0.2-0.4 m	0.8-1 m	1.4-1.6 m	2.7-2.9 m	0.8-1 m	0.3-0.5 m	1.6-1.8 m	0.1-0.3 m	1.7-1.9 m	1.3-1.5 m	3.2-3.4 m	1.6-1.8 m	3.4-3.6 m
QA/QC									FDA	FD												
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		0.002	0.006	**0.01**	**0.0092**	0.006	0.004	0.002	0.002	0.006	0.005	0.004	0.004	0.002	0.003
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		0.008	0.016	**0.68**	**0.53**	**0.37**	0.007	0.005	0.003	0.012	0.007	0.007	0.005	0.004	0.004
Styrene	5	EH	50	EH	5		**50**		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		< 0.01	0.03	0.06	0.02	0.01	0.02	0.01	< 0.01	0.01	0.01	0.03	0.02	0.01	<0.03
m,p-Xylenes	-		-		-		-		< 0.1	-	3.3	14	< 0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
o-Xylene	-		-		-		-		< 0.1	-	1	0.2	< 0.1	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.1	< 0.1	**4.3**	1.6	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	<0.1
Methyl tert-Butyl Ether	800	HH	3500	HH	-		-		-	-	-	< 0.1	-	-	-	-	-	-	-	-	-	< 0.1
VH (C6-C10)	-		-		-		-		-	-	-	180	-	-	-	-	-	-	-	-	-	<10
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		-	-	-	180	-	-	-	-	-	-	-	-	-	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.01	< 0.01	-	< 0.3	< 0.06	-	< 0.01	< 0.01	< 0.03	< 0.01	< 0.01	-	-	< 0.01
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.01	< 0.01	-	< 0.07	< 0.02	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.01	< 0.01	-	< 0.09	< 0.03	-	< 0.01	< 0.01	< 0.03	< 0.01	< 0.01	-	-	< 0.01
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.01	< 0.01	-	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.02
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.01	< 0.01	-	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	0.01
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	0.01	0.01	-	0.02	< 0.01	-	< 0.01	< 0.01	0.02	< 0.03	< 0.01	-	-	0.06
Benzo(g,h,i)perylene	-		-		-		-		< 0.02	< 0.02	-	0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	0.03	< 0.02	-	-	0.08
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.01	< 0.01	-	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.01
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.01	< 0.01	-	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	< 0.02
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.02	< 0.02	-	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-	-	< 0.02
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.01	< 0.01	-	0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	-	-	0.02
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.01	< 0.01	-	**0.61**	0.17	-	< 0.01	< 0.01	0.07	< 0.01	< 0.01	-	-	< 0.01
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.02	< 0.02	-	< 0.02	< 0.02	-	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	-	-	< 0.02
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	**0.02**	**0.02**	-	**1.7**	**0.64**	-	0.01	< 0.01	< 0.07	**0.02**	0.01	-	-	**0.05**
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	0.02	0.02	-	**1.1**	**0.28**	-	0.02	0.01	**0.06**	0.04	0.02	-	-	**0.1**
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.01	< 0.01	-	0.06	< 0.01	-	< 0.01	< 0.01	0.08	0.01	< 0.01	-	-	0.02
2-methylnaphthalene	60	HH	950	HH	-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		0.04	0.04	-	3.4	1.1	-	0.03	0.01	0.13	0.05	0.03	-	-	0.15
PAH, High Molecular Weight	-		-		-		-		<0.02	<0.02	-	0.11	< 0.02	-	< 0.02	< 0.02	0.1	0.05	<0.02	-	-	0.18
PAH, Total	-		-		-		-		0.05	0.05	-	3.5	1.1	-	0.03	< 0.02	0.23	0.1	0.03	-	-	0.34
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	< 100	-	969	< 100	-	< 100	< 100	189	< 100	< 100	-	-	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	< 100	-	966	< 100	-	< 100	< 100	189	< 100	< 100	-	-	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	< 100	-	143	< 100	-	< 100	< 100	< 100	< 100	118	-	-	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	< 100	-	143	< 100	-	< 100	< 100	< 100	< 100	< 100	-	-	< 100
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	G	200 *	G	30	C	**170**	F/P	11	< 10	**190**	120	120	< 10	< 10	< 10	20	17	< 10	14	12	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	G	200 *	G	30	C	**170**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	G	2000 *	G	150		**230**	F/P	96	< 50	**1700**	**1010**	**520**	< 50	< 50	< 50	**826**	67	< 50	< 50	< 50	< 50
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	G	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	G	5000 *	G	300	C	**1700**	C	179	125	873	526	276	107	< 50	63	735	84	210	< 50	< 50	60
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	G	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	153	< 50	< 50	< 50
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
ppm = parts per million; m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.
Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.
High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR		BC CSR		CCME													
Sample Control Number	Soil Low Density Residential	MCS	Soil Industrial	MCS	Soil Residential	MCS	**CCME Soil Industrial**	MCS	URS-BH15 URSBH 15-1.7	URS-BH16 URS BH 16-1.7	URS-BH17 URSBH 17-2.4	URS-BH18 URS BH 18-0.3	URS-BH18 URS BH 18-0.8	UTP-A UTP-A 0.3	UTP-A UTP-A 0.9	UTP-A UTP-A 1.7	UTP-A UTP-A 2.6	UTP-B UTP-B 0.7
Sample Date (Day-Month-Year)									24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	24-Nov-05	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06
Depth of Sample (mbgs)									1.6-1.8 m	1.6-1.8 m	2.3-2.5 m	0.2-0.4 m	0.7-0.9 m	0.2-0.4 m	0.8-1 m	1.6-1.8 m	2.5-2.7 m	0.6-0.8 m
QA/QC																		
Volatile Petroleum Hydrocarbons																		
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		0.003	0.005	0.005	0.004	0.003	< 0.005	< 0.005	**0.009**	< 0.005	< 0.005
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		0.004	0.007	0.006	0.007	0.006	< 0.01	< 0.01	< 0.01	0.01	< 0.01
Styrene	5	EH	50	EH	5		**50**		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		0.02	0.03	0.02	0.02	0.02	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
m,p-Xylenes	-		-		-		-		<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	-		-		-		-		<0.1	<0.1	<0.1	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Methyl tert-Butyl Ether	800	HH	3500	HH	-		-		-	-	-	-	-	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
VH (C6-C10)	-		-		-		-		-	-	-	-	-	-	-	-	-	-
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		-	-	-	-	-	< 10	< 10	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																		
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01
Acenaphthylene	-		-		320	AW	**320**	AW	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	0.02	-	0.02	-	0.03	0.04	-	< 0.01
Benzo(g,h,i)perylene	-		-		-		-		-	-	0.05	-	0.04	-	0.02	0.03	-	< 0.02
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01
Chrysene	40	HH	900	HH	6.2	EI	-		-	-	< 0.01	-	< 0.01	-	< 0.03	< 0.03	-	< 0.01
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.02	-	< 0.02	-	< 0.02	< 0.02	-	< 0.02
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	-	-	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	< 0.01
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.02	-	< 0.02	-	< 0.02	< 0.02	-	< 0.02
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	-	-	**0.02**	-	0.01	-	0.01	**0.02**	-	< 0.01
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	-	-	**0.06**	-	0.03	-	0.03	0.04	-	< 0.01
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	-	-	0.01	-	< 0.01	-	0.02	0.01	-	< 0.01
2-methylnaphthalene	60	HH	950	HH	-		-		-	-	-	-	-	-	0.02	0.02	-	<0.01
Total PAH and B(a)P Calculation																		
PAH, Low Molecular Weight	-		-		-		-		-	-	0.08	-	0.04	-	0.07	0.08	-	<0.01
PAH, High Molecular Weight	-		-		-		-		-	-	0.09	-	0.06	-	0.07	0.07	-	<0.02
PAH, Total	-		-		-		-		-	-	0.17	-	0.11	-	0.14	0.15	-	<0.02
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	-	-	-	-	-	-	-	-	-	-
Index of Additive Cancer Risk Calc.																		
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	-	-	-	-	-	-	-	-	-	-
Extractable Petroleum Hydrocarbons																		
EPH (C10-C19)	1000 *		2000 *		-		-		-	-	< 100	-	< 100	< 100	< 100	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		-	-	< 100	-	< 100	-	< 100	< 100	-	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		-	-	< 100	-	< 100	< 100	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		-	-	< 100	-	< 100	-	< 100	< 100	-	< 100
CCME Hydrocarbon Fractions																		
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	G	200 *	G	30	C	**170**	F/P	< 10	11	11	11	< 10	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	G	200 *	G	30	C	**170**	F/P	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	G	2000 *	G	150		**230**	F/P	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	G	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	G	5000 *	G	300	C	**1700**	C	< 50	< 50	< 50	< 50	< 50	141	118	< 50	< 50	< 50
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	G	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-

Location	UTP-B	UTP-B	UTP-C	UTP-D	UTP-E
Sample Control Number	UTP-B 1.5	UTP-C 0.9	UTP-D 0.8	UTP-E 0.7	
Sample Date (Day-Month-Year)	2-Aug-06	2-Aug-06	3-Aug-06	2-Aug-06	
Depth of Sample (mbgs)	1.4-1.6 m	0.8-1 m	0.7-0.9 m	0.6-0.8 m	
QA/QC					
Volatile Petroleum Hydrocarbons					
Benzene	< 0.005	< 0.005	< 0.005	< 0.005	
Ethylbenzene	< 0.01	< 0.01	< 0.01	< 0.01	
Styrene	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	< 0.05	< 0.05	< 0.05	< 0.05	
m,p-Xylenes	< 0.1	< 0.1	< 0.1	< 0.1	
o-Xylene	< 0.1	< 0.1	< 0.1	< 0.1	
Xylenes, Total	< 0.1	< 0.1	< 0.1	< 0.1	
Methyl tert-Butyl Ether	< 0.1	< 0.1	< 0.1	< 0.1	
VH (C6-C10)	-	-	-	-	
VPH (C6-C10)	< 10	< 10	< 10	< 10	
Total Polychlorinated Biphenyls	-	-	-	-	
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	-	< 0.01	< 0.01	-	
Acenaphthylene	-	< 0.01	< 0.01	-	
Anthracene	-	< 0.01	< 0.01	-	
Benzo(a)anthracene	-	< 0.01	< 0.01	-	
Benzo(a)pyrene	-	< 0.01	< 0.01	-	
Benzo(b)fluoranthene	-	-	-	-	
Benzo(b,j) fluoranthene	-	0.02	0.02	-	
Benzo(g,h,i)perylene	-	< 0.02	< 0.02	-	
Benzo(k)fluoranthene	-	< 0.01	< 0.01	-	
Chrysene	-	< 0.02	< 0.01	-	
Dibenzo(a,h)anthracene	-	< 0.02	< 0.02	-	
Fluoranthene	-	< 0.01	< 0.01	-	
Fluorene	-	< 0.01	< 0.01	-	
Indeno(1,2,3-c,d)pyrene	-	< 0.02	< 0.02	-	
Naphthalene	-	< 0.01	< 0.01	-	
Phenanthrene	-	< 0.01	0.02	0.01	
Pyrene	-	< 0.01	0.03	< 0.01	
2-methylnaphthalene	-	<0.01	<0.01	0.01	
Total PAH and B(a)P Calculation					
PAH, Low Molecular Weight	-	<0.01	0.02	0.01	
PAH, High Molecular Weight	-	<0.02	0.04	<0.02	
PAH, Total	-	<0.02	0.07	0.03	
Benzo(a)pyrene Total Potency Equivalence (TPE)	-	-	-	-	
Index of Additive Cancer Risk Calc.					
Index of Additive Cancer Risk (IACR)	-	-	-	-	
Extractable Petroleum Hydrocarbons					
EPH (C10-C19)	< 100	< 100	< 100	< 100	
LEPH (C10-C19) Less PAHs	-	< 100	< 100	-	
EPH (C19-C32)	< 100	< 100	< 100	< 100	
HEPH (C19-C32) Less PAHs	-	< 100	< 100	-	
CCME Hydrocarbon Fractions					
Petroleum Hydrocarbons - F1 (C6-C10)	< 10	< 10	< 10	< 10	
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	-	-	-	-	
Petroleum Hydrocarbons - F2 (C10-C16)	< 50	< 50	< 50	< 50	
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	-	-	-	-	
Petroleum Hydrocarbons - F3 (C16-C34)	< 50	74	< 50	< 50	
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	-	-	-	-	
Petroleum Hydrocarbons - F4 (C34-C50)	< 50	< 50	< 50	< 50	
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-	-	-	-	

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
ppm = parts per million; m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.
Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.
High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location								UTP-E	UTP-E	UTP-F	UTP-F	UTP-F	UTP-G	UTP-H	UTP-I	UTP-I	UTP-I	UTP-I	UTP-J	UTP-J	UTP-J
Sample Control Number	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	MCS	UTP-E 1.5	UTP-E 2.0	UTP-F 1.5	UTP-F 2.8	DUP-UTP-F 2.8	UTP-G 1.6	UTP-H 1.5	UTP-I 0.3	UTP-I 0.9	UTP-I 1.5	UTP-I 2.8	UTP-J 1.5	DUP-UTP-J 1.5	UTP-J 0.8
Sample Date (Day-Month-Year)									2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	2-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06
Depth of Sample (mbgs)									1.4-1.6 m	1.9-2.1 m	1.4-1.6 m	2.7-2.9 m	2.7-2.9 m	1.5-1.7 m	1.4-1.6 m	0.2-0.4 m	0.8-1 m	1.4-1.6 m	2.7-2.9 m	1.4-1.6 m	1.4-1.6 m	0.7-0.9 m
QA/QC												FDA	FD							FDA	FD	
Volatile Petroleum Hydrocarbons																						
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.005	< 0.005	< 0.005	**0.038**	< 0.005	< 0.005	< 0.005	< 0.005	**0.3**	**0.007**	< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	**46**	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Styrene	5	EH	50	EH	5		**50**		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	**3.9**	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
m,p-Xylenes	-		-		-		-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	-		-		-		-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	**190**	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
VH (C6-C10)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	7700	< 10	< 10	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons																						
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-	**3.8**	< 0.01	-	-	-	< 0.01
Acenaphthylene	-		-		320	AW	**320**	AW	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-	< 1	< 0.01	-	-	-	< 0.01
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-	< 0.4	< 0.01	-	-	-	< 0.01
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-	< 0.02	< 0.01	-	-	-	< 0.01
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	-	-	< 0.01
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	0.04	-	-	0.03	0.04	-	0.02	-	< 0.01	0.02	-	-	-	0.03
Benzo(g,h,i)perylene	-		-		-		-		0.03	-	-	0.07	0.07	-	< 0.02	-	< 0.02	< 0.02	-	-	-	0.02
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-	< 0.01	< 0.01	-	-	-	< 0.01
Chrysene	40	HH	900	HH	6.2	EI	-		< 0.01	-	-	< 0.04	< 0.04	-	< 0.01	-	< 0.02	< 0.01	-	-	-	< 0.01
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	< 0.02	-	-	< 0.02	< 0.02	-	< 0.02	-	< 0.02	< 0.02	-	-	-	< 0.02
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-	0.08	< 0.01	-	-	-	< 0.01
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	< 0.01	-	-	< 0.01	< 0.01	-	< 0.01	-	**4**	< 0.01	-	-	-	< 0.01
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	< 0.02	-	-	< 0.02	< 0.02	-	< 0.02	-	< 0.02	< 0.02	-	-	-	< 0.02
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	**0.02**	-	-	**0.03**	**0.02**	-	< 0.01	-	**52**	< 0.01	-	-	-	0.01
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	0.03	-	-	**0.06**	**0.06**	-	0.02	-	**2.7**	0.03	-	-	-	**0.05**
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	< 0.01	-	-	0.01	0.01	-	< 0.01	-	0.2	< 0.01	-	-	-	< 0.01
2-methylnaphthalene	60	HH	950	HH	-		-		0.01	-	-	0.03	0.02	-	<0.01	-	79	0.01	-	-	-	0.02
Total PAH and B(a)P Calculation																						
PAH, Low Molecular Weight	-		-		-		-		0.06	-	-	0.11	0.1	-	0.02	-	140	0.04	-	-	-	0.08
PAH, High Molecular Weight	-		-		-		-		0.07	-	-	0.11	0.12	-	<0.02	-	0.28	0.02	-	-	-	0.05
PAH, Total	-		-		-		-		0.13	-	-	0.22	0.23	-	0.04	-	140	0.07	-	-	-	0.14
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Index of Additive Cancer Risk Calc.																						
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Extractable Petroleum Hydrocarbons																						
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	19600	< 100	< 100	< 100	< 100	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		< 100	-	-	< 100	< 100	-	< 100	-	19600	< 100	-	-	-	< 100
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	746	< 100	< 100	< 100	< 100	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		< 100	-	-	< 100	< 100	-	< 100	-	745	< 100	-	-	-	< 100
CCME Hydrocarbon Fractions																						
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	**7400**	< 10	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	**23900**	< 50	< 50	< 50	< 50	< 50
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	**3700**	< 50	< 50	73	< 50	69
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	108	< 50	< 50	< 50	< 50	< 50
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
ppm = parts per million; m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.
Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.
High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B2 Results of Soil Analyses - Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location									UTP-K	UTP-L	UTP-L	UTP-L
Sample Control Number	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	MCS	UTP-K0.7	DUP4	UTP-L 0.3	UTP-L 0.8
Sample Date (Day-Month-Year)									3-Aug-06	3-Aug-06	3-Aug-06	3-Aug-06
Depth of Sample (mbgs)									0.6-0.8 m	0.2-0.4 m	0.2-0.4 m	0.7-0.9 m
QA/QC												
Volatile Petroleum Hydrocarbons												
Benzene	0.03	DW	0.03	DW	0.0068		**0.0068**		< 0.005	< 0.005	< 0.005	< 0.005
Ethylbenzene	10	DW	10	DW	0.018		**0.018**		< 0.01	< 0.01	< 0.01	< 0.01
Styrene	5	EH	50	EH	5		**50**		<0.1	< 0.1	< 0.1	< 0.1
Toluene	0.3	AW	0.3	AW	0.08		**0.08**		< 0.05	< 0.05	< 0.05	< 0.05
m,p-Xylenes	-		-		-		-		< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene	-		-		-		-		< 0.1	< 0.1	< 0.1	< 0.1
Xylenes, Total	4.5	DW	4.5	DW	2.4		**2.4**		< 0.1	< 0.1	< 0.1	< 0.1
Methyl tert-Butyl Ether	800	HH	3500	HH	-		**-**		< 0.1	< 0.1	< 0.1	< 0.1
VH (C6-C10)	-		-		-		-		-	-	-	-
VPH (C6-C10)	200	EH/HH	200	EH/HH	-		-		< 10	< 10	< 10	< 10
Total Polychlorinated Biphenyls	1.5		35		1.3		**33**		-	-	-	-
Polycyclic Aromatic Hydrocarbons												
Acenaphthene	950	HH	15000	HH	0.28	AW	**0.28**	AW	-	-	< 0.01	-
Acenaphthylene	-		-		320	AW	**320**	AW	-	-	< 0.01	-
Anthracene	2.5	T	30	T	2.5	SC	**32**	SC	-	-	< 0.03	-
Benzo(a)anthracene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.02	-
Benzo(a)pyrene	5	INT	50	INT	0.6	EI	**1.4**	Int	-	-	< 0.03	-
Benzo(b)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	-	-
Benzo(b,j) fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	0.04	-
Benzo(g,h,i)perylene	-		-		-		-		-	-	0.03	-
Benzo(k)fluoranthene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.01	-
Chrysene	40	HH	900	HH	6.2	EI	-		-	-	< 0.02	-
Dibenzo(a,h)anthracene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.02	-
Fluoranthene	50	T	200	T	15.4	EI	**180**	SC	-	-	< 0.03	-
Fluorene	600	HH	9500	HH	0.25	AW	**0.25**	AW	-	-	< 0.01	-
Indeno(1,2,3-c,d)pyrene	1	EH	10	EH	1	Int	**10**	Int	-	-	< 0.02	-
Naphthalene	0.6	TOX	20	TOX	0.013	AW	**0.013**	AW	-	-	< 0.01	-
Phenanthrene	5	EH	50	EH	0.046	AW	**0.046**	AW	-	-	< 0.02	-
Pyrene	10	EH	100	EH	7.7	EI/R	**100**	Int	-	-	0.11	-
2-methylnaphthalene	60	HH	950	HH	-		-		-	-	<0.01	-
Total PAH and B(a)P Calculation												
PAH, Low Molecular Weight	-		-		-		-		-	-	<0.03	-
PAH, High Molecular Weight	-		-		-		-		-	-	0.17	-
PAH, Total	-		-		-		-		-	-	0.17	-
Benzo(a)pyrene Total Potency Equivalence (TPE)	-		-		0.60	Int	**0.60**	Int	-	-	-	-
Index of Additive Cancer Risk Calc.												
Index of Additive Cancer Risk (IACR)	-		-		1	PW	**1**	PW	-	-	-	-
Extractable Petroleum Hydrocarbons												
EPH (C10-C19)	1000 *		2000 *		-		-		< 100	1300	1020	< 100
LEPH (C10-C19) Less PAHs	1000	EH/HH	2000	EH/HH	-		-		-	-	1020	-
EPH (C19-C32)	1000 *		5000 *		-		-		< 100	3000	2310	< 100
HEPH (C19-C32) Less PAHs	1000	EH/HH	5000	EH/HH	-		-		-	-	2310	-
CCME Hydrocarbon Fractions												
Petroleum Hydrocarbons - F1 (C6-C10)	200 *	*G*	200 *	G	30	C	**170**	F/P	< 10	< 10	< 10	< 10
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	200 *	*G*	200 *	G	30	C	**170**	F/P	-	-	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	1000 *	*G*	2000 *	G	150		**230**	F/P	< 50	**275**	**333**	< 50
Petroleum Hydrocarbons - F2 (C10-C16) less Naphthalene	1000 *	*G*	2000 *	G	150		**230**	F/P	-	-	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	1000 *	*G*	5000 *	G	300	C	**1700**	C	< 50	**3100**	**4010**	< 50
Petroleum Hydrocarbons - F3 (C16-C34) less PAHs	1000 *	*G*	5000 *	G	300	C	**1700**	C	-	-	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	-		-		2800	C	**3300**	C	< 50	1100	1440	< 50
Petroleum Hydrocarbon 4G-SG (BHH+SG)	-		-		-		-		-	-	-	-

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
ppm = parts per million; m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
* The standard for LEPH and HEPH was conservatively screened against EPH (C10-19) and EPH (C19-32) values respectively; The standard for VPH(C6-C10, LEPH, HEPH was conservatively screened agains F1, F2 and F3 petroluem hydrocarbon fractions respectively.
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.
Low Molecular Weight PAHs includes those with less than four rings (acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene and phenanthrene). For non-detect PAHs, the detection limit was used in the sum.
High Molecular Weight PAHs includes those with four or more rings (benzo(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, fluoranthene, indeno(1,2,3-cd)pyrene and pyrene). For non-detect PAHs, the detection limit was used in the sum.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location																									
Sample Control Number		BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	MCS	AH16-01	AH16-01	AH16-02	AH16-02	AH16-03	AH16-03	AH16-04	AH16-05	AH16-05	AH16-06	AH16-07	AH16-08	BH10-04	BH10-05	BH10-06
										AH16-01/S1	AH16-01/S2	AH16-02/S1	AH16-02/S2	AH16-03/S1	AH16-03/S2	AH16-04/S1	AH16-05/S1	AH16-05/S2	AH16-06/S1	AH16-07/S1	AH16-08/S1	21694-03	21694-10	21695-03
Sample Date (Day-Month-Year)										5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	5-Nov-16	10-Oct-10	10-Oct-10	11-Oct-10
Depth of Sample (mbgs)										0.2-0.3 m	0.9-1 m	0.5-0.6 m	0.8-0.9 m	0.5-0.6 m	0.8-0.9 m	0.45-0.5 m	0.35-0.45 m	0.75-0.85 m	0.85-0.95 m	0.8-0.9 m	0.3-0.4 m	0.9-1.2 m	1.5-1.8 m	0.9-1.1 m
QA/QC	Units																							
Volatile Organic Compounds																								
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-		-		< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	-	-	-
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
Chlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
Chloroethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chloroform	mg/kg	5	EH	50	EH	5		**50**		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10	< 0.10	< 0.10
Chloromethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.15	< 0.10	< 0.10	0.29	0.27	< 0.10	< 0.30	< 0.30	< 0.30
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	-	-
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,1-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,2-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,1-dichloroethene	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.80	< 0.10	< 0.30
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2		**0.6**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.30	< 0.40	< 0.20
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01		**0.01**		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.015	< 0.015	< 0.015
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-		-		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.10	< 0.10	< 0.10
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-		-		< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.10	< 0.10	< 0.10
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	-	-
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	-	-
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2		**10**		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	-	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location								BH10-07	BH16-01	BH16-01	BH16-02	BH16-02	BH16-03	BH16-03	BH16-03	BH16-03	BH16-04	BH16-04	BH16-04	BH16-05	BH16-05	BH16-06
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		21695-09	02022-01	02022-02	02022-05	02022-07	02022-09	02022-10	02022-11	02023-01	02023-03	02023-04	02023-06	02023-08	02023-11	02021-01
Sample Date (Day-Month-Year)								11-Oct-10	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16
Depth of Sample (mbgs)								0.7-0.9 m	0.3-0.61 m	1.21-1.52 m	0.3-0.61 m	1.82-2.12 m	0.15-0.45 m FDA	0.15-0.45 m FD	0.91-1.21 m	3.94-4.24 m	0.3-0.61 m	1.52-1.82 m	3.94-4.24 m	1.06-1.36 m	3.03-3.18 m	0.3-0.61 m
QA/QC	Units		MCS		MCS		MCS															
Volatile Organic Compounds																						
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-	-	-	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Chlorobenzene	mg/kg	1	EH	10	EH	1	**10**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Chloroethane	mg/kg	-		-		-	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chloroform	mg/kg	5	EH	50	EH	5	**50**	< 0.10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Chloromethane	mg/kg	-		-		-	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5	**50**	< 0.30	< 0.10	< 0.10	< 0.10	< 0.10	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.10	< 0.10	< 0.10	< 0.10	0.1
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-	-	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1	**10**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1	**10**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1	**10**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethane	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethane	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethene	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-	-	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5	**50**	< 0.30	< 0.025	< 0.025	< 0.025	< 0.025	0.03	< 0.025	< 0.025	< 0.025	0.03	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2	**0.6**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5	**50**	< 0.30	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01	**0.01**	< 0.015	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-	-	< 0.10	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-	-	< 0.10	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2	**10**	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2	**10**	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2	**10**	-	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location																				
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		CCME Soil Industrial		BH16-06 02021-03	BH16-07 02021-04	BH16-07 02021-06	BH16-08 02021-07	BH16-08 02021-09	BH16-09 02021-10	BH16-09 02021-11	BH16-10 02026-01	BH16-10 02026-02	BH16-10 02026-03	BH16-11 02026-04
Sample Date (Day-Month-Year)										6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16
Depth of Sample (mbgs)										2.12-2.42 m	0.15-0.45 m	2.27-2.58 m	0.05-0.35 m	1.82-2.12 m	0.15-0.45 m	1.06-1.36 m	0-0.3 m	0.9-1.3 m FDA	0.9-1.3 m FD	0.16-0.46 m
QA/QC	Units		MCS		MCS		MCS		MCS											
Volatile Organic Compounds																				
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-		-		< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.60
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
Chlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
Chloroethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20
Chloroform	mg/kg	5	EH	50	EH	5		**50**		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10
Chloromethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,1-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,2-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,1-dichloroethene	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2		**0.6**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01		**0.01**		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.010
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-		-		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.40
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-		-		< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.12
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2		**10**		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.40

Location																				
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		CCME Soil Industrial		BH16-11 02026-06	BH16-12 02026-07	BH16-12 02026-10	BH16-15 01133-01							
Sample Date (Day-Month-Year)										9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16							
Depth of Sample (mbgs)										2.12-2.42 m	0.3-0.6 m	2.72-3.03 m	0-0.3 m							
QA/QC	Units		MCS		MCS		MCS		MCS											
Volatile Organic Compounds																				
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050							
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-		-		< 0.30	< 0.30	< 0.30	< 0.30							
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050							
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
Chlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025							
Chloroethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10							
Chloroform	mg/kg	5	EH	50	EH	5		**50**		< 0.050	< 0.050	< 0.050	< 0.050							
Chloromethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10							
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.10	< 0.10	< 0.10	< 0.10							
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050							
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025							
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025							
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025							
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025							
1,1-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
1,2-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
1,1-dichloroethene	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050							
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050							
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025							
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2		**0.6**		< 0.025	< 0.025	< 0.025	< 0.025							
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025							
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01		**0.01**		< 0.0050	< 0.0050	< 0.0050	< 0.0050							
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-		-		< 0.20	< 0.20	< 0.20	< 0.20							
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-		-		< 0.060	< 0.060	< 0.060	< 0.060							
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025							
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025							
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2		**10**		< 0.20	< 0.20	< 0.20	< 0.20							

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
m bgs = metres below ground surface
FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).
Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location								BH16-15	BH16-15	BH16-16	BH16-16	BH16-17	BH16-17	MW09-03	MW09-03	MW09-04	MW09-05	MW10-01S	MW10-02	MW10-03	MW16-02	MW16-02
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		01133-02	01133-04	01133-05	01133-07	01133-08	01133-09	09-020143-09	09-020143-10	09-020144-01	09-020144-04	24418-01	24418-04	24419-02	MW16-02/SA2	MW16-02/SA3
Sample Date (Day-Month-Year)								9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	9-Sep-16	6-Oct-09	6-Oct-09	7-Oct-09	8-Oct-09	20-Sep-10	22-Sep-10	27-Sep-10	1-Sep-16	1-Sep-16
Depth of Sample (mbgs)								0.91-1.21 m	4.85-5.15 m	0-0.3 m	2.27-2.58 m	0.15-0.45 m	1.21-1.52 m	1.5-2 m	1.5-2 m	1.8-2.1 m	1.2-1.5 m	0.8-1.1 m	1.5-1.8m	1.5-1.8m	0.99-1.32 m	1.97-2.3 m
QA/QC														FDA	FD							
Volatile Organic Compounds																						
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-		< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	-	-	-	-	-	-	-	< 0.30	< 0.30
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
Chlorobenzene	mg/kg	1	EH	10	EH	1		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
Chloroethane	mg/kg	-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chloroform	mg/kg	5	EH	50	EH	5		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.050	< 0.050
Chloromethane	mg/kg	-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.45	< 0.30	0.17	< 0.10
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	-	-	-	-	-	-	< 0.025	< 0.025
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,1-dichloroethane	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,2-dichloroethane	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,1-dichloroethene	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.025	< 0.025
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.015	< 0.0050	< 0.0050
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20	< 0.20
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-		< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.060	< 0.060
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	-	-	-	-	-	-	< 0.025	< 0.025
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	-	-	-	-	-	-	< 0.025	< 0.025
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	-	-	-	-	-	-	-	< 0.20	< 0.20

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location								MW16-05	MW16-05	MW16-06	MW16-06	MW16-06	MW16-07	MW16-07	MW16-08	MW16-08	MW16-08	SB-BH-07	SS10	SS11	TP16-01	TP16-01
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		MW16-05/SA2	MW16-05/SA4	MW16-06/SA4	MW16-06/SA4 (FD)	MW16-06/SA5	MW16-07/SA3	MW16-07/SA5	MW16-08/SA2	MW16-08/SA4	MW16-08/SA4 (FD)	SBBH-07-03	02026-12	02026-11	02025-01	02025-03
Sample Date (Day-Month-Year)								3-Sep-16	3-Sep-16	4-Sep-16	4-Sep-16	4-Sep-16	4-Sep-16	4-Sep-16	5-Sep-16	5-Sep-16	5-Sep-16	3-Feb-03	9-Sep-16	9-Sep-16	6-Sep-16	6-Sep-16
Depth of Sample (mbgs)								1.15-1.48 m	3.78-4.11 m	2.8-3.13 m	2.8-3.13 m	3.95-4.28 m	2.63-2.96 m	4.93-5.39 m	0.82-1.15 m	1.97-2.3 m	1.97-2.3 m	3.3-3.4 m	0.15-0.45 m	0.15-0.45 m	0.5-0.5 m	2.5-2.5 m
QA/QC	Units		MCS		MCS		MCS			FDA	FD					FDA	FD					
Volatile Organic Compounds																						
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-		< 0.10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10	< 0.050	< 0.050	< 0.050	< 0.2	< 0.050	< 0.050	< 0.050	< 0.050
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-		< 0.60	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.60	< 0.30	< 0.30	< 0.30	-	< 0.30	< 0.30	< 0.30	< 0.30
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-		< 0.10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10	< 0.050	< 0.050	< 0.050	< 0.2	< 0.050	< 0.050	< 0.050	< 0.050
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
Chlorobenzene	mg/kg	1	EH	10	EH	1		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
Chloroethane	mg/kg	-		-		-		< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10	< 0.2	< 0.10	< 0.10	< 0.10	< 0.10
Chloroform	mg/kg	5	EH	50	EH	5		< 0.10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10	< 0.050	< 0.050	< 0.050	< 0.2	< 0.050	< 0.050	< 0.050	< 0.050
Chloromethane	mg/kg	-		-		-		< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.20	< 0.10	< 0.10	< 0.10	< 0.2	< 0.10	< 0.10	< 0.10	< 0.10
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5		< 0.20	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.44	< 0.10	< 0.10	< 0.10	<1	< 0.10	< 0.10	< 0.10	< 0.10
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-		< 0.10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10	< 0.050	< 0.050	< 0.050	< 0.2	< 0.050	< 0.050	< 0.050	< 0.050
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	-	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethane	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethane	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethene	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-		< 0.10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10	< 0.050	< 0.050	< 0.050	< 0.2	< 0.050	< 0.050	< 0.050	< 0.050
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-		< 0.10	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.10	< 0.050	< 0.050	< 0.050	< 0.2	< 0.050	< 0.050	< 0.050	< 0.050
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5		< 0.050	4	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	0.2	0.76	0.49	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	0.3	< 0.025	< 0.025	< 0.025	< 0.025
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	0.067	0.033	< 0.2	< 0.025	< 0.025	< 0.025	< 0.025
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01		< 0.010	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.010	< 0.0050	< 0.0050	< 0.0050	< 0.2	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-		< 0.40	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.40	< 0.20	< 0.20	< 0.20	< 0.2	< 0.20	< 0.20	< 0.20	< 0.20
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-		< 0.12	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.12	< 0.060	< 0.060	< 0.060	< 0.2	< 0.060	< 0.060	< 0.060	< 0.060
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	-	< 0.025	< 0.025	< 0.025	< 0.025
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2		< 0.050	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.050	< 0.025	< 0.025	< 0.025	-	< 0.025	< 0.025	< 0.025	< 0.025
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2		< 0.40	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.40	< 0.20	< 0.20	< 0.20	-	< 0.20	< 0.20	< 0.20	< 0.20

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location								TP16-02	TP16-02	TP16-03	TP16-03	TP16-03	TP16-08	TP16-08	TP16-11	TP16-11	TP16-12	TP16-12	TP16-12	TP16-13	TP16-13	TP16-13
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		02025-04	02025-06	02025-09	02025-10	02025-11	02028-02	02028-04	02028-08	02028-09	02028-10	02028-11	02028-12	02029-01	02029-02	02029-04
Sample Date (Day-Month-Year)								6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	6-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16	7-Sep-16
Depth of Sample (mbgs)								0.5-0.5 m	2.5-2.5 m	1.5-1.5 m	2.5-2.5 m	3.5-3.5 m	1.5-1.5 m	3.4-3.4 m	2-2 m	3-3 m	0.5-0.5 m FDA	0.5-0.5 m FD	1.5-1.5 m	0.5-0.5 m	1.5-1.5 m	2.5-2.5 m
QA/QC	Units		MCS		MCS		MCS															
Volatile Organic Compounds																						
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	0.11	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-	-	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Chlorobenzene	mg/kg	1	EH	10	EH	1	**10**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Chloroethane	mg/kg	-		-		-	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chloroform	mg/kg	5	EH	50	EH	5	**50**	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Chloromethane	mg/kg	-		-		-	-	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5	**50**	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1	**10**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1	**10**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1	**10**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethane	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethane	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethene	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-	-	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-	-	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	8.3	0.56	< 0.025	< 0.025	< 0.025	0.041	0.05	< 0.025	0.44	< 0.025
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2	**0.6**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5	**50**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.093	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01	**0.01**	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-	-	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-	-	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2	**10**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.11	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2	**10**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2	**10**	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	CCME Soil Industrial	MCS	TP16-14	TP16-14	TP16-14	TP16-15	TP16-15	TP16-16	TP16-16	TP16-16	TP16-17	TP16-17	TP16-18	TP16-18	TP16-19	TP16-19	TP16-20
Sample Control Number										02029-05	02029-06	02029-07	TP16-15-S1	TP16-15-S2	TP16-16-S1	TP16-16-S2	TP16-16-S3	TP16-17-S1	TP16-17-S2	TP16-18-S1	TP16-18-S2	TP16-19-S1	TP16-19-S2	TP16-20-S1
Sample Date (Day-Month-Year)										7-Sep-16	7-Sep-16	7-Sep-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16
Depth of Sample (mbgs)										0.5-0.5 m	1.5-1.5 m	2.5-2.5 m	1-1.2 m	2.3-2.5 m	0.8-1 m	3-3.2 m	5.2-5.4 m	0.9-1.1 m	4.2-4.4 m	1-1.2 m	2.3-2.5 m	1.3-1.5 m	2.3-2.5 m	1.1-1.3 m
QA/QC																								
Volatile Organic Compounds																								
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-		-		< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Chlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Chloroethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chloroform	mg/kg	5	EH	50	EH	5		**50**		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Chloromethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.21	< 0.10	< 0.10	0.23	1.3	< 0.10	< 0.10	< 0.10	0.49	0.62
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethene	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2		**0.6**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01		**0.01**		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-		-		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-		-		< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2		**10**		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location																					
Sample Control Number		BC CSR Soil Low Density Residential		BC CSR Soil Industrial		CCME Soil Residential		**CCME Soil Industrial**		TP16-20 TP16-20-S3	TP16-21 TP16-21-S1	TP16-21 TP16-21-S2	TP16-22 TP16-22-S1	TP16-22 TP16-22-S2	TP16-23 TP16-23-S1	TP16-23 TP16-23-S2	TP16-24 TP16-24-S1	TP16-24 TP16-24-S2	TP16-25 TP16-25-S1	TP16-25 TP16-25-S2	TP16-26 TP16-26-S1	TP16-26 TP16-26-S2	TP16-27 TP16-27-S1	TP16-27 TP16-27-S2
Sample Date (Day-Month-Year)										6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	6-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16
Depth of Sample (mbgs)										4.1-4.3 m	1-1.2 m	2-2.2 m	1-1.2 m	2.1-2.3 m	0.8-1 m	1.8-2 m	0.8-1 m	1.7-1.9 m	0.8-1 m	1.6-1.8 m	0.9-1.1 m	2.6-2.8 m	0.9-1.1 m	3.9-4.1 m
QA/QC	Units		MCS		MCS		MCS		MCS															
Volatile Organic Compounds																								
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-		-		< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Chlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Chloroethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Chloroform	mg/kg	5	EH	50	EH	5		**50**		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
Chloromethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5		**50**		1.4	0.77	< 0.10	< 0.10	0.9	< 0.10	1.9	< 0.10	< 0.10	0.14	< 0.10	< 0.10	0.88	0.2	0.77
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1-dichloroethene	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2		**0.6**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	0.074	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01		**0.01**		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-		-		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-		-		< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2		**10**		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B3 Results of Soil Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location		BC CSR		BC CSR		CCME		CCME Soil		TP16-28	TP16-28	TP16-29	TP16-29	TP16-29	TP16-30	TP16-30	TP16-33	TP16-33	TP16-34	TP16-34	URS-BH09	URS-BH14
Sample Control Number		Soil		Soil		Soil				TP16-28-S1	TP16-28-S2	TP16-29-S1	TP16-29-S3	TP16-29-S3 FD	TP16-30-S1	TP16-30-S2	TP16-33/S1	TP16-33/S3	TP16-34/S1	TP16-34/S2	URSBH 09- 1.5	URSBH 14-3.5
Sample Date (Day-Month-Year)		Low Density		Industrial		Residential		Industrial		7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	7-Nov-16	24-Nov-05	24-Nov-05
Depth of Sample (mbgs)		Residential								1.5-1.7 m	3.7-3.9 m	1-1.2 m	3-3.2 m FDA	3-3.2 m FD	2.1-2.2 m	3.7-3.9 m	1-1.2 m	2.8-3 m	1-1.2 m	1.8-2 m	1.4-1.6 m	3.4-3.6 m
QA/QC	Units		MCS		MCS		MCS		MCS													
Volatile Organic Compounds																						
Bromodichloromethane (BDCM)	mg/kg	20	HH	100	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.05	< 0.05
Bromomethane (Methyl bromide)	mg/kg	20	HH	300	HH	-		-		< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.3	< 0.3
Bromoform (Tribromomethane)	mg/kg	200	HH	800	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.05	< 0.05
Carbon Tetrachloride	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
Chlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
Chloroethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.1	0.1
Chloroform	mg/kg	5	EH	50	EH	5		**50**		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.05	0.08
Chloromethane	mg/kg	-		-		-		-		< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.1	< 0.1
Dichloromethane (DCM) (Methylene Chloride)	mg/kg	5	EH	50	EH	5		**50**		0.56	0.62	< 0.10	< 0.10	< 0.10	0.15	< 0.10	0.59	0.54	0.57	< 0.10	< 0.1	< 0.1
Dibromochloromethane (DBCM)	mg/kg	15	HH	80	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.05	< 0.05
1,2-dibromoethane (Ethylene Dibromide) (EDB)	mg/kg	0.7	HH	3	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,2-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,3-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,4-dichlorobenzene	mg/kg	1	EH	10	EH	1		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,1-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,2-dichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,1-dichloroethene	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,2-dichloropropane (Propylene Dichloride)	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,3-dichloropropene (Cis)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.03	< 0.03
1,3-dichloropropene (Trans)	mg/kg	5	HH	50	HH	-		-		< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.1	< 0.1
1,1,1,2-tetrachloroethane	mg/kg	55	HH	250	HH	-		-		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	<0.03	< 0.03
1,1,2,2-tetrachloroethane	mg/kg	7	HH	30	HH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
Tetrachloroethylene (PCE/PERC)	mg/kg	2.5	AW	2.5	AW	0.2		**0.6**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,1,1-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
1,1,2-trichloroethane	mg/kg	5	EH	50	EH	5		**50**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.03	< 0.03
Trichloroethylene (TCE)	mg/kg	0.3	AW	0.3	AW	0.01		**0.01**		< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.03	< 0.03
Trichlorofluoromethane (Freon 11)	mg/kg	4500	AW	70000	AW	-		-		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.2	< 0.2
Vinyl Chloride (Chloroethene)	mg/kg	0.2	HH	9	HH	-		-		< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.060	< 0.08	< 0.08
1,2,3-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	-
1,2,4-Trichlorobenzene	mg/kg	2	EH	10	EH	2		**10**		< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	-	-
Hexachlorobutadiene	mg/kg	15	HH	85	HH	2		**10**		< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	-	-

Notes:

Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.

m bgs = metres below ground surface

FDA = field duplicate available; FD = field duplicate; QA/QC = quality assurance/quality control

MCS = most conservative standard based on applicable site-specific standards

CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.

CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)

Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).

CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

Italics = indicates that the detection limit exceeds one or more criteria.

TABLE B4 Results of Soil Analyses - Glycols
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location												URS-BH14
Sample Control Number												URSBH 14-3.5
Sample Date (Day-Month-Year)												24-Nov-05
Depth of Sample (mbgs)												3.4-3.6 m
QA/QC	Units	BC CSR Soil Low Density Residential	MCS	BC CSR Soil Industrial	MCS	CCME Soil Residential	MCS	**CCME Soil Industrial**	MCS			
Glycol												
Ethylene Glycol	mg/kg	10		10		960		**960**				<2.1
Diethylene Glycol	mg/kg											<3.2
Triethylene Glycol	mg/kg	30000		45000								<6.3
Tetraethylene Glycol	mg/kg											<11
Propylene Glycol	mg/kg											<11

Notes:
Results are expressed in micrograms per gram (ug/g), unless otherwise indicated.
m bgs = metres below ground surface
MCS = most conservative standard based on applicable site-specific standards
CSR Standards shown from the Ministerial Order No. M426. This order outlines amendments to the Contaminated Sites Regulation, B.C. Reg. 375/96 that are to be effective November 1, 2017.
CSR Standards reflect the most conservative value of generic (G), intake of contaminated soil (I), toxicity to soil invertebrates and plants (T), aquatic life (AW) and drinking water (DW), Ecological Health (EH) or Human Health (HH)
Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines for residential or park land (RL/PL), and industrial land (IL).
CCME guidelines reflect the most conservative value of aquatic life (AW), interim or provisional (int), environmental ingestion (EI), soil contact (SC), coarse soil (C), fine soil (F), potable water (P).

TABLE B5 Results of Soil Analyses - TCLP Testing
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

	Location	MW16-08	MW16-08	TP16-04	TP16-07
	Sample Name	MW16-08/SA4	MW16-08/SA4 (FD)	01129-02	01129-06
	Sample Date	9/5/2016	9/5/2016	9/7/2016	9/7/2016
	Sample Depth	1.97-2.3 m	1.97-2.3 m	1.65-1.65 m	0.5-0.5 m
Parameter	Unit				
Barium	mg/L	-	-	4.45	2.80
1,1,1,2-Tetrachloroethane	ug/L	< 10	< 10	-	-
1,1,1-Trichloroethane	ug/L	< 10	< 10	-	-
1,1,2,2-Tetrachloroethane	ug/L	< 10	< 10	-	-
1,1,2-Trichloroethane	ug/L	< 10	< 10	-	-
1,1-Dichloroethane	ug/L	< 10	< 10	-	-
1,1-Dichloroethene	ug/L	< 10	< 10	-	-
1,2,3-Trichlorobenzene	ug/L	< 10	< 10	-	-
1,2,4-Trichlorobenzene	ug/L	< 10	< 10	-	-
1,2,4-Trimethylbenzene	ug/L	28	18	-	-
1,2-Dibromoethane	ug/L	< 10	< 10	-	-
1,2-Dichlorobenzene	ug/L	< 10	< 10	-	-
1,2-Dichloroethane	ug/L	< 10	< 10	-	-
1,2-Dichloropropane	ug/L	< 10	< 10	-	-
1,3,5-Trichlorobenzene	ug/L	< 10	< 10	-	-
1,3,5-Trimethylbenzene	ug/L	< 10	< 10	-	-
1,3-Dichlorobenzene	ug/L	< 10	< 10	-	-
1,4-Dichlorobenzene	ug/L	< 10	< 10	-	-
2-Methylnaphthalene	ug/L	3.8	4.9	-	-
Acenaphthene	ug/L	< 0.10	0.10	-	-
Acenaphthylene	ug/L	< 0.10	< 0.10	-	-
Acridine	ug/L	< 0.50	< 0.50	-	-
Anthracene	ug/L	< 0.10	< 0.10	-	-
Benzene	ug/L	< 10	< 10	-	-
Benzo [b,j] fluoranthene	ug/L	< 0.10	< 0.10	-	-
Benzo[a]anthracene	ug/L	< 0.10	< 0.10	-	-
Benzo[a]pyrene	ug/L	< 0.10	< 0.10	-	-
Benzo[g,h,i]perylene	ug/L	< 0.20	< 0.20	-	-
Benzo[k]fluoranthene	ug/L	< 0.10	< 0.10	-	-
Bromodichloromethane	ug/L	< 10	< 10	-	-
Bromoform	ug/L	< 10	< 10	-	-
Bromomethane	ug/L	< 10	< 10	-	-
Carbon Tetrachloride	ug/L	< 10	< 10	-	-
Chlorobenzene	ug/L	< 10	< 10	-	-
Chloroethane	ug/L	< 10	< 10	-	-
Chloroform	ug/L	< 10	< 10	-	-
Chloromethane	ug/L	< 10	< 10	-	-
Chrysene	ug/L	< 0.10	< 0.10	-	-
cis-1,2-Dichloroethene	ug/L	< 10	< 10	-	-
cis-1,3-Dichloropropene	ug/L	< 10	< 10	-	-
Dibenzo[a,h]anthracene	ug/L	< 0.20	< 0.20	-	-
Dibromochloromethane	ug/L	< 10	< 10	-	-
Ethylbenzene	ug/L	< 10	< 10	-	-
Extractable Petroleum Hydrocarbons (C10-C19)	mg/L	< 0.20	0.20	-	-
Extractable Petroleum Hydrocarbons (C19-C32)	mg/L	< 0.20	< 0.20	-	-
Fluoranthene	ug/L	< 0.10	< 0.10	-	-
Fluorene	ug/L	0.26	0.15	-	-
Heavy Extractable Petroleum Hydrocarbons (C19-C32) Less P	mg/L	< 0.20	< 0.20	-	-
Indeno[1,2,3-cd]pyrene	ug/L	< 0.20	< 0.20	-	-
Light Extractable Petroleum Hydrocarbons (C10-C19) Less PA	mg/L	< 0.20	< 0.20	-	-
m,p-Xylenes	ug/L	< 20	< 20	-	-
Methyl Methacrylate	ug/L	< 10	< 10	-	-
Methyl tert-Butyl Ether	ug/L	< 10	< 10	-	-
Methylene Chloride	ug/L	< 10	< 10	-	-
Naphthalene	ug/L	3.2	4.3	-	-
o-Xylene	ug/L	< 10	< 10	-	-
Petroleum Hydrocarbons - F2 (C10-C16)	mg/L	< 0.20	< 0.20	-	-
Petroleum Hydrocarbons - F3 (C16-C34)	mg/L	< 0.20	< 0.20	-	-
Petroleum Hydrocarbons - F4 (C34-C50)	mg/L	< 3.0	< 3.0	-	-
Phenanthrene	ug/L	0.15	< 0.10	-	-
Polycyclic Aromatic Hydrocarbons, High Molecular Weight	ug/L	< 0.20	< 0.20	-	-
Polycyclic Aromatic Hydrocarbons, Low Molecular Weight	ug/L	7.4	9.4	-	-
Polycyclic Aromatic Hydrocarbons, Total	ug/L	7.4	9.4	-	-
Pyrene	ug/L	< 0.10	< 0.10	-	-
Quinoline	ug/L	< 0.50	< 0.50	-	-
Styrene	ug/L	< 10	< 10	-	-
Tetrachloroethene	ug/L	< 10	< 10	-	-
Toluene	ug/L	< 10	< 10	-	-
trans-1,2-Dichloroethene	ug/L	< 10	< 10	-	-
trans-1,3-Dichloropropene	ug/L	< 10	< 10	-	-
Trichloroethene	ug/L	< 10	< 10	-	-
Trichlorofluoromethane	ug/L	< 10	< 10	-	-
Vinyl Chloride	ug/L	< 10	< 10	-	-
Xylenes, Total	ug/L	< 10	< 10	-	-

All parameter units in milligrams per kilogram (mg/kg), unless otherwise noted.

FDA = Field Duplicate Available; FD = Field Duplicate.

SCN = Sample Control Number; MCS = Most Conservative Standard

TABLE B6 Results of Groundwater Analyses - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Notes	Omnibus Standards for Aquatic Life	Notes	Federal Interim Groundwater Quality Guidelines Residential	Notes	**Health Canada Guidelines for Drinking Water**	Notes	MW10-01S 24412-05 25-Sep-10 N	MW10-01S 22795-01 26-Sep-11 N	MW10-01S 23259-03 7-Jun-12 N	MW10-01S 283695-01 24-Jul-13 N	MW10-01S 17813-02 18-Sep-14 N	MW10-01S 01123-07 21-Oct-15 N	MW10-01D 24412-06 25-Sep-10 N	MW16-01 MW16-01 8-Sep-16 N	MW16-01 MW16-01 7-Nov-16 N	MW16-06 MW16-06 8-Sep-16 N
Physical Tests																		
pH (field)					6.5-9.0	FW	**6.5 to 8.5**	AO	**6.2**	6.76	**6.46**	**5.47**	**5.58**	**5.75**	**6.45**	7.84	**6.3**	7.09
Hardness (as CaCO3)									30.9	51.9	133	95.7	58.2	34.3	74.7	320	351	274
Anions and Nutrients																		
Bromide (Br)									-	<0.050	<0.050	-	-	-	-	-		-
Chloride (Cl)	250		1500		120	FW	**250**	AO	20.6	37.0	124	111	63.1	-	3.32	39	70	230
Fluoride (F)	1.5		2 , 3		0.12	FW	**1.5**		-	0.116	0.14	-	-	-	-	-	-	-
Nitrate (as N)	10		400		13	FW	**10**		-	<0.0050	0.204	-	-	-	-	-	-	-
Nitrite (as N)	1		0.2-2		0.06	FW	**1**		-	<0.0010	<0.0010	-	-	-	-	-	-	-
Sulfate (SO4)	500		1280-4290	H	100	FW	**500**		-	5.23	6.03	-	-	-	-	-	-	-
Cyanides																		
Cyanide, Total	0.2		0.05		0.005	FW			-	<0.0050	<0.0050	<0.0050	-	-	-	-	-	-
Cyanide, Free									-	-	<0.0050	<0.0050	-	-	-	-	-	-
Total Metals																		
Total Sodium (Na)									12.2	-	-	-	-	-	22.6	7.75	6.69	90.6
Dissolved Metals																		
Aluminum	9.5				0.005 - 0.1	pH	**0.1/0.2**	AO/Tr	**0.113**	**0.107**	**0.173**	0.099	0.093	0.0967	0.014	0.0073	< 0.0030	0.0547
Antimony	0.006		0.09		2	FW	**0.006**		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	0.00058
Arsenic	0.01		0.05		0.005	FW	**0.01**		0.0039	<0.00050	0.00052	0.0026	<0.0010	0.00028	<0.0010	0.00018	0.00021	0.00115
Barium	1		10		2.9	FW	**1**		0.679	**1.25**	**2.49**	**2.29**	**1.3**	0.945	0.279	0.169	0.205	0.558
Beryllium	0.008		0.0015		0.0053	FW			*<0.0050*	<0.0010	<0.0010	*<0.0050*	*<0.0050*	<0.00010	*<0.0050*	< 0.00010	< 0.00010	< 0.00010
Bismuth									-	-	<0.20	-	-	<0.0010	-	< 0.0010	< 0.0010	< 0.0010
Boron	5		12				**5**		<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	0.33	0.172	0.158	< 0.05
Cadmium	0.005		0.0005-0.004	H,pH	0.000017	FW	**0.005**		0.000209	0.00018	0.000354	0.000183	0.000166	0.000095	0.000077	0.00001	< 0.000010	0.000125
Calcium									8.45	14.6	39.1	25.7	16.7	9.50	20.6	87.5	99.1	80.2
Chromium	0.05 , 6	V	0.01 , 0.09	V	0.0089	FW	**0.05**		<0.00050	<0.0010	<0.0010	<0.00050	<0.00050	<0.0010	<0.00050	< 0.0010	< 0.0010	< 0.0010
Cobalt	0.001		0.04						0.0108	0.00559	0.011	0.0123	0.00439	0.00318	0.00328	< 0.00050	< 0.00050	0.00464
Copper	1.5		0.02-0.09	H	0.002 - 0.004	H	**1**	AO	<0.0010	0.0011	<0.0010	<0.0010	<0.0010	0.00108	0.0015	0.00032	0.00035	0.00191
Iron					0.3	FW	**0.3**	AO	**6.29**	**0.441**	**3.71**	**13.7**	0.089	0.120	<0.030	0.0409	**0.404**	0.193
Lead	0.01		0.04 - 0.16	H	0.001 - 0.007	H	**0.01**		<0.0010	<0.00050	<0.00050	<0.0010	<0.0010	<0.00020	<0.0010	< 0.00020	< 0.00020	< 0.00020
Lithium	0.008								*<0.050*	*<0.0050*	*<0.0050*	*<0.050*	*<0.050*	*<0.0050*	0.077	0.0522	0.052	0.0254
Magnesium									2.38	3.75	8.69	7.64	4.03	2.57	5.67	24.5	25.2	17.9
Manganese							**0.05**	AO	**0.459**	**0.191**	**0.391**	**0.648**	**0.166**	**0.115**	**0.417**	**0.0913**	**0.113**	**0.366**
Mercury	0.001		0.00025		0.000026	FW	**0.001**		*<0.00020*	<0.000010	<0.000010	*<0.00020*	*<0.00020*	<0.000010	*<0.00020*	< 0.000010	< 0.000010	< 0.000010
Molybdenum	0.25		10		0.073	FW			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.002	< 0.0010	< 0.0010	0.0012
Nickel	0.08		0.25 - 1.5	H	0.025 - 0.150	H			0.0104	0.0109	0.0199	0.0187	0.0094	0.0071	0.0086	< 0.0010	< 0.0010	0.009
Phosphorus									-	-	<0.30	-	-	-	-	-	-	-
Potassium									-	<2.0	<2.0	-	-	0.690	-	2.44	2.33	3.55
Selenium	0.01		0.02		0.001	FW	**0.05**		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.00017	<0.0010	< 0.00010	< 0.00010	0.00032
Silicon									-	-	2.64	-	-	4.00	-	4.53	5.13	4.13
Silver	0.02		0.0005 , 0.015	H	0.0001	FW			<0.000050	<0.000020	<0.000020	<0.000050	<0.000050	0.000051	<0.000050	< 0.000020	< 0.000020	< 0.000020
Sodium	200						**200**	AO	12.2	19.5	40.3	32.6	31.0	20.5	30.6	7.49	6.69	84.9
Strontium	2.5								-	-	0.189	-	-	0.0560	-	0.856	1.12	0.496
Sulphur									-	-	-	-	-	<3.0	-	7.7	7.3	< 3.0
Thallium	0.00004		0.003		0.0008	FW			*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.000050*	*<0.00020*	*< 0.000050*	*< 0.000050*	*< 0.000050*
Tin	2.5								-	<0.00050	<0.00050	-	-	<0.0050	-	< 0.0050	< 0.0050	< 0.0050
Titanium			1		0.1	FW			<0.050	<0.010	<0.010	<0.050	<0.050	<0.0050	<0.050	< 0.0050	< 0.0050	< 0.0050
Uranium	0.02		0.085		0.015	FW	**0.02**		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00010	0.00058	< 0.00010	< 0.00010	0.00123
Vanadium	0.02								*<0.030*	<0.0010	<0.0010	*<0.030*	*<0.030*	<0.0050	*<0.030*	< 0.0050	< 0.0050	< 0.0050
Zinc	3		0.075 - 2.4	H	0.03	FW	**5**	AO	0.02	0.0180	0.0318	0.0353	0.0129	0.0099	0.0726	< 0.0050	< 0.0050	0.0075
Zirconium	0.0003								-	-	-	-	-	*<0.00050*	-	*< 0.00050*	*< 0.00050*	*< 0.00050*

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.

FDA = Field Duplicate Available; FD = Field Duplicate.
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective
pH = pH-dependant guideline; V = Valence-dependant guideline; H = Hardness-dependant guideline
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; Cl = Chloride dependant; tot = Total; P = protocol 10;
* Applied the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life, Update 7.1, December 2007.

St 8 - Refer to CSR Schedule 6 footnotes 58, 59, 60, and 61 for the application of iron and manganese standards.

TABLE B6 Results of Groundwater Analyses - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Notes	Omnibus Standards for Aquatic Life	Notes	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	Water Well Steamboat 24-Nov-05 FDA	Water Well Water Dup 24-Nov-05 FD	MW09-01 09-020146-11-Oct-09 FDA	MW09-01 09-020146-11-Oct-09 FD	MW09-01 24412-07 25-Sep-10 N	MW09-01 22795-03 26-Sep-11 FDA	MW09-01 22795-04 26-Sep-11 FD	MW09-01 23259-02 7-Jun-12 N	MW09-01 283695-06 24-Jul-13 N	MW09-01 17813-01 18-Sep-14 N	MW09-01 01123-06 21-Oct-15 N	MW09-01 MW09-01 3-Sep-16 FDA	MW09-01 MW09-01 3-Sep-16 FD	MW09-02 09-020146-11-Oct-09 N	MW09-02 23259-09 8-Jun-12 N	MW09-03 09-020146-11-Oct-09 N	MW09-04 09-020146-11-Oct-09 N	MW09-04 24412-01 24-Sep-10 N	MW09-04 22795-05 29-Sep-11 N	MW09-04 23259-08 7-Jun-12 N	MW09-04 283695-03 24-Jul-13 FDA
Physical Tests																													
pH (field)					6.5-9.0	FW	**6.5 to 8.5**	AO	7.4	7.4	**6.31**	**6.31**	**6.22**	-	-	**6.15**	**5.66**	**5.76**	**6.02**	6.76	6.76	**6.22**	**5.84**	6.52	**5.78**	**5.79**	**3.9**	**4.61**	**4.86**
Hardness (as CaCO3)									100	100	332	318	170	1670	1670	132	274	361	672	78.4	76.2	356	2170	323	1730	3330	2970	1900	1510
Anions and Nutrients																													
Bromide (Br)									-	-	-	-	-	<2.5	<5.0	<0.50	-	-	-	-	-	-	<2.5	-	-	-	5.4	<5.0	-
Chloride (Cl)	250		1500		120	FW	**250**	AO	31.4	32.4	**527**	**553**	**302**	**2210**	**2170**	**281**	**492**	**505**	-	130	130	**547**	**3410**	**402**	**4760**	**2280**	**11100**	**6930**	**5450**
Fluoride (F)	1.5		2 , 3		0.12	FW	**1.5**		-	-	-	-	-	*<1.0*	0.226	*<0.20*	-	-	-	-	-	-	*<1.0*	-	-	-	**4.28**	**2.06**	-
Nitrate (as N)	10		400		13	FW	**10**		-	-	-	-	-	1.14	1.05	0.068	-	-	-	-	-	-	4.53	-	-	-	1.30	0.60	-
Nitrite (as N)	1		0.2-2		0.06	FW	**1**		-	-	-	-	-	*<0.10*	*<0.10*	<0.010	-	-	-	-	-	-	<0.050	-	-	-	*<0.10*	*<0.10*	-
Sulfate (SO4)	500		1280-4290	H	100	FW	**500**		-	-	-	-	-	<25	<50	<5.0	-	-	-	-	-	-	<25	-	-	-	<50	<50	-
Cyanides																													
Cyanide, Total	0.2		0.05		0.005	FW			-	-	-	-	-	<0.0050	0.0052	<0.0050	<0.0050	-	-	-	-	-	-	-	-	-	<0.0050	<0.0050	<0.0050
Cyanide, Free									-	-	-	-	-	-	-	<0.0050	<0.0050	-	-	-	-	-	-	-	-	-	-	<0.0050	<0.0050
Total Metals																													
Total Sodium (Na)									-	-	-	-	133	-	-	-	-	-	-	-	-	-	-	-	-	4200	-	-	-
Dissolved Metals																													
Aluminum	9.5				0.005 - 0.1	pH	**0.1/0.2**	AO/Tr	*<0.02*	*<0.02*	0.062	0.069	**0.129**	**0.396**	**0.385**	**0.117**	**0.201**	**0.113**	0.0920	**0.167**	**0.171**	0.044	**15.9**	0.032	**1.6**	**168**	**65**	**29**	**13.2**
Antimony	0.006		0.09		2	FW	**0.006**		<0.001	<0.001	<0.0025	<0.0025	<0.0010	<0.0050	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	<0.0025	<0.0050	<0.0025	<0.0025	*<0.050*	*<0.050*	*<0.010*	<0.0010
Arsenic	0.01		0.05		0.005	FW	**0.01**		<0.001	<0.001	<0.0025	<0.0025	<0.0020	<0.0050	<0.0050	<0.00050	<0.0010	<0.0010	0.00017	0.00019	0.00020	<0.0025	<0.0050	<0.0025	<0.0025	*<0.10*	<0.050	<0.010	0.0014
Barium	1		10		2.9	FW	**1**		**1.54**	**1.52**	**5.28**	**5.18**	**3.87**	**24.5**	**25.7**	**3.39**	**8.56**	**8.39**	**14.2**	**1.53**	**1.55**	**3.26**	**61.6**	**1.44**	**29.3**	**118**	**102**	**39.6**	**36.6**
Beryllium	0.008		0.0015		0.0053	FW			<0.0002	<0.0002	*<0.0050*	*<0.0050*	*<0.0050*	*<0.010*	*<0.010*	<0.0010	*<0.0050*	*<0.0050*	<0.00010	< 0.00010	< 0.00010	*<0.0050*	*<0.010*	*<0.0050*	*<0.0050*	*<0.050*	*<0.10*	*<0.020*	*<0.025*
Bismuth									-	-	-	-	-	-	-	<0.20	-	-	<0.0010	< 0.0010	< 0.0010	-	<0.40	-	-	-	-	<1.0	-
Boron	5		12				**5**		0.199	0.197	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	< 0.05	< 0.05	<0.10	<0.20	<0.10	<0.30	<1.0	<1.0	<0.50	<0.50
Cadmium	0.005		0.0005-0.004	H,pH	0.000017	FW	**0.005**		*<0.0001*	*<0.0001*	0.000678	0.000541	0.00052	**0.0115**	**0.0113**	0.000427	0.000962	0.00104	0.00184	0.000177	0.000189	0.000977	**0.00515**	0.000779	0.00105	**0.0274**	**0.0267**	**0.014**	**0.0128**
Calcium									27.6	27.4	96.7	91.7	47.4	442	443	36.9	77.7	101.0	186	22.1	21.6	101	626	87.8	488	993	873	538	433
Chromium	0.05 , 6	V	0.01 , 0.09	V	0.0089	FW	**0.05**		<0.005	<0.005	<0.0050	<0.0050	<0.0010	<0.010	<0.010	<0.0010	<0.00050	<0.00050	<0.0010	< 0.0010	< 0.0010	<0.0050	0.019	<0.0050	<0.0050	*<0.050*	<0.10	<0.020	<0.0050
Cobalt	0.001		0.04						<0.0005	<0.0005	0.0042	0.0039	0.0021	0.0227	0.0226	0.0015	0.00314	0.00325	0.00448	0.00078	0.00080	0.0059	0.0206	0.0134	0.0057	0.325	0.124	0.0773	0.0363
Copper	1.5		0.02-0.09	H	0.002 - 0.004	H	**1**	AO	*<0.005*	*<0.005*	*<0.0050*	*<0.0050*	<0.0020	*<0.010*	*<0.010*	<0.0010	<0.0010	<0.0010	0.00077	0.00169	0.00168	*<0.0050*	0.01	*<0.0050*	*<0.0050*	*<0.10*	*<0.10*	<0.020	*<0.0050*
Iron					0.3	FW	**0.3**	AO	**1.45**	**1.45**	<0.030	<0.030	0.078	<0.030	<0.030	<0.030	<0.030	<0.030	0.0111	0.0818	0.0829	<0.030	**9.58**	<0.030	<0.090	**1.59**	**0.31**	<0.15	<0.15
Lead	0.01		0.04 - 0.16	H	0.001 - 0.007	H	**0.01**		<0.0005	<0.0005	*<0.0025*	*<0.0025*	<0.0020	*<0.0050*	*<0.0050*	<0.00050	<0.0010	<0.0010	<0.00020	< 0.00020	< 0.00020	*<0.0025*	0.0053	*<0.0025*	*<0.0025*	*<0.10*	*<0.050*	<0.010	0.0017
Lithium	0.008								-	-	<0.025	<0.025	<0.050	<0.050	<0.050	0.009	<0.050	<0.050	0.0131	0.0056	0.0058	0.026	*<0.050*	0.026	*<0.025*	*<0.50*	*<0.50*	*<0.10*	*<0.050*
Magnesium									8.31	8.24	22.0	21.6	12.4	138	138	9.67	19.4	26.2	50.6	5.61	5.45	25.0	147	25.2	125	208	192	135	103
Manganese							**0.05**	AO	0.04	0.04	**0.449**	**0.409**	**0.118**	**1.37**	**1.39**	**0.0730**	**0.129**	**0.215**	**0.390**	**0.0731**	**0.0720**	**0.457**	**2.39**	**1.01**	**0.327**	**13.4**	**7.1**	**4.13**	**2.07**
Mercury	0.001		0.00025		0.000026	FW	**0.001**		*<0.00005*	*<0.00005*	<0.000020	<0.000020	*<0.00020*	<0.000010	<0.000010	<0.000010	*<0.00020*	*<0.00020*	<0.000010	< 0.000010	< 0.000010	<0.000020	0.000075	<0.000020	<0.000020	*<0.00020*	<0.000010	<0.000010	*<0.00020*
Molybdenum	0.25		10		0.073	FW			<0.005	<0.005	<0.0050	<0.0050	<0.0020	<0.010	<0.010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0050	<0.010	<0.0050	<0.0050	*<0.10*	*<0.10*	*<0.020*	<0.0010
Nickel	0.08		0.25 - 1.5	H	0.025 - 0.150	H			<0.008	<0.008	0.0240	0.0219	0.022	0.206	0.205	0.0178	0.0357	0.0343	0.0526	0.0106	0.0111	0.0454	0.339	0.0669	0.0394	1.54	1.11	0.459	0.37
Phosphorus									-	-	-	-	-	-	-	<0.30	-	-	-	-	-	-	<0.60	-	-	-	-	<1.5	-
Potassium									-	-	6.1	6.1	-	14.3	14.4	4.2	-	-	7.70	2.56	2.52	2.8	9.4	3.2	14.3	-	25	12	-
Selenium	0.01		0.02		0.001	FW	**0.05**		<0.001	<0.001	*<0.0050*	*<0.0050*	*<0.0020*	*<0.010*	*<0.010*	<0.0010	<0.0010	<0.0010	0.00016	0.00021	0.00019	*<0.0050*	<0.010	*<0.0050*	*<0.0050*	*<0.10*	*<0.10*	<0.020	<0.010
Silicon									-	-	-	-	-	-	-	2.03	-	-	4.11	2.39	2.48	-	50.1	-	-	-	-	4.72	-
Silver	0.02		0.0005 , 0.015	H	0.0001	FW			<0.0001	<0.0001	<0.00010	<0.00010	<0.00010	0.00095	0.00077	0.000020	0.000052	<0.000050	0.000104	< 0.000020	< 0.000020	<0.00010	0.00095	<0.00010	0.00021	0.0068	0.0069	0.00519	0.00492
Sodium	200						**200**	AO	64.7	64.4	**204**	198	135	**625**	**622**	124	**204**	**216**	**245**	84.1	81.1	**202**	**1420**	109	**1820**	**5920**	**5730**	**3430**	**2620**
Strontium	2.5								0.475	0.472	-	-	-	-	-	0.254	-	-	1.09	0.133	0.14	-	3.79	-	-	-	-	3.11	-
Sulphur									6.6	5.2	-	-	-	-	-	-	-	-	3.2	< 3.0	< 3.0	-	-	-	-	-	-	-	-
Thallium	0.00004		0.003		0.0008	FW			*<0.0001*	*<0.0001*	*<0.0010*	*<0.0010*	*<0.00040*	*<0.0020*	*<0.0020*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.000050*	*< 0.000050*	*< 0.000050*	*<0.0010*	*<0.0020*	*<0.0010*	*<0.0010*	*<0.020*	*<0.020*	*<0.0040*	*<0.0010*
Tin	2.5								<0.02	<0.02	<0.0025	<0.0025	-	<0.0050	<0.0050	<0.00050	-		<0.0050	< 0.0050	< 0.0050	<0.0025	<0.0050	<0.0025	<0.0025	-	<0.050	<0.010	-
Titanium			1		0.1	FW			<0.003	<0.003	<0.010	<0.010	<0.050	0.027	0.027	<0.010	<0.050	<0.050	<0.0050	< 0.0050	< 0.0050	<0.010	1.01	<0.010	0.042	*<0.50*	<0.10	<0.050	<0.050
Uranium	0.02		0.085		0.015	FW	**0.02**		0.0001	0.0001	<0.0010	<0.0010	<0.00040	<0.0020	<0.0020	<0.00020	<0.00020	<0.00020	<0.00010	0.00012	0.00012	<0.0010	<0.0020	<0.0010	<0.0010	*<0.020*	*<0.020*	<0.0040	<0.00020
Vanadium	0.02								<0.005	<0.005	<0.0050	<0.0050	*<0.030*	<0.010	<0.010	<0.0010	*<0.030*	*<0.030*	<0.0050	< 0.0050	< 0.0050	<0.0050	0.034	<0.0050	<0.0050	*<0.30*	<0.10	<0.020	*<0.15*
Zinc	3		0.075 - 2.4	H	0.03	FW	**5**	AO	<0.005	<0.005	0.0307	0.0295	0.0326	0.252	0.25	0.0267	0.0457	0.0416	0.0605	0.0160	0.0162	0.0190	0.119	0.0212	0.306	1.29	0.887	0.334	0.283
Zirconium	0.0003								-	-	-	-	-	-	-	-	-	-	*<0.00050*	*< 0.00050*	*< 0.00050*	-	-	-	-	-	-	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.

FDA = Field Duplicate Available; FD = Field Duplicate.
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective
pH = pH-dependant guideline; V = Valence-dependant guideline; H = Hardness-dependant guideline
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; Cl = Chloride dependant; tot = Total; P = protocol 10;
* Applied the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life, Update 7.1, December 2007.

St 8 - Refer to CSR Schedule 6 footnotes 58, 59, 60, and 61 for the application of iron and manganese standards.

TABLE B6 Results of Groundwater Analyses - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	Omnibus Standards for Drinking Water	Notes	Omnibus Standards for Aquatic Life	Notes	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW09-04	MW09-04	MW09-04	MW09-04	MW09-04	MW09-05	MW09-05	MW09-05	MW09-05	MW09-05	MW09-05	MW09-05	MW09-06	MW09-06	MW09-06	MW09-06	MW09-06	MW09-06
Sample Control Number									283695-04	17811-02	01123-02	01123-03	MW09-04	09-020146-	24412-03	24412-04	22795-02	23259-01	283696-01	17811-03	01123-05	09-020146-	24412-02	23259-05	283695-02	17814-01	17814-02	01123-04	MW09-06
Date Sampled									24-Jul-13	17-Sep-14	20-Oct-15	20-Oct-15	2-Sep-16	11-Oct-09	24-Sep-10	24-Sep-10	26-Sep-11	7-Jun-12	23-Jul-13	17-Sep-14	20-Oct-15	11-Oct-09	24-Sep-10	7-Jun-12	24-Jul-13	19-Sep-14	19-Sep-14	21-Oct-15	2-Sep-16
QA/QC									FD	N	FDA	FD	N	N	FDA	FD	N	N	N	N	N	N	N	N	N	FD	FDA	N	N
Physical Tests																													
pH (field)					6.5-9.0	FW	**6.5 to 8.5**	AO	**4.86**	**4.85**	**4.58**	**4.58**	**5.36**	6.74	**6.37**	**6.37**	6.66	6.98	-	6.77	7.28	6.63	**6.36**	7.40	6.84	6.86	6.86	6.74	6.84
Hardness (as CaCO3)									1500	1220	2160	2330	1030	778	1390	1630	812	600	712	623	727	2650	2740	415	641	1640	1620	3130	201
Anions and Nutrients																													
Bromide (Br)									-		-	-	-	-	-	-	<1.0	<1.0	-	-	-	-	-	<2.5	-	-	-	-	-
Chloride (Cl)	250		1500		120	FW	**250**	AO	**5420**	**5060**	-	-	2900	**745**	**296**	**633**	**618**	**504**	**723**	**551**	-	**7790**	**5300**	**1800**	**2060**	**4900**	**4830**	-	**850**
Fluoride (F)	1.5		2 , 3		0.12	FW	**1.5**		-	-	-	-	-	**-**	-	-	*<0.40*	*<0.40*	-	-	-	**-**	-	*<1.0*	-	-	-	-	-
Nitrate (as N)	10		400		13	FW	**10**		-	-	-	-	-	**-**	-	-	0.29	0.21	-	-	-	**-**	-	3.27	-	-	-	-	-
Nitrite (as N)	1		0.2-2		0.06	FW	**1**		-	-	-	-	-	**-**	-	-	<0.020	<0.020	-	-	-	**-**	-	0.060	-	-	-	-	-
Sulfate (SO4)	500		1280-4290	H	100	FW	**500**		-	-	-	-	-	**-**	-	-	<10	<10	-	-	-	**-**	-	<25	-	-	-	-	-
Cyanides																													
Cyanide, Total	0.2		0.05		0.005	FW			<0.0050	-	-	-	-	**-**	-	-	<0.0050	<0.0050	<0.0050	-	-	**-**	-	<0.0050	<0.0050	-	-	-	-
Cyanide, Free									<0.0050	-	-	-	-	**-**	-	-	-	<0.0050	<0.0050	-	-	**-**	-	<0.0050	<0.0050	-	-	-	-
Total Metals																													
Total Sodium (Na)									-	-	-	-	-	-	162	165	-	-	-	-	-	-	4340	-	-	-	-	-	-
Dissolved Metals																													
Aluminum	9.5				0.005 - 0.1	pH	**0.1/0.2**	AO/Tr	**13.2**	**8.41**	**12.8**	**14.0**	**4.06**	**0.474**	*<0.050*	*<0.050*	**0.549**	<0.0050	*<0.010*	*<0.010*	0.0096	*<0.50*	*<0.50*	*<0.050*	*<0.015*	*<0.030*	*<0.030*	0.0074	0.0086
Antimony	0.006		0.09		2	FW	**0.006**		<0.0010	<0.0010	<0.00050	<0.00050	< 0.00050	<0.0025	<0.0025	<0.0025	<0.0025	<0.00050	<0.00050	<0.00050	<0.00050	*<0.050*	*<0.025*	<0.0050	<0.00050	<0.0010	<0.0010	<0.00050	< 0.00050
Arsenic	0.01		0.05		0.005	FW	**0.01**		<0.0010	<0.0010	0.00048	0.00048	< 0.00010	<0.0025	<0.0050	<0.0050	<0.0025	<0.00050	<0.0010	<0.0010	0.00026	*<0.050*	*<0.050*	<0.0050	<0.0010	<0.0010	<0.0010	0.00060	0.00031
Barium	1		10		2.9	FW	**1**		**36.7**	**27.8**	**47.4**	**50.8**	**15.1**	**2.42**	**3.14**	**3.5**	**2.18**	**1.66**	**2.2**	**1.88**	**1.65**	**20.5**	**15.3**	**1.63**	**2.63**	**7.18**	**7.16**	**11.6**	0.813
Beryllium	0.008		0.0015		0.0053	FW			*<0.025*	*<0.015*	0.00290	0.00321	0.00112	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0010*	*<0.0050*	*<0.0050*	<0.00010	*<0.10*	*<0.025*	*<0.010*	*<0.010*	*<0.025*	*<0.025*	<0.00010	< 0.00010
Bismuth									-	-	<0.0010	<0.0010	< 0.0010	-	-	-	-	<0.20	-	-	<0.0010	-	-	<0.40	-	-	-	<0.0010	< 0.0010
Boron	5		12				**5**		<0.50	<0.30	<0.050	<0.050	< 0.05	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.066	<0.50	<0.50	<0.20	<0.20	<0.50	<0.50	<0.050	< 0.05
Cadmium	0.005		0.0005-0.004	H,pH	0.000017	FW	**0.005**		**0.0132**	**0.0109**	**0.0196**	**0.0213**	**0.00698**	0.000386	*<0.00025*	*<0.00025*	0.000181	0.000089	0.000101	0.00023	0.000190	**0.0043**	**0.0046**	0.00022	0.00075	0.00238	0.00243	**0.00416**	0.000129
Calcium									429	340	608	665	297	217	379	444	219	163	191	174	197	948	978	135	227	584	577	1130	70.3
Chromium	0.05 , 6	V	0.01 , 0.09	V	0.0089	FW	**0.05**		<0.0050	<0.0050	<0.0010	<0.0010	< 0.0010	<0.0050	<0.0025	<0.0025	<0.0050	<0.0010	<0.00050	<0.00050	<0.0010	*<0.10*	*<0.025*	<0.010	<0.0025	<0.0050	<0.0050	0.0313	< 0.0010
Cobalt	0.001		0.04						0.0364	0.0286	0.0603	0.0668	0.0311	*<0.0015*	0.0071	0.0107	0.0016	0.00102	<0.00050	0.00144	0.00100	*<0.030*	*<0.025*	<0.0030	<0.00050	<0.0010	<0.0010	0.00082	< 0.00050
Copper	1.5		0.02-0.09	H	0.002 - 0.004	H	**1**	AO	*<0.0050*	*<0.0050*	0.00462	0.00469	0.00193	*<0.0050*	*<0.0050*	*<0.0050*	*<0.0050*	<0.0010	<0.0010	<0.0010	0.00102	*<0.10*	*<0.050*	<0.010	*<0.0025*	<0.0050	*<0.0050*	0.00102	0.00115
Iron					0.3	FW	**0.3**	AO	<0.15	<0.090	0.0611	0.110	0.0134	0.065	**0.532**	**0.579**	**0.337**	0.283	0.140	<0.030	**0.313**	<0.15	<0.15	<0.060	<0.060	<0.15	<0.15	0.0207	0.0082
Lead	0.01		0.04 - 0.16	H	0.001 - 0.007	H	**0.01**		0.0023	0.0014	0.00413	0.00502	0.00059	*<0.0025*	*<0.0050*	*<0.0050*	*<0.0025*	<0.00050	<0.0010	<0.0010	<0.00020	*<0.050*	*<0.050*	*<0.0050*	<0.0010	<0.0010	<0.0010	<0.00020	< 0.00020
Lithium	0.008								*<0.050*	*<0.050*	0.0676	0.0776	0.0379	0.032	0.055	0.061	0.04	0.0299	*<0.050*	*<0.050*	0.0346	*<0.50*	*<0.25*	*<0.050*	*<0.050*	*<0.050*	*<0.050*	0.0879	0.0127
Magnesium									105	89.8	157	163	70.3	57.3	107	126	64.4	47.0	57.3	45.8	56.9	69.0	71.5	19.2	18.0	43.6	43.5	77.5	6.19
Manganese							**0.05**	AO	**2.08**	**1.59**	**2.66**	**2.79**	**1.96**	**0.121**	**2.97**	**6.29**	**0.286**	**0.208**	**0.091**	**0.216**	**0.245**	**0.270**	**0.297**	0.0353	**0.095**	**0.2240**	**0.226**	**0.479**	0.0177
Mercury	0.001		0.00025		0.000026	FW	**0.001**		*<0.00020*	*<0.00020*	0.000018	0.000011	< 0.000010	<0.000020	*<0.00020*	*<0.00020*	<0.000010	<0.000010	*<0.00020*	*<0.00020*	<0.000010	<0.000020	*<0.00020*	<0.000010	*<0.00020*	*<0.00020*	*<0.00020*	<0.000010	< 0.000010
Molybdenum	0.25		10		0.073	FW			<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	*<0.10*	<0.050	<0.010	0.0040	0.0018	0.0017	0.0017	0.0034
Nickel	0.08		0.25 - 1.5	H	0.025 - 0.150	H			0.386	0.313	0.506	0.541	0.184	<0.0050	<0.025	<0.025	<0.0050	0.0021	<0.0050	<0.0050	0.0022	*<0.10*	*<0.25*	<0.010	0.0086	0.0207	0.0208	0.0498	0.0030
Phosphorus									-	-	-	-	-	-	-	-	-	<0.30	-	-	-	-	-	<0.60	-	-	-	-	-
Potassium									-	-	12.9	14.8	6.89	6.8	-	-	6.8	5.7	-	-	6.49	20	-	7.2	-	-	-	25.1	4.85
Selenium	0.01		0.02		0.001	FW	**0.05**		<0.010	<0.010	0.00025	0.00032	0.00029	*<0.0050*	*<0.010*	*<0.010*	*<0.0050*	<0.0010	<0.0010	<0.0010	0.00054	*<0.10*	*<0.050*	<0.010	<0.0050	<0.010	<0.010	0.00049	0.00019
Silicon									-	-	8.72	8.68	5.35	-	-	-	-	4.37	-	-	6.11	-	-	2.46	-	-	-	6.56	3.73
Silver	0.02		0.0005 , 0.015	H	0.0001	FW			0.00491	0.0045	0.00480	0.00488	0.000066	<0.00010	*<0.00025*	*<0.00025*	<0.00010	<0.000020	<0.000050	<0.000050	0.000187	*<0.0020*	0.0046	<0.00020	0.000523	0.00182	0.00172	0.00443	0.000026
Sodium	200						**200**	AO	**2650**	**2370**	**2770**	**2780**	**1370**	167	**270**	**311**	125	105	181	124	104	**3780**	**4310**	**1100**	**1230**	**2540**	**2530**	**3990**	**589**
Strontium	2.5								-	-	3.72	4.03	1.68	-	-	-	-	1.04	-	-	1.21	-	-	0.569	-	-	-	6.38	0.394
Sulphur									-	-	<3.0	<3.0	< 3.0	-	-	-	-	-	-	-	4.4	-	-	-	-	-	-	5.3	< 3.0
Thallium	0.00004		0.003		0.0008	FW			*<0.0010*	*<0.0010*	0.000185	0.000206	0.000071	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.00020*	*<0.00020*	*<0.00020*	*<0.000050*	*<0.020*	*<0.010*	*<0.0020*	*<0.00050*	*<0.0010*	*<0.0010*	0.000110	*< 0.000050*
Tin	2.5								-	-	<0.0050	<0.0050	< 0.0050	<0.0025	-	-	<0.0025	<0.00050	-	-	<0.0050	<0.050	-	<0.0050	-	-	-	<0.0050	< 0.0050
Titanium			1		0.1	FW			<0.050	<0.050	<0.0050	<0.0050	< 0.0050	<0.010	<0.050	<0.050	0.023	0.018	<0.050	<0.050	<0.0050	0.072	*<0.25*	<0.020	<0.050	0.059	0.064	<0.0050	< 0.0050
Uranium	0.02		0.085		0.015	FW	**0.02**		<0.00020	<0.00020	0.00022	0.00028	< 0.00010	<0.0010	0.0011	0.0013	<0.0010	0.00060	0.00041	0.00044	0.00076	*<0.020*	<0.010	<0.0020	0.00217	0.0033	0.00334	0.00446	0.00137
Vanadium	0.02								*<0.15*	*<0.090*	<0.0050	<0.0050	< 0.0050	<0.0050	*<0.030*	*<0.030*	<0.0050	<0.0010	*<0.030*	*<0.030*	<0.0050	*<0.10*	*<0.15*	<0.010	<0.060	*<0.15*	*<0.15*	<0.0050	< 0.0050
Zinc	3		0.075 - 2.4	H	0.03	FW	**5**	AO	0.286	0.273	0.536	0.596	0.17	<0.0050	<0.0050	<0.0050	0.0062	<0.0050	<0.0050	0.0065	0.0214	<0.025	<0.025	<0.010	<0.010	<0.025	<0.025	0.0393	< 0.0050
Zirconium	0.0003								-	-	*<0.00050*	*<0.00050*	*< 0.00050*	-	-	-	-	-	-	-	*<0.00050*	-	-	-	-	-	-	*<0.00050*	*< 0.00050*

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.

FDA = Field Duplicate Available; FD = Field Duplicate.
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective
pH = pH-dependant guideline; V = Valence-dependant guideline; H = Hardness-dependant guideline
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; Cl = Chloride dependant; tot = Total; P = protocol 10;
* Applied the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life, Update 7.1, December 2007.

St 8 - Refer to CSR Schedule 6 footnotes 58, 59, 60, and 61 for the application of iron and manganese standards.

TABLE B6 Results of Groundwater Analyses - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Notes	Omnibus Standards for Aquatic Life	Notes	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW10-02 24412-08 25-Sep-10 N	MW10-02 22795-06 27-Sep-11 N	MW10-02 23259-06 7-Jun-12 FDA	MW10-02 23259-07 7-Jun-12 FD	MW10-02 23701-01 25-Jul-12 N	MW10-02 283695-05 24-Jul-13 N	MW10-02 17811-01 17-Sep-14 N	MW10-02 01123-01 20-Oct-15 N	MW10-02 MW10-02 2-Sep-16 N	MW10-03 24412-09 25-Sep-10 N	MW10-03 22795-07 29-Sep-11 N	MW10-03 23259-04 7-Jun-12 N	MW16-02 MW16-02 8-Sep-16 N
Physical Tests																					
pH (field)					6.5-9.0	FW	**6.5 to 8.5**	AO	**5.99**	**4.39**	**5.34**	**5.34**	**4.39**	**5.55**	**5.94**	6.67	**5.78**	**6.46**	6.75	7.00	7.18
Hardness (as CaCO3)									1470	2270	691	691	-	1330	1560	1920	1080	199	1200	105	2170
Anions and Nutrients																					
Bromide (Br)									-	<2.5	<2.5	<2.5		-	-	-	-	-	<1.0	<0.050	-
Chloride (Cl)	250		1500		120	FW	**250**	AO	**3770**	**4960**	**1850**	**1870**	-	**2690**	**2990**	-	**2300**	89.6	**1240**	28.8	**4500**
Fluoride (F)	1.5		2 , 3		0.12	FW	**1.5**		-	1	*<1.0*	*<1.0*	-	-	-	-	-	-	*<0.40*	0.141	-
Nitrate (as N)	10		400		13	FW	**10**		-	9.13	1.69	1.74	-	-	-	-	-	-	1.27	0.0345	-
Nitrite (as N)	1		0.2-2		0.06	FW	**1**		-	0.158	<0.050	<0.050	-	-	-	-	-	-	0.028	0.0011	-
Sulfate (SO4)	500		1280-4290	H	100	FW	**500**		-	<25	<25	<25	-	-	-	-	-	-	<10	2.96	-
Cyanides																					
Cyanide, Total	0.2		0.05		0.005	FW			-	0.102	<0.0050	<0.0050	<0.0050	<0.0050	-	-	-	-	<0.0050	<0.0050	-
Cyanide, Free									-	-	<0.0050	<0.0050	<0.0050	<0.0050	-	-	-	-	-	<0.0050	-
Total Metals																					
Total Sodium (Na)									1960	-	-	-		-	-	-	-	27.9	-	-	1700
Dissolved Metals																					
Aluminum	9.5				0.005 - 0.1	pH	**0.1/0.2**	AO/Tr	**7.36**	**9.92**	**1.56**	**1.62**	-	**0.792**	**0.432**	**0.370**	**0.322**	0.016	<0.025	0.0618	0.0098
Antimony	0.006		0.09		2	FW	**0.006**		*<0.010*	*<0.025*	<0.0025	<0.0025	-	<0.0010	<0.00050	<0.00050	< 0.00050	<0.00050	<0.0025	<0.00050	< 0.00050
Arsenic	0.01		0.05		0.005	FW	**0.01**		*<0.020*	*<0.025*	<0.0025	<0.0025	-	<0.0010	<0.0010	0.00019	0.00024	<0.0010	<0.0025	<0.00050	0.00036
Barium	1		10		2.9	FW	**1**		**35.1**	**58.3**	**13.7**	**13.8**	-	**35.5**	**38.5**	**44.4**	**30.5**	0.141	**5.03**	0.307	**12.2**
Beryllium	0.008		0.0015		0.0053	FW			*<0.010*	*<0.050*	*<0.0050*	*<0.0050*	-	*<0.010*	*<0.010*	0.00018	0.00010	*<0.0050*	*<0.0050*	<0.0010	< 0.00010
Bismuth									-	-	<0.20	<0.20	-	-	-	<0.0010	< 0.0010	-	-	<0.20	< 0.0010
Boron	5		12				**5**		<0.20	<0.50	<0.10	<0.10	-	<0.20	<0.20	<0.050	< 0.05	<0.10	<0.10	<0.10	< 0.05
Cadmium	0.005		0.0005-0.004	H,pH	0.000017	FW	**0.005**		**0.0109**	**0.0168**	0.00498	**0.00507**	-	**0.00895**	**0.0111**	**0.0116**	**0.00848**	0.000056	<0.000085	<0.000017	0.00107
Calcium									423	644	193	194	-	385	443	558	316	56.1	351	30.0	668
Chromium	0.05 , 6	V	0.01 , 0.09	V	0.0089	FW	**0.05**		*<0.010*	*<0.050*	<0.0050	<0.0050	-	<0.0050	<0.0025	<0.0010	< 0.0010	<0.00050	<0.0050	<0.0010	< 0.0010
Cobalt	0.001		0.04						0.051	0.057	0.0244	0.0247	-	0.0243	0.0291	0.0326	0.0197	0.00126	0.0019	<0.00030	0.00288
Copper	1.5		0.02-0.09	H	0.002 - 0.004	H	**1**	AO	*<0.020*	*<0.050*	*<0.0050*	*<0.0050*	-	*<0.0050*	*<0.0025*	0.00089	0.00126	<0.0010	*<0.0050*	0.0010	0.00214
Iron					0.3	FW	**0.3**	AO	0.142	<0.15	0.175	0.033	-	<0.060	<0.060	0.0197	0.0467	0.032	<0.030	0.126	0.0671
Lead	0.01		0.04 - 0.16	H	0.001 - 0.007	H	**0.01**		*<0.020*	*<0.025*	*<0.0025*	*<0.0025*	-	0.0021	<0.0010	0.00037	0.00025	<0.0010	*<0.0025*	<0.00050	< 0.00020
Lithium	0.008								*<0.10*	*<0.25*	*<0.025*	0.025	-	*<0.050*	*<0.050*	0.0321	0.0307	*<0.050*	0.052	0.0075	0.0739
Magnesium									101	162	50.4	50.3	-	88.6	110	127	70.9	14.4	77.8	7.34	122
Manganese							**0.05**	AO	**1.97**	**2.41**	**0.878**	**0.905**	-	**1.06**	**1.13**	**1.19**	**0.751**	**0.11**	**0.623**	0.0241	**0.356**
Mercury	0.001		0.00025		0.000026	FW	**0.001**		*<0.00020*	<0.000010	<0.000010	<0.000010	-	*<0.00020*	*<0.00020*	<0.000010	< 0.000010	*<0.00020*	<0.000010	<0.000010	< 0.000010
Molybdenum	0.25		10		0.073	FW			<0.020	<0.050	<0.0050	<0.0050	-	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0050	<0.0010	0.0026
Nickel	0.08		0.25 - 1.5	H	0.025 - 0.150	H			0.31	0.35	0.131	0.134	-	0.177	0.197	0.203	0.146	<0.0050	0.0087	0.0015	0.0126
Phosphorus									-	-	<0.30	<0.30	-	-	-	-	-	-	-	<0.30	-
Potassium									-	23	9.9	9.9	-	-	-	18.3	11.2	-	8.0	<2.0	24.1
Selenium	0.01		0.02		0.001	FW	**0.05**		*<0.020*	*<0.050*	*<0.0050*	*<0.0050*	-	<0.010	<0.0050	0.00036	0.00033	*<0.0020*	*<0.0050*	<0.0010	0.00062
Silicon									-	-	3.53	3.50	-	-		5.27	4.85	-	-	3.39	4.8
Silver	0.02		0.0005 , 0.015	H	0.0001	FW			0.0017	0.0054	0.00092	0.0008	-	0.00189	0.00183	0.00132	0.000050	<0.000050	<0.00010	<0.000020	< 0.000020
Sodium	200						**200**	AO	**1960**	**2170**	**841**	**854**	-	**1170**	**1200**	**1220**	**828**	22.5	**299**	10.7	**1620**
Strontium	2.5								-	-	1.10	1.11	-	-	-	2.83	1.85	-	-	0.167	3.84
Sulphur									-	-	-	-	-	-	-	<3.0	< 3.0	-	-	-	16.7
Thallium	0.00004		0.003		0.0008	FW			*<0.0040*	*<0.010*	*<0.0010*	*<0.0010*	-	*<0.0010*	*<0.00050*	0.000094	0.000072	*<0.00020*	*<0.0010*	*<0.00020*	*< 0.000050*
Tin	2.5								-	<0.025	<0.0025	<0.0025	-	-	-	<0.0050	< 0.0050	-	<0.0025	<0.00050	< 0.0050
Titanium			1		0.1	FW			<0.10	0.089	0.019	0.019	-	<0.050	<0.050	<0.0050	< 0.0050	<0.050	<0.010	<0.010	< 0.0050
Uranium	0.02		0.085		0.015	FW	**0.02**		<0.0040	<0.010	<0.0010	<0.0010	-	<0.00020	<0.00020	0.00013	0.00020	0.00068	0.0041	<0.00020	0.00461
Vanadium	0.02								*<0.060*	*<0.050*	<0.0050	<0.0050	-	*<0.060*	*<0.060*	<0.0050	< 0.0050	*<0.030*	<0.0050	<0.0010	< 0.0050
Zinc	3		0.075 - 2.4	H	0.03	FW	**5**	AO	0.272	0.482	0.156	0.156	-	0.204	0.251	0.281	0.241	<0.0050	<0.0050	<0.0050	0.0159
Zirconium	0.0003								-	-	-	-	-	-	-	*<0.00050*	0.00053	-	-	-	*< 0.00050*

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.

FDA = Field Duplicate Available; FD = Field Duplicate.
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective
pH = pH-dependant guideline; V = Valence-dependant guideline; H = Hardness-dependant guideline
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; Cl = Chloride dependant; tot = Total; P = protocol 10;
* Applied the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life, Update 7.1, December 2007.

St 8 - Refer to CSR Schedule 6 footnotes 58, 59, 60, and 61 for the application of iron and manganese standards.

TABLE B6 Results of Groundwater Analyses - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Notes	Omnibus Standards for Aquatic Life	Notes	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW16-02A MW16-02A 6-Nov-16 FDA	MW16-02B MW16-02B 6-Nov-16 FD	MW16-03 MW16-03 8-Sep-16 N	MW16-03 MW16-03 7-Nov-16 N	MW16-04 MW16-04 8-Sep-16 N	MW16-04 MW16-04 5-Nov-16 N	MW16-05 MW16-05 8-Sep-16 N	MW16-05 MW16-05 7-Nov-16 N	MW16-07 MW16-07 8-Sep-16 N	MW16-07 MW16-07 5-Nov-16 N	MW16-08 MW16-08A 8-Sep-16 FDA	MW16-08 MW16-08B 8-Sep-16 FD
Physical Tests																				
pH (field)					6.5-9.0	FW	**6.5 to 8.5**	AO	8.60	7.30	7.55	6.60	7.09	7.80	7.05	6.70	6.99	**6.3**	7.02	7.02
Hardness (as CaCO3)									2250	2390	428	414	316	377	141	357	992	2460	557	554
Anions and Nutrients																				
Bromide (Br)											-		-		-		-		-	-
Chloride (Cl)	250		1500		120	FW	**250**	AO	**6800**	**6700**	41	33	200	170	210	360	960	**2800**	740	770
Fluoride (F)	1.5		2 , 3		0.12	FW	**1.5**		-	-	-	-	-	-	-	-	-	-	-	-
Nitrate (as N)	10		400		13	FW	**10**		-	-	-	-	-	-	-	-	-	-	-	-
Nitrite (as N)	1		0.2-2		0.06	FW	**1**		-	-	-	-	-	-	-	-	-	-	-	-
Sulfate (SO4)	500		1280-4290	H	100	FW	**500**		-	-	-	-	-	-	-	-	-	-	-	-
Cyanides																				
Cyanide, Total	0.2		0.05		0.005	FW			-	-	-	-	-	-	-	-	-	-	-	-
Cyanide, Free									-	-	-	-	140	-	-	-	-	-	-	-
Total Metals																				
Total Sodium (Na)									2600	2700	11.2	7.37	70.7	56.9	120	123	208	480	248	250
Dissolved Metals																				
Aluminum	9.5				0.005 - 0.1	pH	**0.1/0.2**	AO/Tr	0.0082	0.0077	0.0063	< 0.0030	0.0171	0.0068	**0.126**	0.0349	**0.125**	0.003	0.0467	0.0444
Antimony	0.006		0.09		2	FW	**0.006**		< 0.0010	< 0.0010	0.00117	0.00132	0.00096	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Arsenic	0.01		0.05		0.005	FW	**0.01**		0.00024	0.0003	0.00089	0.00087	0.00399	0.00234	0.00205	0.00179	0.00069	0.00033	0.0003	0.00033
Barium	1		10		2.9	FW	**1**		**16.8**	**18.7**	0.146	0.0737	**2.12**	**3.01**	**2.98**	**4.81**	**1.38**	0.648	**3.46**	**3.36**
Beryllium	0.008		0.0015		0.0053	FW			< 0.00020	< 0.00020	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Bismuth									< 0.0020	< 0.0020	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Boron	5		12				**5**		< 0.1	< 0.1	0.216	0.178	0.057	< 0.05	< 0.05	< 0.05	< 0.05	0.057	< 0.05	< 0.05
Cadmium	0.005		0.0005-0.004	H,pH	0.000017	FW	**0.005**		0.00223	0.00237	0.000038	0.000073	0.000065	0.000027	0.000204	0.000348	0.000222	0.000181	0.00113	0.00109
Calcium									707	751	108	110	88.1	101	38	99.3	265	676	159	155
Chromium	0.05 , 6	V	0.01 , 0.09	V	0.0089	FW	**0.05**		< 0.0020	< 0.0020	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Cobalt	0.001		0.04						0.0029	0.0031	0.00306	0.00228	0.00221	0.00239	0.00224	0.00343	0.011	0.00445	0.0134	0.0136
Copper	1.5		0.02-0.09	H	0.002 - 0.004	H	**1**	AO	0.00269	0.00293	0.00118	0.00151	0.0007	0.00024	0.00193	0.00208	0.00305	0.00053	0.00268	0.00273
Iron					0.3	FW	**0.3**	AO	0.04	0.041	0.0128	0.0076	**1.09**	**2.66**	**0.959**	**2.05**	**2.78**	0.0752	0.212	0.204
Lead	0.01		0.04 - 0.16	H	0.001 - 0.007	H	**0.01**		< 0.00040	< 0.00040	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020	< 0.00020
Lithium	0.008								0.072	0.077	0.0425	0.039	0.0343	0.0349	0.0131	0.0167	0.0509	0.139	0.026	0.0256
Magnesium									117	124	38.6	33.5	23.2	30.1	11.1	26.5	80.4	188	39.1	40.6
Manganese							**0.05**	AO	**0.795**	**0.847**	**0.371**	**0.269**	**0.425**	**0.71**	**0.117**	**0.408**	**0.769**	**1.74**	**1.08**	**1.13**
Mercury	0.001		0.00025		0.000026	FW	**0.001**		< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Molybdenum	0.25		10		0.073	FW			0.0023	0.0025	0.0192	0.0223	0.0013	< 0.0010	< 0.0010	< 0.0010	0.0026	0.0014	< 0.0010	< 0.0010
Nickel	0.08		0.25 - 1.5	H	0.025 - 0.150	H			0.0197	0.0206	0.0187	0.0106	0.0063	0.0062	0.0161	0.0212	0.0229	0.0131	0.046	0.0488
Phosphorus									-	-	-	-	-	-	-	-	-	-	-	-
Potassium									27.7	28.8	7.98	4.5	2.63	2.41	3.54	3.99	4.75	7.36	8.06	8.31
Selenium	0.01		0.02		0.001	FW	**0.05**		0.00047	0.00047	0.00062	0.00113	0.00036	< 0.00010	0.00012	0.00023	0.00012	< 0.00010	0.0002	0.00029
Silicon									4.86	5.04	5.52	5.92	5.22	6.25	2.5	4.15	3.45	5.68	3.21	3.19
Silver	0.02		0.0005 , 0.015	H	0.0001	FW			0.000145	0.00013	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Sodium	200						**200**	AO	**2600**	**2700**	9.94	7.37	71.3	56.9	126	123	**211**	**480**	**236**	**246**
Strontium	2.5								4.98	5.15	0.776	0.925	0.456	0.654	0.222	0.554	0.746	2.25	0.887	0.904
Sulphur									< 6.0	7.1	39.4	34.7	5.9	7.4	3	< 3.0	5.3	8.5	< 3.0	< 3.0
Thallium	0.00004		0.003		0.0008	FW			*< 0.00010*	*< 0.00010*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*
Tin	2.5								< 0.01	< 0.01	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Titanium			1		0.1	FW			< 0.01	< 0.01	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Uranium	0.02		0.085		0.015	FW	**0.02**		0.00468	0.00482	0.00296	0.00436	0.00247	0.00102	0.00025	0.00061	0.00105	0.00225	0.00063	0.00066
Vanadium	0.02								< 0.01	< 0.01	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
Zinc	3		0.075 - 2.4	H	0.03	FW	**5**	AO	0.014	0.016	0.0099	< 0.0050	0.0086	0.0073	0.0167	0.0202	0.0121	0.0079	0.0414	0.0415
Zirconium	0.0003								*< 0.0010*	*< 0.0010*	*< 0.00050*	*< 0.00050*	*< 0.00050*	*< 0.00050*	*< 0.00050*	*< 0.00050*	*< 0.00050*	*< 0.00050*	*< 0.00050*	*< 0.00050*

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.

FDA = Field Duplicate Available; FD = Field Duplicate.
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective
pH = pH-dependant guideline; V = Valence-dependant guideline; H = Hardness-dependant guideline
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; Cl = Chloride dependant; tot = Total; P = protocol 10;
* Applied the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life, Update 7.1, December 2007.

St 8 - Refer to CSR Schedule 6 footnotes 58, 59, 60, and 61 for the application of iron and manganese standards.

TABLE B7 Results of Groundwater Analyses - Hydrocarbons and Glygols
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW10-01S 24412-05 25-Sep-10 N	MW10-01S 22795-01 26-Sep-11 N	MW10-01S 23259-03 7-Jun-12 N	MW10-01S 283695-01 24-Jul-13 N	MW10-01S 17813-02 18-Sep-14 N	MW10-01S 01123-07 21-Oct-15 N	MW10-01D 24412-06 25-Sep-10 N	MW10-02 MW10-02 2-Sep-16 N	MW16-01 MW16-01 8-Sep-16 N	MW16-01 MW16-01 7-Nov-16 N	MW16-06 MW16-06 8-Sep-16 N
Hydrocarbons																	
EPH10-19	5	5					<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	< 0.20	< 0.20	< 0.20	< 0.20
EPH19-32							<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	< 0.20	< 0.20	< 0.20	< 0.20
LEPH		0.5					<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	< 0.20	< 0.20	< 0.20	< 0.20
HEPH							<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	< 0.20	< 0.20	< 0.20	< 0.20
Volatile Hydrocarbons (VH6-10)	15	15					<0.10	-	-	<0.10	<0.10	<0.30	<0.10	< 0.3	< 0.3	< 0.3	< 0.3
VPH (C6-C10)		1.5					<0.10	-	-	<0.10	<0.10	<0.30	<0.10	< 0.3	< 0.3	< 0.3	< 0.3
Polycyclic Aromatic Hydrocarbons																	
Acenaphthene	0.25	0.06	0.0058	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Acenaphthylene			0.046	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Acridine		0.0005	0.00005	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Anthracene	1	0.001	0.000012	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000050	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Benz(a)anthracene	0.00007	0.001	0.000018	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000050	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Benzo(a)pyrene	0.00001	0.0001	0.000015	FW	**0.00001**		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000090	<0.000010	< 0.0000090	< 0.0000090	< 0.0000090	< 0.0000090
Benzo(b)fluoranthene			0.00048	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	-	-	< 0.000050	-
Benzo(b,j) fluoranthene	0.00007		0.00048	FW			-	-	-	-	-	-	-	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Benzo(g,h,i)perylene			0.00017	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Benzo(k)fluoranthene			0.00048	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Chrysene	0.007	0.001	0.0014	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Dibenz(a,h)anthracene	0.000007		0.00026	FW			*<0.000050*	*<0.000010*	*<0.000010*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*
Fluoranthene	0.15	0.002	0.00004	FW			*<0.000050*	<0.000010	<0.000010	*<0.000050*	*<0.000050*	<0.000020	*<0.000050*	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Fluorene	0.15	0.12	0.003	FW			<0.000050	<0.000010	0.000028	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Indeno(1,2,3-c,d)pyrene			0.00021	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Naphthalene	0.08	0.01	0.0011	FW			<0.000080	<0.000030	<0.000080	0.000078	<0.000050	<0.00010	0.000116	< 0.00010	< 0.00010	< 0.00010	0.00020
Phenanthrene		0.003	0.0004	FW			<0.000050	<0.000020	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	< 0.000050	0.000066
Pyrene	0.1	0.0002	0.000025	FW			*<0.000050*	<0.000010	<0.000010	*<0.000050*	*<0.000050*	<0.000020	*<0.000050*	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Quinoline	0.00005	0.034	0.0034	FW			<0.000050	<0.000030	0.000056	<0.000080	<0.000050	*<0.00024*	<0.000050	*< 0.00024*	*< 0.00024*	*< 0.00024*	*< 0.00024*
2-methylnaphthalene	0.015						-	-	-	-	-	-	-	< 0.00010	< 0.00010	< 0.00010	0.00027
PAH, Low Molecular Weight							-	-	-	-	-	-	-	< 0.00024	< 0.00024	< 0.00024	0.00053
PAH, High Molecular Weight							-	-	-	-	-	-	-	< 0.000050	< 0.000050	< 0.000050	< 0.000050
PAH, Total							-	-	-	-	-	-	-	< 0.00024	< 0.00024	< 0.00024	0.00053
Glycols																	
Ethylene Glycol	8	1920	190	FW			-	-	-	-	-	-	-	-	-	-	-
Diethylene Glycol							-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	8						-	-	-	-	-	-	-	-	-	-	-
Tetraethylene Glycol							-	-	-	-	-	-	-	-	-	-	-
Propylene Glycol	80	5000	500	FW			-	-	-	-	-	-	-	-	-	-	-

Notes:

All parameter units in milligrams per litre (mg/L), unless otherwise noted.

a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines

b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.

c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014).
Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B7 Results of Groundwater Analyses - Hydrocarbons and Glygols
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	Water Well Steamboat 24-Nov-05 FDA	Water Well Water Dup 24-Nov-05 FD	MW09-01 09-020146-01 11-Oct-09 FDA	MW09-01 09-020146-07 11-Oct-09 FD	MW09-01 24412-07 25-Sep-10 N	MW09-01 22795-03 26-Sep-11 FDA	MW09-01 22795-04 26-Sep-11 FD	MW09-01 23259-02 7-Jun-12 N	MW09-01 283695-06 24-Jul-13 N	MW09-01 17813-01 18-Sep-14 N	MW09-01 00123-06 21-Oct-15 N	MW09-01A MW09-01A 3-Sep-16 FDA	MW09-01B MW09-01B 3-Sep-16 FD	MW09-02 09-020146-02 11-Oct-09 N
Hydrocarbons																				
EPH10-19	5	5					<0.08	<0.08	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	< 0.20	< 0.20	<0.25
EPH19-32							<0.08	<0.08	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	< 0.20	< 0.20	0.64
LEPH		0.5					<0.08	<0.08	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	< 0.20	< 0.20	<0.25
HEPH							<0.08	<0.08	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	< 0.20	< 0.20	0.64
Volatile Hydrocarbons (VH6-10)	15	15					<0.1	<0.1	<0.10	<0.10	<0.10	-	-	-	<0.10	<0.10	<0.30	< 0.3	< 0.3	<0.10
VPH (C6-C10)		1.5					<0.1	<0.1	<0.10	<0.10	<0.10	-	-	-	<0.10	<0.10	<0.30	< 0.3	< 0.3	<0.10
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene	0.25	0.06	0.0058	FW			<0.00001	<0.00001	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	<0.000010
Acenaphthylene			0.046	FW			<0.00001	<0.00001	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	<0.000010
Acridine		0.0005	0.00005	FW			<0.00005	<0.00005	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	<0.000010
Anthracene	1	0.001	0.000012	FW			<0.00001	<0.00001	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	< 0.000010	< 0.000010	<0.000010
Benz(a)anthracene	0.00007	0.001	0.000018	FW			<0.00001	<0.00001	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	< 0.000010	< 0.000010	<0.000020
Benzo(a)pyrene	0.00001	0.0001	0.000015	FW	**0.00001**		<0.00001	<0.00001	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000090	< 0.0000090	< 0.0000090	<0.000020
Benzo(b)fluoranthene			0.00048	FW			<0.00001	<0.00001	<0.000010	<0.000010	<0.000050	0.000022	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	-	-	0.000037
Benzo(b,j) fluoranthene	0.00007		0.00048	FW			-	-	-	-	-	-	-	-	-	-	-	< 0.000050	< 0.000050	-
Benzo(g,h,i)perylene			0.00017	FW			<0.00002	<0.00002	<0.000010	<0.000010	<0.000050	0.000011	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	<0.000040
Benzo(k)fluoranthene			0.00048	FW			<0.00001	<0.00001	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	<0.000010
Chrysene	0.007	0.001	0.0014	FW			<0.00001	<0.00001	<0.000020	<0.000030	<0.000050	0.000012	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	<0.000050
Dibenz(a,h)anthracene	0.000007		0.00026	FW			*<0.00002*	*<0.00002*	*<0.000010*	*<0.000010*	*<0.000050*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000050*	*<0.000050*	*<0.000050*	*< 0.000050*	*< 0.000050*	*<0.000010*
Fluoranthene	0.15	0.002	0.00004	FW			<0.00001	<0.00001	<0.000010	<0.000010	*<0.000050*	0.000038	0.000013	<0.000010	*<0.000050*	*<0.000050*	<0.000020	< 0.000020	< 0.000020	<0.000040
Fluorene	0.15	0.12	0.003	FW			<0.00001	<0.00001	<0.000010	<0.000010	`	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	<0.000010
Indeno(1,2,3-c,d)pyrene			0.00021	FW			<0.00002	<0.00002	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	<0.000020
Naphthalene	0.08	0.01	0.0011	FW			0.00001	0.00001	<0.000020	<0.000020	<0.000050	<0.000020	<0.000020	<0.000050	<0.000050	<0.000050	<0.00010	< 0.00010	< 0.00010	<0.000050
Phenanthrene		0.003	0.0004	FW			<0.00001	<0.00001	<0.000020	<0.000020	<0.000050	0.000024	<0.000020	<0.000020	<0.000050	<0.000050	<0.000050	< 0.000050	< 0.000050	0.000210
Pyrene	0.1	0.0002	0.000025	FW			<0.00001	<0.00001	<0.000010	<0.000010	*<0.000050*	0.000028	0.000011	<0.000010	*<0.000050*	*<0.000050*	<0.000020	< 0.000020	< 0.000020	*<0.000060*
Quinoline	0.00005	0.034	0.0034	FW			<0.00005	<0.00005	<0.000010	<0.000010	<0.000050	<0.000010	0.000022	<0.000010	<0.000050	<0.000050	*<0.00024*	*< 0.00024*	*< 0.00024*	<0.000010
2-methylnaphthalene	0.015						-	-	-	-	-	-	-	-	-	-	-	< 0.00010	< 0.00010	-
PAH, Low Molecular Weight							-	-	-	-	-	-	-	-	-	-	-	< 0.00024	< 0.00024	-
PAH, High Molecular Weight							-	-	-	-	-	-	-	-	-	-	-	< 0.000050	< 0.000050	-
PAH, Total							-	-	-	-	-	-	-	-	-	-	-	< 0.00024	< 0.00024	-
Glycols																				
Ethylene Glycol	8	1920	190	FW			<0.002	<0.002	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene Glycol							<0.003	<0.003	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	8						<0.0061	<0.0061	-	-	-	-	-	-	-	-	-	-	-	-
Tetraethylene Glycol							<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-
Propylene Glycol	80	5000	500	FW			<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014).
Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B7 Results of Groundwater Analyses - Hydrocarbons and Glygols
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW09-02 23259-09 8-Jun-12 N	MW09-03 09-020146-03 11-Oct-09 N	MW09-04 09-020146-04 11-Oct-09 N	MW09-04 24412-01 24-Sep-10 N	MW09-04 22795-05 29-Sep-11 N	MW09-04 23259-08 7-Jun-12 N	MW09-04 283695-03 24-Jul-13 FDA	MW09-04 283695-04 24-Jul-13 FD	MW09-04 17811-02 17-Sep-14 N	MW09-04 01123-02 20-Oct-15 FDA	MW09-04 01123-03 20-Oct-15 FD	MW09-04 MW09-04 2-Sep-16 N	MW09-05 09-020146-05 11-Oct-09 N	MW09-05 24412-03 24-Sep-10 FDA
Hydrocarbons																				
EPH10-19	5	5					<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.20	< 0.20	<0.25	<0.25
EPH19-32							<0.25	0.31	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.20	< 0.20	<0.25	<0.25
LEPH		0.5					<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.20	< 0.20	<0.25	<0.25
HEPH							<0.25	0.31	0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.20	< 0.20	<0.25	<0.25
Volatile Hydrocarbons (VH6-10)	15	15					-	<0.10	<0.10	<0.10	-	-	<0.10	<0.10	<0.10	<0.30	<0.30	< 0.3	<0.10	<0.10
VPH (C6-C10)		1.5					-	<0.10	<0.10	<0.10	-	-	<0.10	<0.10	<0.10	<0.30	<0.30	< 0.3	<0.10	<0.10
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene	0.25	0.06	0.0058	FW			<0.000010	<0.000020	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000010	<0.000050
Acenaphthylene			0.046	FW			<0.000010	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000010	<0.000050
Acridine		0.0005	0.00005	FW			<0.000010	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000010	<0.000050
Anthracene	1	0.001	0.000012	FW			<0.000010	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000010	<0.000010	<0.000050
Benz(a)anthracene	0.00007	0.001	0.000018	FW			<0.000010	<0.000030	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000010	<0.000010	<0.000050
Benzo(a)pyrene	0.00001	0.0001	0.000015	FW	**0.00001**		<0.000010	<0.000030	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000090	<0.0000090	< 0.0000090	<0.000010	<0.000010
Benzo(b)fluoranthene			0.00048	FW			<0.000010	<0.000060	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	-	<0.000020	<0.000050
Benzo(b,j) fluoranthene	0.00007		0.00048	FW			-	-	-	-	-	-	-	-	-	-	-	< 0.000050	-	-
Benzo(g,h,i)perylene			0.00017	FW			<0.000010	0.000040	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000010	<0.000050
Benzo(k)fluoranthene			0.00048	FW			<0.000010	<0.000010	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000010	<0.000050
Chrysene	0.007	0.001	0.0014	FW			<0.000010	<0.000060	<0.000020	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000030	<0.000050
Dibenz(a,h)anthracene	0.000007		0.00026	FW			*<0.000010*	*<0.000020*	*<0.000010*	*<0.000050*	*<0.000010*	*<0.000010*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*< 0.000050*	*<0.000010*	*<0.000050*
Fluoranthene	0.15	0.002	0.00004	FW			<0.000010	0.000038	<0.000010	*<0.000050*	<0.000010	<0.000010	*<0.000050*	*<0.000050*	*<0.000050*	<0.000020	<0.000020	< 0.000020	<0.000010	*<0.000050*
Fluorene	0.15	0.12	0.003	FW			<0.000010	0.000012	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000010	<0.000050
Indeno(1,2,3-c,d)pyrene			0.00021	FW			<0.000010	<0.000030	<0.000010	<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000010	<0.000050
Naphthalene	0.08	0.01	0.0011	FW			<0.000050	0.000063	<0.000020	<0.000050	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010	<0.00010	< 0.00010	<0.000040	<0.000050
Phenanthrene		0.003	0.0004	FW			0.000040	0.000264	<0.000030	<0.000050	0.0000280	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050	<0.000020	<0.000050
Pyrene	0.1	0.0002	0.000025	FW			0.000011	*<0.000080*	*<0.000030*	*<0.000050*	<0.000010	<0.000010	*<0.000050*	*<0.000050*	*<0.000050*	<0.000020	<0.000020	< 0.000020	*<0.000030*	*<0.000050*
Quinoline	0.00005	0.034	0.0034	FW			<0.000010	<0.000010	<0.000030	<0.000050	*<0.000070*	<0.000040	*<0.000080*	*<0.000080*	*<0.000070*	*<0.00024*	*<0.00024*	*< 0.00024*	<0.000010	<0.000050
2-methylnaphthalene	0.015						-	-	-	-	-	-	-	-	-	-	-	< 0.00010	-	-
PAH, Low Molecular Weight							-	-	-	-	-	-	-	-	-	-	-	< 0.00024	-	-
PAH, High Molecular Weight							-	-	-	-	-	-	-	-	-	-	-	< 0.000050	-	-
PAH, Total							-	-	-	-	-	-	-	-	-	-	-	< 0.00024	-	-
Glycols																				
Ethylene Glycol	8	1920	190	FW			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene Glycol							-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	8						-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetraethylene Glycol							-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene Glycol	80	5000	500	FW			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014).
Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B7 Results of Groundwater Analyses - Hydrocarbons and Glygols
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW09-05 24412-04 24-Sep-10 FD	MW09-05 22795-02 26-Sep-11 N	MW09-05 23259-01 7-Jun-12 N	MW09-05 283696-01 23-Jul-13 N	MW09-05 17811-03 17-Sep-14 N	MW09-05 01123-05 20-Oct-15 N	MW09-06 09-020146-06 11-Oct-09 N	MW09-06 24412-02 24-Sep-10 N	MW09-06 23259-05 7-Jun-12 N	MW09-06 283695-02 24-Jul-13 N	MW09-06 17814-01 19-Sep-14 FD	MW09-06 17814-02 19-Sep-14 FDA	MW09-06 01123-04 20-Oct-15 N	MW09-06 MW09-06 2-Sep-16 N
Hydrocarbons																				
EPH10-19	5	5					<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	< 0.20
EPH19-32							<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	0.28	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	< 0.20
LEPH		0.5					<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	< 0.20
HEPH							<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	0.28	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	< 0.20
Volatile Hydrocarbons (VH6-10)	15	15					<0.10	-	-	<0.10	<0.10	<0.30	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.30	< 0.3
VPH (C6-C10)		1.5					<0.10	-	-	<0.10	<0.10	<0.30	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.30	< 0.3
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene	0.25	0.06	0.0058	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Acenaphthylene			0.046	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Acridine		0.0005	0.00005	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Anthracene	1	0.001	0.000012	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	< 0.000010
Benz(a)anthracene	0.00007	0.001	0.000018	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	< 0.000010
Benzo(a)pyrene	0.00001	0.0001	0.000015	FW	**0.00001**		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000090	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000090	< 0.0000090
Benzo(b)fluoranthene			0.00048	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	-
Benzo(b,j) fluoranthene	0.00007		0.00048	FW			-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.000050
Benzo(g,h,i)perylene			0.00017	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Benzo(k)fluoranthene			0.00048	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Chrysene	0.007	0.001	0.0014	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	0.000015	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Dibenz(a,h)anthracene	0.000007		0.00026	FW			*<0.000050*	*<0.000010*	*<0.000010*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000010*	*<0.000050*	*<0.000010*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*< 0.000050*
Fluoranthene	0.15	0.002	0.00004	FW			*<0.000050*	<0.000010	<0.000010	*<0.000050*	*<0.000050*	<0.000020	<0.000010	*<0.000050*	<0.000010	*<0.000050*	*<0.000050*	*<0.000050*	<0.000020	< 0.000020
Fluorene	0.15	0.12	0.003	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000020	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Indeno(1,2,3-c,d)pyrene			0.00021	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Naphthalene	0.08	0.01	0.0011	FW			<0.000050	<0.000020	<0.000050	<0.000050	<0.000050	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010	< 0.00010
Phenanthrene		0.003	0.0004	FW			<0.000050	<0.000020	<0.000020	<0.000050	<0.000050	<0.000050	<0.000040	<0.000050	0.000024	<0.000050	<0.000050	<0.000050	<0.000050	< 0.000050
Pyrene	0.1	0.0002	0.000025	FW			*<0.000050*	<0.000010	<0.000010	*<0.000050*	*<0.000050*	<0.000020	<0.000020	*<0.000050*	0.000011	*<0.000050*	*<0.000050*	*<0.000050*	<0.000020	< 0.000020
Quinoline	0.00005	0.034	0.0034	FW			<0.000050	<0.000010	<0.000010	<0.000050	<0.000050	*<0.00024*	<0.000010	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	*<0.00024*	*< 0.00024*
2-methylnaphthalene	0.015						-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00010
PAH, Low Molecular Weight							-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00024
PAH, High Molecular Weight							-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.000050
PAH, Total							-	-	-	-	-	-	-	-	-	-	-	-	-	< 0.00024
Glycols																				
Ethylene Glycol	8	1920	190	FW			-	-	-	-	-	-	-	-	-	-		-	-	
Diethylene Glycol							-	-	-	-	-	-	-	-	-	-		-	-	
Triethylene Glycol	8						-	-	-	-	-	-	-	-	-	-		-	-	
Tetraethylene Glycol							-	-	-	-	-	-	-	-	-	-		-	-	
Propylene Glycol	80	5000	500	FW			-	-	-	-	-	-	-	-	-	-		-	-	

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014).
Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B7 Results of Groundwater Analyses - Hydrocarbons and Glygols
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW10-02 24412-08 25-Sep-10 N	MW10-02 22795-06 27-Sep-11 N	MW10-02 23259-06 7-Jun-12 FDA	MW10-02 23259-07 7-Jun-12 FD	MW10-02 283695-05 24-Jul-13 N	MW10-02 17811-01 17-Sep-14 N	MW10-02 01123-01 20-Oct-15 N	MW10-03 24412-09 25-Sep-10 N	MW10-03 22795-07 27-Sep-11 N	MW10-03 23259-04 7-Jun-12 N	MW16-02 MW16-02 8-Sep-16 N	MW16-02A MW16-02A 6-Nov-16 N	MW16-02B MW16-02B 6-Nov-16 FD	MW16-03 MW16-03 8-Sep-16 N
Hydrocarbons																				
EPH10-19	5	5					<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	<0.25	<0.25	< 0.20	< 0.20	< 0.20	0.36
EPH19-32							<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	<0.25	<0.25	0.24	< 0.20	< 0.20	0.69
LEPH		0.5					<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	<0.25	<0.25	< 0.20	< 0.20	< 0.20	0.36
HEPH							<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.20	<0.25	<0.25	<0.25	0.24	< 0.20	< 0.20	0.69
Volatile Hydrocarbons (VH6-10)	15	15					<0.10	-	-	-	<0.10	<0.10	<0.30	<0.10	-	-	< 0.3	< 0.3	< 0.3	< 0.3
VPH (C6-C10)		1.5					<0.10	-	-	-	<0.10	<0.10	<0.30	<0.10	-	-	< 0.3	< 0.3	< 0.3	< 0.3
Polycyclic Aromatic Hydrocarbons																				
Acenaphthene	0.25	0.06	0.0058	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000050	< 0.000050	< 0.000050	0.000079
Acenaphthylene			0.046	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Acridine		0.0005	0.00005	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Anthracene	1	0.001	0.000012	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Benz(a)anthracene	0.00007	0.001	0.000018	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000010	<0.000050	<0.000010	<0.000010	< 0.000010	< 0.000010	< 0.000010	0.000023
Benzo(a)pyrene	0.00001	0.0001	0.000015	FW	**0.00001**		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.0000090	0.00002	<0.000010	<0.000010	< 0.0000090	< 0.0000090	< 0.0000090	**0.000024**
Benzo(b)fluoranthene			0.00048	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	-	< 0.000050	< 0.000050	-
Benzo(b,j) fluoranthene	0.00007		0.00048	FW			-	-	-	-	-	-	-	-	-	-	< 0.000050	< 0.000050	< 0.000050	0.000052
Benzo(g,h,i)perylene			0.00017	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000050	< 0.000050	< 0.000050	0.000073
Benzo(k)fluoranthene			0.00048	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Chrysene	0.007	0.001	0.0014	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000050	< 0.000050	< 0.000050	0.00014
Dibenz(a,h)anthracene	0.000007		0.00026	FW			*<0.000050*	*<0.000010*	*<0.000010*	*<0.000010*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000050*	*<0.000010*	*<0.000010*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*
Fluoranthene	0.15	0.002	0.00004	FW			*<0.000050*	<0.000010	<0.000010	<0.000010	*<0.000050*	*<0.000050*	<0.000020	*<0.000050*	<0.000010	<0.000010	0.000020	< 0.000020	< 0.000020	0.000063
Fluorene	0.15	0.12	0.003	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000050	< 0.000050	< 0.000050	0.00014
Indeno(1,2,3-c,d)pyrene			0.00021	FW			<0.000050	<0.000010	<0.000010	<0.000010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000010	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Naphthalene	0.08	0.01	0.0011	FW			<0.000050	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010	0.000067	0.000037	<0.000050	0.00020	0.00012	0.00010	0.00032
Phenanthrene		0.003	0.0004	FW			<0.000050	<0.000020	<0.000020	<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	0.000023	<0.000020	0.00011	0.00011	0.00010	0.00026
Pyrene	0.1	0.0002	0.000025	FW			*<0.000050*	<0.000010	<0.000010	<0.000010	*<0.000050*	*<0.000050*	<0.000020	*<0.000050*	<0.000010	<0.000010	0.000026	0.000029	0.000026	0.000067
Quinoline	0.00005	0.034	0.0034	FW			<0.000050	<0.000050	<0.000030	<0.000030	<0.000050	<0.000050	*<0.00024*	<0.000050	<0.000010	<0.000010	*< 0.00024*	*< 0.00024*	*< 0.00024*	*< 0.00024*
2-methylnaphthalene	0.015						-	-	-	-	-	-	-	-	-	-	0.00024	0.00019	0.00017	0.00075
PAH, Low Molecular Weight							-	-	-	-	-	-	-	-	-	-	0.00055	0.00041	0.00037	0.0015
PAH, High Molecular Weight							-	-	-	-	-	-	-	-	-	-	< 0.000050	< 0.000050	< 0.000050	0.00044
PAH, Total							-	-	-	-	-	-	-	-	-	-	0.00059	0.00044	0.00040	0.0020
Glycols																				
Ethylene Glycol	8	1920	190	FW			-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene Glycol							-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	8						-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetraethylene Glycol							-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene Glycol	80	5000	500	FW			-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014).
Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B7 Results of Groundwater Analyses - Hydrocarbons and Glygols
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW16-03 MW16-03 7-Nov-16 N	MW16-04 MW16-04 8-Sep-16 N	MW16-04 MW16-04 5-Nov-16 N	MW16-05 MW16-05 8-Sep-16 N	MW16-05 MW16-05 7-Nov-16 N	MW16-07 MW16-07 8-Sep-16 N	MW16-07 MW16-07 5-Nov-16 N	MW16-08A MW16-08A 8-Sep-16 FDA	MW16-08B MW16-08B 8-Sep-16 FD
Hydrocarbons															
EPH10-19	5	5					< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
EPH19-32							< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
LEPH		0.5					< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
HEPH							< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
Volatile Hydrocarbons (VH6-10)	15	15					< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
VPH (C6-C10)		1.5					< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Polycyclic Aromatic Hydrocarbons															
Acenaphthene	0.25	0.06	0.0058	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Acenaphthylene			0.046	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Acridine		0.0005	0.00005	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Anthracene	1	0.001	0.000012	FW			< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Benz(a)anthracene	0.00007	0.001	0.000018	FW			< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010	< 0.000010
Benzo(a)pyrene	0.00001	0.0001	0.000015	FW	**0.00001**		< 0.0000090	< 0.0000090	< 0.0000090	< 0.0000090	< 0.0000090	< 0.0000090	< 0.0000090	< 0.0000090	< 0.0000090
Benzo(b)fluoranthene			0.00048	FW			< 0.000050	-	< 0.000050	-	< 0.000050	-	< 0.000050	-	-
Benzo(b,j) fluoranthene	0.00007		0.00048	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Benzo(g,h,i)perylene			0.00017	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Benzo(k)fluoranthene			0.00048	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Chrysene	0.007	0.001	0.0014	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Dibenz(a,h)anthracene	0.000007		0.00026	FW			*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*	*< 0.000050*
Fluoranthene	0.15	0.002	0.00004	FW			< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020
Fluorene	0.15	0.12	0.003	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Indeno(1,2,3-c,d)pyrene			0.00021	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
Naphthalene	0.08	0.01	0.0011	FW			< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010
Phenanthrene		0.003	0.0004	FW			< 0.000050	< 0.000050	< 0.000050	< 0.000050	0.000053	< 0.000050	0.00010	< 0.000050	< 0.000050
Pyrene	0.1	0.0002	0.000025	FW			< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	< 0.000020	0.000023	< 0.000020	< 0.000020
Quinoline	0.00005	0.034	0.0034	FW			*< 0.00024*	*< 0.00024*	*< 0.00024*	*< 0.00024*	*< 0.00024*	*< 0.00024*	*< 0.00024*	*< 0.00024*	*< 0.00024*
2-methylnaphthalene	0.015						< 0.00010	0.00011	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	0.00013	0.00013
PAH, Low Molecular Weight							< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024
PAH, High Molecular Weight							< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050	< 0.000050
PAH, Total							< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024	< 0.00024
Glycols															
Ethylene Glycol	8	1920	190	FW			-	-	-	-	-	-	-	-	-
Diethylene Glycol							-	-	-	-	-	-	-	-	-
Triethylene Glycol	8						-	-	-	-	-	-	-	-	-
Tetraethylene Glycol							-	-	-	-	-	-	-	-	-
Propylene Glycol	80	5000	500	FW			-	-	-	-	-	-	-	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014).
Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B8 Results of Groundwater Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW10-01S 24412-05 25-Sep-10 N	MW10-01S 283695-01 24-Jul-13 N	MW10-01S 17813-02 18-Sep-14 N	MW10-01S 01123-07 21-Oct-15 N	MW10-01D 24412-06 25-Sep-10 N	MW16-01 MW16-01 8-Sep-16 N	MW16-01 MW16-01 7-Nov-16 N	MW16-06 MW16-06 8-Sep-16 N	Water Well Steamboat 24-Nov-05 FDA	Water Well Water Dup 24-Nov-05 FD	MW09-01 09-020146-01 11-Oct-09 FDA	MW09-01 09-020146-07 11-Oct-09 FD	MW09-01 24412-07 25-Sep-10 N
Volatile Organic Compounds																			
Benzene	1-20	0.4	0.14	I	**0.005**		<0.00050	<0.00050	<0.00050	<0.00040	<0.00050	< 0.00040	< 0.00040	< 0.00040	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050
Bromodichloromethane	0.1		8.5	FW			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	<0.0010	<0.0010	<0.0010
Bromoform	0.1		0.38	I			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	<0.0010	<0.0010	<0.0010
Bromomethane	0.0055		0.0056	I			-	-	-	<0.0010	-	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	-	-	-
Carbon Tetrachloride	0.002	0.13	0.00056	I	**0.002**		<0.0010	<0.00050	<0.00050	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	*<0.003*	*<0.003*	<0.0010	<0.0010	<0.0010
Chlorobenzene	0.08	0.013	0.0013	FW	**0.03**	AO	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
Dibromochloromethane	0.1		1.1	I			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	<0.0010	<0.0010	<0.0010
Chloroethane							<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	<0.0010	<0.0010	<0.0010
Chloroform	0.1	0.02	0.0018	FW			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	<0.0010	<0.0010	<0.0010
Chloromethane							<0.0050	<0.0050	<0.0050	<0.0010	<0.0050	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	<0.0050	<0.0050	<0.0050
1,2-Dichlorobenzene	0.2	0.007	0.0007	FW	**0.003**	AO	<0.0010	<0.00070	<0.00070	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
1,3-Dichlorobenzene		1.5	0.15	FW			<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
1,4-Dichlorobenzene	0.005	0.26	0.026	FW	**0.001**	AO	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
1,1-Dichloroethane	0.03		0.32	I			<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
1,2-Dichloroethane	0.005	1	0.01	I	**0.005**		<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
1,1-Dichloroethylene	0.014	0.72	0.039	I	**0.014**		<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
cis-1,2-Dichloroethylene	0.008		0.0016	FW			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	<0.0010	<0.0010	<0.0010
trans-1,2-Dichloroethylene	0.08		0.0016	FW			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	<0.001	<0.001	<0.0010	<0.0010	<0.0010
Dichloromethane	0.05	0.98	0.098	FW	**0.05**		<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	< 0.0020	< 0.0020	< 0.0020	<0.002	<0.002	<0.0050	<0.0050	<0.0050
1,2-Dichloropropane	0.0045		0.016	I			<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
cis-1,3-Dichloropropene	0.0015		0.0052	I, *			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	<0.0001	<0.0001	<0.0010	<0.0010	<0.0010
trans-1,3-Dichloropropene	0.0015		0.0052	I, *			<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	< 0.0010	-	-	<0.0010	<0.0010	<0.0010
Ethylbenzene	0.14	2	16	I	**0.0016**	AO	<0.00050	<0.00050	<0.00050	<0.00040	<0.00050	< 0.00040	< 0.00040	< 0.00040	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050
Methyl t-butyl ether (MTBE)	0.095	34	0.34	I	**0.015**	AO	<0.0010	<0.00050	<0.00050	<0.0040	<0.0010	< 0.0040	< 0.0040	< 0.0040	<0.004	<0.004	<0.0010	<0.0010	<0.0010
Styrene	0.8		0.072	FW			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.00050	<0.00050	<0.00050
1,1,1,2-Tetrachloroethane	0.006		0.0034	I			<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
1,1,2,2-Tetrachloroethane	0.0008		0.0032	I			*<0.0010*	*<0.0010*	*<0.0010*	<0.00050	*<0.0010*	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	*<0.0010*	*<0.0010*	*<0.0010*
Tetrachloroethylene	0.03	1.1	0.11	FW	**0.03**		<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
Toluene	0.06	0.005	0.083	FW	**0.024**	AO	<0.0010	<0.00050	<0.00050	<0.00040	<0.0010	0.0021	< 0.00040	< 0.00040	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
1,1,1-Trichloroethane	8		0.64	I			<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	-	-	<0.0010	<0.0010	<0.0010
1,1,2-Trichloroethane	0.003		0.0047	I			<0.0015	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
Trichloroethylene	0.005	0.2	0.02	I	**0.005**		<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
Trichlorofluoromethane	1						<0.0010	<0.0010	<0.0010	<0.0040	<0.0010	< 0.0040	< 0.0040	< 0.0040	<0.004	<0.004	<0.0010	<0.0010	<0.0010
Vinyl Chloride	0.002		0.0011	I	**0.002**		<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	< 0.00050	< 0.00050	< 0.00050	<0.0005	<0.0005	<0.0010	<0.0010	<0.0010
ortho-Xylene							<0.00050	<0.00050	<0.00050	<0.00040	<0.00050	< 0.00040	< 0.00040	< 0.00040	-	-	<0.00050	<0.00050	<0.00050
meta- & para-Xylene							<0.00050	<0.00050	<0.00050	<0.00040	<0.00050	< 0.00040	< 0.00040	< 0.00040	-	-	<0.00050	<0.00050	<0.00050
Xylenes	0.09	0.3	3.9	I	**0.02**	AO	<0.00071	<0.00075	<0.00075	<0.00040	<0.00071	< 0.00040	< 0.00040	< 0.00040	<0.001	<0.001	<0.0010	<0.0010	<0.00071
1,2-dibromoethane (Ethylene Dibromide) (EDB)	0.00008						-	-	-	-	-	-	*< 0.00020*	-	-	-	-	-	-
1,2,3-Trichlorobenzene	0.003	0.08					-	-	-	-	-	-	< 0.0020	-	-	-	-	-	-
1,2,4-Trichlorobenzene	0.0055	0.24					-	-	-	-	-	-	< 0.0020	-	-	-	-	-	-
Dichlorodifluoromethane (Freon 12)	0.8						-	-	-	-	-	-	< 0.0020	-	-	-	-	-	-
Hexachlorobutadiene	0.002	0.015					-	-	-	-	-	-	< 0.00050	-	-	-	-	-	-
Freon 113	100						-	-	-	-	-	-	< 0.0020	-	-	-	-	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B8 Results of Groundwater Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	**Health Canada Guidelines for Drinking Water**	Notes	MW09-01 283695-06 24-Jul-13 N	MW09-01 17813-01 18-Sep-14 N	MW09-01 00123-06 21-Oct-15 N	MW09-01A MW09-01A 3-Sep-16 FDA	MW09-01B MW09-01B 3-Sep-16 FD	MW09-02 09-020146-02 11-Oct-09 N	MW09-03 09-020146-03 11-Oct-09 N	MW09-04 09-020146-04 11-Oct-09 N	MW09-04 24412-01 24-Sep-10 N	MW09-04 283695-03 24-Jul-13 FDA	MW09-04 283695-04 24-Jul-13 FD	MW09-04 17811-02 17-Sep-14 N
Volatile Organic Compounds																		
Benzene	1-20	0.4	0.14	I	**0.005**		<0.00050	<0.00050	<0.00040	< 0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Bromodichloromethane	0.1		8.5	FW			<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bromoform	0.1		0.38	I			<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bromomethane	0.0055		0.0056	I			-	-	<0.0010	< 0.0010	< 0.0010	-	-	-	-	-	-	-
Carbon Tetrachloride	0.002	0.13	0.00056	I	**0.002**		<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050
Chlorobenzene	0.08	0.013	0.0013	FW	**0.03**	AO	<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Dibromochloromethane	0.1		1.1	I			<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Chloroethane							<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Chloroform	0.1	0.02	0.0018	FW			<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Chloromethane							<0.0050	<0.0050	<0.0010	< 0.0010	< 0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dichlorobenzene	0.2	0.007	0.0007	FW	**0.003**	AO	<0.00070	<0.00070	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.00070	<0.00070	<0.00070
1,3-Dichlorobenzene		1.5	0.15	FW			<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,4-Dichlorobenzene	0.005	0.26	0.026	FW	**0.001**	AO	<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1-Dichloroethane	0.03		0.32	I			<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,2-Dichloroethane	0.005	1	0.01	I	**0.005**		<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1-Dichloroethylene	0.014	0.72	0.039	I	**0.014**		<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
cis-1,2-Dichloroethylene	0.008		0.0016	FW			<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
trans-1,2-Dichloroethylene	0.08		0.0016	FW			<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Dichloromethane	0.05	0.98	0.098	FW	**0.05**		<0.0050	<0.0050	<0.0020	< 0.0020	< 0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1,2-Dichloropropane	0.0045		0.016	I			<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
cis-1,3-Dichloropropene	0.0015		0.0052	I, *			<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
trans-1,3-Dichloropropene	0.0015		0.0052	I, *			<0.0010	<0.0010	<0.0010	< 0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Ethylbenzene	0.14	2	16	I	**0.0016**	AO	<0.00050	<0.00050	<0.00040	< 0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methyl t-butyl ether (MTBE)	0.095	34	0.34	I	**0.015**	AO	<0.00050	<0.00050	<0.0040	< 0.0040	< 0.0040	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050
Styrene	0.8		0.072	FW			<0.00050	<0.00050	<0.00050	< 0.00050	< 0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1,2-Tetrachloroethane	0.006		0.0034	I			<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1,2,2-Tetrachloroethane	0.0008		0.0032	I			*<0.0010*	*<0.0010*	<0.00050	< 0.00050	< 0.00050	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*
Tetrachloroethylene	0.03	1.1	0.11	FW	**0.03**		<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Toluene	0.06	0.005	0.083	FW	**0.024**	AO	<0.00050	<0.00050	<0.00040	< 0.00040	< 0.00040	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050
1,1,1-Trichloroethane	8		0.64	I			<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
1,1,2-Trichloroethane	0.003		0.0047	I			<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Trichloroethylene	0.005	0.2	0.02	I	**0.005**		<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Trichlorofluoromethane	1						<0.0010	<0.0010	<0.0040	< 0.0040	< 0.0040	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Vinyl Chloride	0.002		0.0011	I	**0.002**		<0.0010	<0.0010	<0.00050	< 0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
ortho-Xylene							<0.00050	<0.00050	<0.00040	< 0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
meta- & para-Xylene							<0.00050	<0.00050	<0.00040	< 0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Xylenes	0.09	0.3	3.9	I	**0.02**	AO	<0.00075	<0.00075	<0.00040	< 0.00040	< 0.00040	<0.0010	<0.0010	<0.0010	<0.00071	<0.00075	<0.00075	<0.00075
1,2-dibromoethane (Ethylene Dibromide) (EDB)	0.00008						-	-	-	*< 0.00020*	*< 0.00020*	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	0.003	0.08					-	-	-	< 0.0020	< 0.0020	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	0.0055	0.24					-	-	-	< 0.0020	< 0.0020	-	-	-	-	-	-	-
Dichlorodifluoromethane (Freon 12)	0.8						-	-	-	< 0.0020	< 0.0020	-	-	-	-	-	-	-
Hexachlorobutadiene	0.002	0.015					-	-	-	< 0.00050	< 0.00050	-	-	-	-	-	-	-
Freon 113	100						-	-	-	< 0.0020	< 0.0020	-	-	-	-	-	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B8 Results of Groundwater Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW09-04 01123-02 20-Oct-15 FDA	MW09-04 01123-03 20-Oct-15 FD	MW09-04 MW09-04 2-Sep-16 N	MW09-05 09-020146-05 11-Oct-09 N	MW09-05 24412-03 24-Sep-10 FDA	MW09-05 24412-04 24-Sep-10 FD	MW09-05 283696-01 23-Jul-13 N	MW09-05 17811-03 17-Sep-14 N	MW09-05 01123-05 20-Oct-15 N	MW09-06 09-020146-06 11-Oct-09 N	MW09-06 24412-02 24-Sep-10 N	MW09-06 283695-02 24-Jul-13 N
Volatile Organic Compounds																		
Benzene	1-20	0.4	0.14	I	**0.005**		<0.00040	<0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00050	<0.00050	<0.00050
Bromodichloromethane	0.1		8.5	FW			<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bromoform	0.1		0.38	I			<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Bromomethane	0.0055		0.0056	I			<0.0010	<0.0010	< 0.0010	-	-	-	-	-	<0.0010	-	-	-
Carbon Tetrachloride	0.002	0.13	0.00056	I	**0.002**		<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.00050
Chlorobenzene	0.08	0.013	0.0013	FW	**0.03**	AO	<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
Dibromochloromethane	0.1		1.1	I			<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Chloroethane							<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Chloroform	0.1	0.02	0.0018	FW			<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Chloromethane							<0.0010	<0.0010	< 0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010	<0.0050	<0.0050	<0.0050
1,2-Dichlorobenzene	0.2	0.007	0.0007	FW	**0.003**	AO	<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00070	<0.00070	<0.00050	<0.0010	<0.0010	<0.00070
1,3-Dichlorobenzene		1.5	0.15	FW			<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
1,4-Dichlorobenzene	0.005	0.26	0.026	FW	**0.001**	AO	<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
1,1-Dichloroethane	0.03		0.32	I			<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
1,2-Dichloroethane	0.005	1	0.01	I	**0.005**		<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
1,1-Dichloroethylene	0.014	0.72	0.039	I	**0.014**		<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
cis-1,2-Dichloroethylene	0.008		0.0016	FW			<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
trans-1,2-Dichloroethylene	0.08		0.0016	FW			<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Dichloromethane	0.05	0.98	0.098	FW	**0.05**		<0.0020	<0.0020	< 0.0020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0020	<0.0050	<0.0050	<0.0050
1,2-Dichloropropane	0.0045		0.016	I			<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
cis-1,3-Dichloropropene	0.0015		0.0052	I, *			<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
trans-1,3-Dichloropropene	0.0015		0.0052	I, *			<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Ethylbenzene	0.14	2	16	I	**0.0016**	AO	<0.00040	<0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00050	<0.00050	<0.00050
Methyl t-butyl ether (MTBE)	0.095	34	0.34	I	**0.015**	AO	<0.0040	<0.0040	< 0.0040	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.0040	<0.0010	<0.0010	<0.00050
Styrene	0.8		0.072	FW			<0.00050	<0.00050	< 0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,1,1,2-Tetrachloroethane	0.006		0.0034	I			<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
1,1,2,2-Tetrachloroethane	0.0008		0.0032	I			<0.00050	<0.00050	< 0.00050	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	*<0.0010*	<0.00050	*<0.0010*	*<0.0010*	*<0.0010*
Tetrachloroethylene	0.03	1.1	0.11	FW	**0.03**		<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
Toluene	0.06	0.005	0.083	FW	**0.024**	AO	<0.00040	<0.00040	< 0.00040	<0.0010	<0.0010	<0.0010	<0.00050	<0.00050	<0.00040	<0.0010	<0.0010	<0.00050
1,1,1-Trichloroethane	8		0.64	I			<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
1,1,2-Trichloroethane	0.003		0.0047	I			<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
Trichloroethylene	0.005	0.2	0.02	I	**0.005**		<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
Trichlorofluoromethane	1						<0.0040	<0.0040	< 0.0040	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0040	<0.0010	<0.0010	<0.0010
Vinyl Chloride	0.002		0.0011	I	**0.002**		<0.00050	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010
ortho-Xylene							<0.00040	<0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00050	<0.00050	<0.00050
meta- & para-Xylene							<0.00040	<0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00040	<0.00050	<0.00050	<0.00050
Xylenes	0.09	0.3	3.9	I	**0.02**	AO	<0.00040	<0.00040	< 0.00040	<0.0010	<0.00071	<0.00071	<0.00075	<0.00075	<0.00040	<0.0010	<0.00071	<0.00075
1,2-dibromoethane (Ethylene Dibromide) (EDB)	0.00008						-	-	*< 0.00020*	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	0.003	0.08					-	-	< 0.0020	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	0.0055	0.24					-	-	< 0.0020	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane (Freon 12)	0.8						-	-	< 0.0020	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	0.002	0.015					-	-	< 0.00050	-	-	-	-	-	-	-	-	-
Freon 113	100						-	-	< 0.0020	-	-	-	-	-	-	-	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B8 Results of Groundwater Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW09-06 17814-01 19-Sep-14 FD	MW09-06 17814-02 19-Sep-14 FDA	MW09-06 01123-04 20-Oct-15 N	MW09-06 MW09-06 2-Sep-16 N	MW10-02 24412-08 25-Sep-10 N	MW10-02 283695-05 24-Jul-13 N	MW10-02 17811-01 17-Sep-14 N	MW10-02 01123-01 20-Oct-15 N	MW10-02 MW10-02 2-Sep-16 N	MW10-03 24412-09 25-Sep-10 N	MW16-02 MW16-02 8-Sep-16 N	MW16-02A MW16-02A 6-Nov-16 N
Volatile Organic Compounds																		
Benzene	1-20	0.4	0.14	I	**0.005**		<0.00050	<0.00050	<0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00040	< 0.00040	<0.00050	< 0.00040	< 0.00040
Bromodichloromethane	0.1		8.5	FW			<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
Bromoform	0.1		0.38	I			<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
Bromomethane	0.0055		0.0056	I			-	-	<0.0010	< 0.0010	-	-	-	<0.0010	< 0.0010	-	< 0.0010	< 0.0010
Carbon Tetrachloride	0.002	0.13	0.00056	I	**0.002**		<0.00050	<0.00050	<0.00050	< 0.00050	<0.0010	<0.00050	<0.00050	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
Chlorobenzene	0.08	0.013	0.0013	FW	**0.03**	AO	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
Dibromochloromethane	0.1		1.1	I			<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
Chloroethane							<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
Chloroform	0.1	0.02	0.0018	FW			<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
Chloromethane							<0.0050	<0.0050	<0.0010	< 0.0010	<0.0050	<0.0050	<0.0050	<0.0010	< 0.0010	<0.0050	< 0.0010	0.0013
1,2-Dichlorobenzene	0.2	0.007	0.0007	FW	**0.003**	AO	<0.00070	<0.00070	<0.00050	< 0.00050	<0.0010	<0.00070	<0.00070	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
1,3-Dichlorobenzene		1.5	0.15	FW			<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
1,4-Dichlorobenzene	0.005	0.26	0.026	FW	**0.001**	AO	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
1,1-Dichloroethane	0.03		0.32	I			<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
1,2-Dichloroethane	0.005	1	0.01	I	**0.005**		<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
1,1-Dichloroethylene	0.014	0.72	0.039	I	**0.014**		<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
cis-1,2-Dichloroethylene	0.008		0.0016	FW			<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
trans-1,2-Dichloroethylene	0.08		0.0016	FW			<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
Dichloromethane	0.05	0.98	0.098	FW	**0.05**		<0.0050	<0.0050	<0.0020	< 0.0020	<0.0050	<0.0050	<0.0050	<0.0020	< 0.0020	<0.0050	< 0.0020	0.0028
1,2-Dichloropropane	0.0045		0.016	I			<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
cis-1,3-Dichloropropene	0.0015		0.0052	I, *			<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
trans-1,3-Dichloropropene	0.0015		0.0052	I, *			<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	<0.0010	<0.0010	<0.0010	< 0.0010	<0.0010	< 0.0010	< 0.0010
Ethylbenzene	0.14	2	16	I	**0.0016**	AO	<0.00050	<0.00050	<0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00040	< 0.00040	<0.00050	< 0.00040	< 0.00040
Methyl t-butyl ether (MTBE)	0.095	34	0.34	I	**0.015**	AO	<0.00050	<0.00050	<0.0040	< 0.0040	<0.0010	<0.00050	<0.00050	<0.0040	< 0.0040	<0.0010	< 0.0040	< 0.0040
Styrene	0.8		0.072	FW			<0.00050	<0.00050	<0.00050	< 0.00050	<0.00050	<0.00050	<0.00050	<0.00050	< 0.00050	<0.00050	< 0.00050	< 0.00050
1,1,1,2-Tetrachloroethane	0.006		0.0034	I			<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
1,1,2,2-Tetrachloroethane	0.0008		0.0032	I			*<0.0010*	*<0.0010*	<0.00050	< 0.00050	*<0.0010*	*<0.0010*	*<0.0010*	<0.00050	< 0.00050	*<0.0010*	< 0.00050	< 0.00050
Tetrachloroethylene	0.03	1.1	0.11	FW	**0.03**		<0.0010	<0.0010	0.00058	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
Toluene	0.06	0.005	0.083	FW	**0.024**	AO	<0.00050	<0.00050	<0.00040	< 0.00040	<0.0010	<0.00050	<0.00050	<0.00040	< 0.00040	<0.0010	< 0.00040	< 0.00040
1,1,1-Trichloroethane	8		0.64	I			<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
1,1,2-Trichloroethane	0.003		0.0047	I			<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
Trichloroethylene	0.005	0.2	0.02	I	**0.005**		<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
Trichlorofluoromethane	1						<0.0010	<0.0010	<0.0040	< 0.0040	<0.0010	<0.0010	<0.0010	<0.0040	< 0.0040	<0.0010	< 0.0040	< 0.0040
Vinyl Chloride	0.002		0.0011	I	**0.002**		<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	<0.0010	<0.0010	<0.00050	< 0.00050	<0.0010	< 0.00050	< 0.00050
ortho-Xylene							<0.00050	<0.00050	<0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00040	< 0.00040	<0.00050	< 0.00040	< 0.00040
meta- & para-Xylene							<0.00050	<0.00050	<0.00040	< 0.00040	<0.00050	<0.00050	<0.00050	<0.00040	0.0015	<0.00050	< 0.00040	< 0.00040
Xylenes	0.09	0.3	3.9	I	**0.02**	AO	<0.00075	<0.00075	<0.00040	< 0.00040	<0.00071	<0.00075	<0.00075	<0.00040	0.0015	<0.00071	< 0.00040	< 0.00040
1,2-dibromoethane (Ethylene Dibromide) (EDB)	0.00008						-	-	-	*< 0.00020*	-	-	-	-	*< 0.00020*	-	-	*< 0.00020*
1,2,3-Trichlorobenzene	0.003	0.08					-	-	-	< 0.0020	-	-	-	-	< 0.0020	-	-	< 0.0020
1,2,4-Trichlorobenzene	0.0055	0.24					-	-	-	< 0.0020	-	-	-	-	< 0.0020	-	-	< 0.0020
Dichlorodifluoromethane (Freon 12)	0.8						-	-	-	< 0.0020	-	-	-	-	< 0.0020	-	-	< 0.0020
Hexachlorobutadiene	0.002	0.015					-	-	-	< 0.00050	-	-	-	-	< 0.00050	-	-	< 0.00050
Freon 113	100						-	-	-	< 0.0020	-	-	-	-	< 0.0020	-	-	< 0.0020

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B8 Results of Groundwater Analyses - Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location Sample Control Number Date Sampled QA/QC	Omnibus Standards for Drinking Water	Omnibus Standards for Fresh Water Aquatic Life	Federal Interim Groundwater Quality Guidelines Residential	Notes	Health Canada Guidelines for Drinking Water	Notes	MW16-02B MW16-02B 6-Nov-16 FD	MW16-03 MW16-03 8-Sep-16 N	MW16-03 MW16-03 7-Nov-16 N	MW16-04 MW16-04 8-Sep-16 N	MW16-04 MW16-04 5-Nov-16 N	MW16-05 MW16-05 8-Sep-16 N	MW16-05 MW16-05 7-Nov-16 N	MW16-07 MW16-07 8-Sep-16 N	MW16-07 MW16-07 5-Nov-16 N	MW16-08A MW16-08A 8-Sep-16 FDA	MW16-08B MW16-08B 8-Sep-16 FD
Volatile Organic Compounds																	
Benzene	1-20	0.4	0.14	I	**0.005**		< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040
Bromodichloromethane	0.1		8.5	FW			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Bromoform	0.1		0.38	I			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Bromomethane	0.0055		0.0056	I			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Carbon Tetrachloride	0.002	0.13	0.00056	I	**0.002**		< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Chlorobenzene	0.08	0.013	0.0013	FW	**0.03**	AO	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Dibromochloromethane	0.1		1.1	I			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Chloroethane							< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Chloroform	0.1	0.02	0.0018	FW			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Chloromethane							< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
1,2-Dichlorobenzene	0.2	0.007	0.0007	FW	**0.003**	AO	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
1,3-Dichlorobenzene		1.5	0.15	FW			< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
1,4-Dichlorobenzene	0.005	0.26	0.026	FW	**0.001**	AO	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
1,1-Dichloroethane	0.03		0.32	I			< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
1,2-Dichloroethane	0.005	1	0.01	I	**0.005**		< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
1,1-Dichloroethylene	0.014	0.72	0.039	I	**0.014**		< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
cis-1,2-Dichloroethylene	0.008		0.0016	FW			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
trans-1,2-Dichloroethylene	0.08		0.0016	FW			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Dichloromethane	0.05	0.98	0.098	FW	**0.05**		< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020	< 0.0020
1,2-Dichloropropane	0.0045		0.016	I			< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
cis-1,3-Dichloropropene	0.0015		0.0052	I, *			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
trans-1,3-Dichloropropene	0.0015		0.0052	I, *			< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010
Ethylbenzene	0.14	2	16	I	**0.0016**	AO	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040
Methyl t-butyl ether (MTBE)	0.095	34	0.34	I	**0.015**	AO	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Styrene	0.8		0.072	FW			< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
1,1,1,2-Tetrachloroethane	0.006		0.0034	I			< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
1,1,2,2-Tetrachloroethane	0.0008		0.0032	I			< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Tetrachloroethylene	0.03	1.1	0.11	FW	**0.03**		< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Toluene	0.06	0.005	0.083	FW	**0.024**	AO	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040
1,1,1-Trichloroethane	8		0.64	I			< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
1,1,2-Trichloroethane	0.003		0.0047	I			< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Trichloroethylene	0.005	0.2	0.02	I	**0.005**		< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
Trichlorofluoromethane	1						< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040	< 0.0040
Vinyl Chloride	0.002		0.0011	I	**0.002**		< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050	< 0.00050
ortho-Xylene							< 0.00040	0.00090	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040
meta- & para-Xylene							< 0.00040	0.0016	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040
Xylenes	0.09	0.3	3.9	I	**0.02**	AO	< 0.00040	0.0024	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040	< 0.00040
1,2-dibromoethane (Ethylene Dibromide) (EDB)	0.00008						*< 0.00020*	-	*< 0.00020*	-	*< 0.00020*	-	*< 0.00020*	-	*< 0.00020*	-	-
1,2,3-Trichlorobenzene	0.003	0.08					< 0.0020	-	< 0.0020	-	< 0.0020	-	< 0.0020	-	< 0.0020	-	-
1,2,4-Trichlorobenzene	0.0055	0.24					< 0.0020	-	< 0.0020	-	< 0.0020	-	< 0.0020	-	< 0.0020	-	-
Dichlorodifluoromethane (Freon 12)	0.8						< 0.0020	-	< 0.0020	-	< 0.0020	-	< 0.0020	-	< 0.0020	-	-
Hexachlorobutadiene	0.002	0.015					< 0.00050	-	< 0.00050	-	< 0.00050	-	< 0.00050	-	< 0.00050	-	-
Freon 113	100						< 0.0020	-	< 0.0020	-	< 0.0020	-	< 0.0020	-	< 0.0020	-	-

Notes:
All parameter units in milligrams per litre (mg/L), unless otherwise noted.
a. Guidelines shown are from the Canadian Council of Ministers of the Environment (CCME) Environmental Quality Guidelines
b. Standards shown are from the Contaminated Sites Regulation (CSR), enacted in 1997, and updated from time to time.
c. Guidelines are from "Guidance document on Federal Interim Groundwater Quality Guidelines for Federal Contaminated Sites" (March 2014). Most conservative of inhalation, soil contact and freshwater life pathways was chosen for each parameter.
FDA = Field Duplicate Available; FD = Field Duplicate.
* = Standard is for cis and trans is applied
Italics - indicates that the detection limit exceeds one or more criteria.
AO = Aesthetic Objective; + = standard is specific to total trihalomethane
S = Schedule 10 of the BC CSR; int = Director's Interim Standard (CSR) effective May 31, 2011
FW = Freshwater life; I = Inhalation

TABLE B9 Results of Soil Vapour Analyses Including Historical Data
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Probe ID / Sample Control Number / Date Sampled / Probe Depth (meters) / QA/QC	BC CSR Vapour Standards RL	Notes	BC CSR Vapour Standards IL	Notes	SV09-01 / 09-020145-01 / 9-Oct-09 / 1.0			SV09-02 / 09-020145-02 / 10-Oct-09 / 1.0			SV09-03 / 09-020145-03 / 10-Oct-09 / 1.00 / FDA			SV09-03 / 09-020145-04 / 10-Oct-09 / 1.0 / FD		
Applied Attenuation Factor (α)					Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$
Volatile Organic Compounds																
Acetone	**2500**		25000		66.3	1.3	0.0066	8940	179	0.89	78.5	1.60	0.0079	81.3	1.60	0.0081
Benzene	**1.5**		10		45	0.9	0.0045	246	**4.9**	0.025	52.4	1.00	0.0052	49.4	0.99	0.0049
Benzyl chloride	**0.2**		2		-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	**50**		550		<0.30	<0.006	<0.00003	996	20	0.1	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003
Bromoform	**9**		85		<0.40	<0.008	<0.00004	<0.40	<0.008	<0.00004	<0.40	<0.008	<0.00004	<0.40	<0.008	<0.00004
Bromomethane	**5**		45		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
1,3-Butadiene	**2**		3		<0.090	<0.0018	<0.000009	<0.090	<0.0018	<0.000009	<0.090	<0.0018	<0.000009	<0.090	<0.0018	<0.000009
n-Butane					-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulfide	**700**		6,500		4.1	0.082	0.00041	32.3	0.65	0.0032	12.1	0.24	0.0012	10.6	0.21	0.0011
Carbon Tetrachloride	**1.5**		15		0.25	0.005	0.000025	0.31	0.0062	0.000031	0.25	0.01	0.000025	<0.30	<0.006	<0.00003
Chlorobenzene	**10**		90		14	0.28	0.0014	49	0.98	0.0049	7.83	0.16	0.00078	7.64	0.15	0.00076
Chloroethane	**10,000**		90,000		-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	**100**		900		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	1.12	0.02	0.00011	1.12	0.02	0.00011
Chloromethane	**90**		800		0.929	0.019	0.000093	1.53	0.031	0.00015	6.34	0.13	0.00063	7.23	0.14	0.00072
Cumene	**400**		3,500		0.88	0.018	0.000088	249	5	0.025	0.69	0.01	0.000069	0.54	0.01	0.000054
Cyclohexane					-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	**50**		550		<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003
Decane	**2,500**		25,000		34.8	0.7	0.0035	883	17.66	0.088	30.4	0.61	0.003	29.9	0.60	0.003
1,2-Dibromoethane	**0.5**		0.5		<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003
1,2-Dichlorobenzene	**200**		2,000		<0.20	<0.004	<0.00002	0.48	0.0096	0.000048	0.6	0.01	0.00006	0.9	0.02	0.00009
1,3-Dichlorobenzene	**80**		850		<0.20	<0.004	<0.00002	0.9	0.018	0.00009	0.42	0.01	0.000042	0.42	0.01	0.000042
1,4-Dichlorobenzene	**800**		7,500		<0.20	<0.004	<0.00002	0.24	0.0048	0.000024	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
1,1-Dichloroethane	**500**		4,500		<0.010	<0.0002	<0.000001	<0.010	<0.0002	<0.000001	<0.010	<0.0002	<0.000001	<0.010	<0.0002	<0.000001
1,2-Dichloroethane	**5**		45		<0.20	<0.004	<0.00002	38.8	0.78	0.0039	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
1,1-Dichloroethene	**200**		2000		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
cis-1,2-Dichloroethylene	**60**		550		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
trans-1,2-Dichloroethene	**60**		550		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
Dichlorodifluoromethane	**100**		900		-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	**600**		5500		6.2	0.12	0.00062	95.5	1.9	0.0096	33.9	0.68	0.0034	25	0.50	0.0025
1,2-Dichloropropane	**4**		35		<0.20	<0.004	<0.00002	6.05	0.12	0.00061	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
cis-1,3-Dichloropropene	**2.5**		25		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
trans-1,3-Dichloropropene	**2.5**		25		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
1,2-Dichlorotetrafluoroethane					-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane					-	-	-	-	-	-	-	-	-	-	-	-
Ethanol (ethyl alcohol)					-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Acetate	**70**		650		-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Benzene	**1,000**		9,000		6.11	0.12	0.00061	488	9.8	0.049	3.73	0.08	0.00037	3.03	0.06	0.0003
Ethyl Chloride	**10,000**		90,000		0.9	0.018	0.00009	0.42	0.0084	0.000042	0.4	0.01	0.00004	0.32	0.01	0.000032
Ethyl Dibromide	**0.5**		0.5		-	-	-	-	-	-	-	-	-	-	-	-
4-ethyltoluene					-	-	-	-	-	-	-	-	-	-	-	-
Halocarbon 11	**700**		6500		0.84	0.017	0.000084	1.35	0.027	0.00014	1.85	0.04	0.00019	1.4	0.03	0.00014
Halocarbon 12	**100**		900		0.79	0.016	0.000079	1.58	0.032	0.00016	5.74	0.11	0.00057	10.1	0.20	0.001
Heptane					-	-	-	-	-	-	-	-	-	-	-	-
Hexachloro-1,3-butadiene	**1**		4		0.42	0.0084	0.000042	0.63	0.013	0.000063	0.53	0.01	0.000053	0.53	0.01	0.000053
Hexane	**700**		6,500		6.23	0.12	0.00062	9560	191.2	0.96	22.6	0.45	0.0023	21.4	0.43	0.0021
Isopropyl Alcohol					13.8	0.28	0.0014	185	3.7	0.019	83.4	1.70	0.0083	82.4	1.60	0.0082
Methyl Ethyl Ketone	**5,000**		45,000		26.2	0.52	0.0026	21.9	0.44	0.0022	26	0.52	0.0026	35.7	0.71	0.0036
Methyl Isobutyl Ketone	**3,000**		25,000		<0.020	<0.0004	<0.000002	<0.020	<0.0004	<0.000002	0.188	0.00	0.000019	<0.020	<0.0004	<0.000002
Methylcyclohexane	**2,000**		25,000		9.16	0.18	0.00092	9660	193.2	0.97	17	0.34	0.0017	12.8	0.26	0.0013
Methyl Butyl Ketone (2-Hexanone)					-	-	-	-	-	-	-	-	-	-	-	-
Methyl Tert-Butyl Ether	**3,000**		25,000		<0.10	<0.002	<0.00001	<0.10	<0.002	<0.00001	<0.10	<0.002	<0.00001	<0.10	<0.002	<0.00001
Naphthalene	**3**		25		1.7	0.034	0.00017	22	0.44	0.0022	2.3	0.05	0.00023	2.1	0.04	0.00021
2-Propanone					-	-	-	-	-	-	-	-	-	-	-	-
Propene	**2500**		25000		-	-	-	-	-	-	-	-	-	-	-	-
Styrene	**1,000**		9,000		0.55	0.011	0.000055	14.8	0.3	0.0015	0.55	0.01	0.000055	0.68	0.01	0.000068
1,1,1,2-Tetrachloroethane	**1.5**		10		-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	**50**		550		5.83	0.12	0.00058	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003
Tetrachloroethylene	**40**		350		1.15	0.023	0.00012	5.22	0.1	0.00052	2.71	0.05	0.00027	1.83	0.04	0.00018
Tetrahydrofuran	**3.5**		30		-	-	-	-	-	-	-	-	-	-	-	-
Toluene	**500**		45,000		19.5	0.39	0.002	276	5.5	0.028	45.7	0.91	0.0046	39.1	0.78	0.0039
Trichlorofluoromethane	**700**		6,500		-	-	-	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	**30,000**		250,000		-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trimethylbenzene					-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	**7**		65		0.74	0.015	0.000074	2.45	0.049	0.00025	0.89	0.02	0.000089	0.67	0.01	0.000067
1,1,1-Trichloroethane	**5,000**		45,000		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
1,1,2-Trichloroethane	**0.5**		2		<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
Trichloroethylene	**2**		20		<0.20	<0.004	<0.00002	43.7	0.87	0.0044	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002
1,2,4-Trimethylbenzene	**7**		65		4.33	0.087	0.00043	1490	**29.8**	0.15	5.11	0.10	0.00051	4.38	0.09	0.00044
1,3,5-Trimethylbenzene	**4.5**		45		11.3	0.23	0.0011	2320	**46.4**	0.23	11.8	0.24	0.0012	10.2	0.20	0.001
2,2,4-Trimethylpentane					-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Acetate	**200**		2,000		-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Bromide	**1**		3		-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	**1**		10		<0.10	<0.002	<0.00001	0.1	0.002	0.00001	0.31	0.01	0.000031	0.33	0.01	0.000033
o-Xylene					6.95	0.14	0.0007	711	14.22	0.071	6.39	0.13	0.00064	5.56	0.11	0.00056
m+p-Xylenes					13.8	0.28	0.0014	1300	26	0.13	15.2	0.30	0.0015	12.7	0.25	0.0013
Xylenes (Total)	**100**		900		20.7	0.41	0.0021	2010	40.2	0.2	21.6	0.43	0.0022	18.3	0.37	0.0018
Hydrocarbons																
F1 (C6-C10)	**1,000**	*	11,500	*	20,200	404	2	280,000	**5,600**	28	818	16.36	0.082	943	19	0.094
F2 (C10-C16)					1,500	30	0.15	59,200	1184	5.9	2,220	44.40	0.22	3,800	76	0.38
VPHv (C6-C13)	**1,000**		11,500		-	-	-	-	-	-	-	-	-	-	-	-

Probe ID / Sample Control Number / Date Sampled / Probe Depth (meters) / QA/QC	SV09-04 / 09-020145-05 / 10-Oct-09 / 1.0			SV09-05 / 09-020145-06 / 10-Oct-09 / 1.0			SV10-01 / 24413-01 / 26-Sep-10 / 1.0			SV10-02 / 24413-02 / 26-Sep-10 / 1.0		
Applied Attenuation Factor (α)	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$
Volatile Organic Compounds												
Acetone	55.3	1.10	0.0055	216	4.3	0.022	<100	<2	<0.01	129	2.60	0.013
Benzene	21	0.42	0.0021	17.8	0.36	0.0018	14.5	0.29	0.0015	22.6	0.45	0.0023
Benzyl chloride	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<2.7	<0.054	<0.00027	<2.7	<0.054	<0.00027
Bromoform	<0.40	<0.008	<0.00004	<0.40	<0.008	<0.00004	<0.41	<0.0082	<0.000041	<0.41	<0.0082	<0.000041
Bromomethane	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	0.47	0.0094	0.000047	<0.16	<0.0032	<0.000016
1,3-Butadiene	<0.090	<0.0018	<0.000009	<0.090	<0.0018	<0.000009	<0.88	<0.018	<0.000088	<4.9	<0.098	<0.00049
n-Butane	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulfide	3.9	0.08	0.00039	15.8	0.32	0.0016	2.1	0.042	0.00021	4.1	0.08	0.00041
Carbon Tetrachloride	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.25	<0.005	<0.000025	<0.25	<0.005	<0.000025
Chlorobenzene	10.5	0.21	0.0011	5.99	0.12	0.0006	123	2.5	0.012	76.6	1.50	0.0077
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	0.63	0.01	0.000063	1.22	0.024	0.00012	0.44	0.0088	0.000044	1.07	0.02	0.00011
Chloromethane	1.78	0.04	0.00018	1.16	0.023	0.00012	15.0	0.3	0.0015	12.3	0.25	0.0012
Cumene	0.44	0.01	0.000044	0.29	0.0058	0.000029	0.79	0.016	0.000079	<0.20	<0.004	<0.00002
Cyclohexane	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.34	<0.0068	<0.000034	<0.34	<0.0068	<0.000034
Decane	34.1	0.68	0.0034	17.5	0.35	0.0018	14.3	0.29	0.0014	9.66	0.19	0.00097
1,2-Dibromoethane	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.31	<0.0062	<0.000031	<0.31	<0.0062	<0.000031
1,2-Dichlorobenzene	0.78	0.02	0.000078	0.54	0.011	0.000054	2.71	0.054	0.00027	1.38	0.03	0.00014
1,3-Dichlorobenzene	0.54	0.01	0.000054	0.54	0.011	0.000054	0.54	0.011	0.000054	0.24	0.00	0.000024
1,4-Dichlorobenzene	0.24	0.00	0.000024	<0.20	<0.004	<0.00002	8.42	0.17	0.00084	4.75	0.10	0.00048
1,1-Dichloroethane	<0.010	<0.0002	<0.000001	<0.010	<0.0002	<0.000001	<0.015	<0.0003	<0.0000015	<0.015	<0.0003	<0.0000015
1,2-Dichloroethane	<0.20	<0.004	<0.00002	0.32	0.0064	0.000032	<0.16	<0.0032	<0.000016	<0.16	<0.0032	<0.000016
1,1-Dichloroethene	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.16	<0.0032	<0.000016	<0.16	<0.0032	<0.000016
cis-1,2-Dichloroethylene	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.16	<0.0032	<0.000016	<0.16	<0.0032	<0.000016
trans-1,2-Dichloroethene	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.16	<0.0032	<0.000016	<0.16	<0.0032	<0.000016
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	18.2	0.36	0.0018	79.8	1.6	0.008	<1.4	<0.028	<0.00014	<1.4	<0.028	<0.00014
1,2-Dichloropropane	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018
cis-1,3-Dichloropropene	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018
trans-1,3-Dichloropropene	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018
1,2-Dichlorotetrafluoroethane	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-	-	-	-	-	-	-
Ethanol (ethyl alcohol)	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Acetate	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Benzene	2.25	0.05	0.00023	2.51	0.05	0.00025	4.68	0.094	0.00047	2.08	0.04	0.00021
Ethyl Chloride	<0.10	<0.002	<0.00001	1.27	0.025	0.00013	<0.11	<0.0022	<0.000011	<0.11	<0.0022	<0.000011
Ethyl Dibromide	-	-	-	-	-	-	-	-	-	-	-	-
4-ethyltoluene	-	-	-	-	-	-	-	-	-	-	-	-
Halocarbon 11	1.35	0.03	0.00014	0.96	0.019	0.000096	0.39	0.0078	0.000039	0.56	0.01	0.000056
Halocarbon 12	9.99	0.20	0.001	0.59	0.012	0.000059	0.64	0.013	0.000064	20.3	0.41	0.002
Heptane	-	-	-	-	-	-	-	-	-	-	-	-
Hexachloro-1,3-butadiene	0.42	0.01	0.000042	0.42	0.0084	0.000042	<0.42	<0.0084	<0.000042	<0.42	<0.0084	<0.000042
Hexane	11.3	0.23	0.0011	63.1	1.3	0.0063	18.9	0.38	0.0019	32.7	0.65	0.0033
Isopropyl Alcohol	60.3	1.20	0.006	162	3.2	0.016	13.4	0.27	0.0013	3.51	0.07	0.00035
Methyl Ethyl Ketone	111	2.20	0.011	96.6	1.9	0.0097	52.5	1.1	0.0053	44.2	0.88	0.0044
Methyl Isobutyl Ketone	<0.020	<0.0004	<0.000002	<0.020	<0.0004	<0.000002	0.70	0.014	0.00007	0.86	0.02	0.000086
Methylcyclohexane	11.4	0.23	0.0011	12.8	0.26	0.0013	54.3	1.1	0.0054	53.3	1.10	0.0053
Methyl Butyl Ketone (2-Hexanone)	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Tert-Butyl Ether	<0.10	<0.002	<0.00001	<0.10	<0.002	<0.00001	<0.35	<0.007	<0.000035	<0.14	<0.0028	<0.000014
Naphthalene	2.3	0.05	0.00023	1.2	0.024	0.00012	<1.0	<0.02	<0.0001	<1.0	<0.02	<0.0001
2-Propanone	-	-	-	-	-	-	-	-	-	-	-	-
Propene	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	0.34	0.01	0.000034	0.26	0.0052	0.000026	0.68	0.014	0.000068	0.72	0.01	0.000072
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	<0.30	<0.006	<0.00003	<0.30	<0.006	<0.00003	<0.41	<0.0082	<0.000041	<0.27	<0.0054	<0.000027
Tetrachloroethylene	2.51	0.05	0.00025	4.27	0.085	0.00043	0.41	0.0082	0.000041	0.27	0.01	0.000027
Tetrahydrofuran	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	37.7	0.75	0.0038	62.5	1.3	0.0063	108	2.2	0.011	73.0	1.50	0.0073
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	<0.30	<0.006	<0.00003	0.52	0.01	0.000052	0.82	0.016	0.000082	0.37	0.01	0.000037
1,1,1-Trichloroethane	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.22	<0.0044	<0.000022	<0.22	<0.0044	<0.000022
1,1,2-Trichloroethane	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	<0.22	<0.0044	<0.000022	<0.22	<0.0044	<0.000022
Trichloroethylene	<0.20	<0.004	<0.00002	<0.20	<0.004	<0.00002	0.43	0.0086	0.000043	<0.21	<0.0042	<0.000021
1,2,4-Trimethylbenzene	3.54	0.07	0.00035	2.16	0.043	0.00022	7.18	0.14	0.00072	1.08	0.02	0.00011
1,3,5-Trimethylbenzene	8.7	0.17	0.00087	6.29	0.13	0.00063	3.00	0.06	0.0003	0.49	0.01	0.000049
2,2,4-Trimethylpentane	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Acetate	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Bromide	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	<0.10	<0.002	<0.00001	<0.10	<0.002	<0.00001	<0.10	<0.002	<0.00001	0.49	0.01	0.000049
o-Xylene	4.43	0.09	0.00044	4.47	0.089	0.00045	5.26	0.11	0.00053	3.82	0.08	0.00038
m+p-Xylenes	10.9	0.22	0.0011	12.4	0.25	0.0012	4.73	0.095	0.00047	4.00	0.08	0.0004
Xylenes (Total)	15.3	0.31	0.0015	16.9	0.34	0.0017	9.99	0.2	0.001	7.82	0.16	0.00078
Hydrocarbons												
F1 (C6-C10)	611	12	0.061	638	12.76	0.064	1,650	33	0.17	627	13	0.063
F2 (C10-C16)	3,550	71	0.36	128	2.6	0.013	1,210	24.2	0.12	63	1	0.0063
VPHv (C6-C13)	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Results are expressed as micrograms per cubic metre (μg/m^3), unless otherwise specified.
BC Ministry of Environment: Contaminated Sites Regulation, Schedule 11 (includes amendments up to B.C. Reg. 286/2010, updated time to time)
Italics indicates the method detection limit exceeds one or more standards
* = Standard for VPH (C6-10) conservatively applied to F1 (C6-10)
FD - Field duplicate; FDA - Field duplicate available

TABLE B9 Results of Soil Vapour Analyses Including Historical Data
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Probe ID	BC CSR Vapour Standards RL	Notes	BC CSR Vapour Standards IL	Notes	SV10-03 Shallow			SV10-03 Deep			SV10-04 Subslab		
Sample Control Number					24413-03			24413-04			24413-05		
Date Sampled					26-Sep-10			26-Sep-10			27-Sep-10		
Probe Depth (meters)					1.0			2.0			0.15		
QA/QC													
Applied Attenuation Factor (α)					Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$
Volatile Organic Compounds													
Acetone	**2500**		25000		1540	31	0.15	<480	<9.6	<0.048	771	15.42	0.077
Benzene	**1.5**		10		499	10	0.05	135	**2.70**	0.014	5.81	0.12	0.00058
Benzyl chloride	**0.2**		2		-	-	-	-	-	-	-	-	-
Bromodichloromethane	**50**		550		<12,000	<240	<1.2	<370	<7.4	<0.037	<4.0	<0.08	<0.0004
Bromoform	**9**		85		<110	<2.2	<0.011	<1.6	<0.032	<0.00016	<1.6	<0.032	<0.00016
Bromomethane	**5**		45		<43	<0.86	<0.0043	<0.62	<0.012	<0.000062	<0.62	<0.012	<0.000062
1,3-Butadiene	**2**		3		<25	<0.5	<0.0025	<0.35	<0.007	<0.000035	<0.35	<0.007	<0.000035
n-Butane					-	-	-	-	-	-	-	-	-
Carbon Disulfide	**700**		6,500		840	17	0.084	<5.2	<0.1	<0.00052	<5.2	<0.1	<0.00052
Carbon Tetrachloride	**1.5**		15		<70	<1.4	<0.007	<1.0	<0.02	<0.0001	<1.0	<0.02	<0.0001
Chlorobenzene	**10**		90		<24,000	*<480*	<2.4	<450	<9	<0.045	<140	<2.8	<0.014
Chloroethane	**10,000**		90,000		-	-	-	-	-	-	-	-	-
Chloroform	**100**		900		<55	<1.1	<0.0055	<0.78	<0.016	<0.000078	<0.78	<0.016	<0.000078
Chloromethane	**90**		800		63	1	0.0063	3.47	0.07	0.00035	<0.33	<0.0066	<0.000033
Cumene	**400**		3,500		5030	101	0.5	85.0	1.70	0.0085	52.0	1	0.0052
Cyclohexane					-	-	-	-	-	-	-	-	-
Dibromochloromethane	**50**		550		<95	<1.9	<0.0095	<1.4	<0.028	<0.00014	<1.4	<0.028	<0.00014
Decane	**2,500**		25,000		56,000	1120	5.6	1,550	31.00	0.16	3890	77.8	0.39
1,2-Dibromoethane	**0.5**		0.5		<86	<1.7	<0.0086	<1.2	<0.024	<0.00012	<1.2	<0.024	<0.00012
1,2-Dichlorobenzene	**200**		2,000		<67	<1.3	<0.0067	<0.96	<0.019	<0.000096	<0.96	<0.019	<0.000096
1,3-Dichlorobenzene	**80**		850		<67	<1.3	<0.0067	<0.96	<0.019	<0.000096	29.9	0.6	0.003
1,4-Dichlorobenzene	**800**		7,500		126	3	0.013	<0.96	<0.019	<0.000096	1.20	0.024	0.00012
1,1-Dichloroethane	**500**		4,500		<52	<1	<0.0052	<0.059	<0.0012	<0.0000059	<0.059	<0.0012	<0.0000059
1,2-Dichloroethane	**5**		45		197	4	0.02	11.8	0.24	0.0012	<0.65	<0.013	<0.000065
1,1-Dichloroethene	**200**		2000		<44	<0.88	<0.0044	<0.63	<0.013	<0.000063	<0.63	<0.013	<0.000063
cis-1,2-Dichloroethylene	**60**		550		<44	<0.88	<0.0044	<0.63	<0.013	<0.000063	<0.63	<0.013	<0.000063
trans-1,2-Dichloroethene	**60**		550		<44	<0.88	<0.0044	<0.63	<0.013	<0.000063	<0.63	<0.013	<0.000063
Dichlorodifluoromethane	**100**		900		-	-	-	-	-	-	-	-	-
Methylene Chloride	**600**		5500		3,010	60	0.3	<5.6	<0.11	<0.00056	<5.6	<0.11	<0.00056
1,2-Dichloropropane	**4**		35		<52	<1	<0.0052	<0.74	<0.015	<0.000074	<0.74	<0.015	<0.000074
cis-1,3-Dichloropropene	**2.5**		25		<52	<1	<0.0052	<0.74	<0.015	<0.000074	<0.74	<0.015	<0.000074
trans-1,3-Dichloropropene	**2.5**		25		<52	<1	<0.0052	<0.74	<0.015	<0.000074	<0.74	<0.015	<0.000074
1,2-Dichlorotetrafluoroethane					-	-	-	-	-	-	-	-	-
1,4-Dioxane					-	-	-	-	-	-	-	-	-
Ethanol (ethyl alcohol)					-	-	-	-	-	-	-	-	-
Ethyl Acetate	**70**		650		-	-	-	-	-	-	-	-	-
Ethyl Benzene	**1,000**		9,000		19,600	392	2	340	6.80	0.034	74.0	1.5	0.0074
Ethyl Chloride	**10,000**		90,000		<30	<0.6	<0.003	0.42	0.01	0.000042	<0.42	<0.0084	<0.000042
Ethyl Dibromide	**0.5**		0.5		-	-	-	-	-	-	-	-	-
4-ethyltoluene					-	-	-	-	-	-	-	-	-
Halocarbon 11	**700**		6500		<63	<1.3	<0.0063	1.01	0.02	0.0001	<0.90	<0.018	<0.00009
Halocarbon 12	**100**		900		94	2	0.0094	3.41	0.07	0.00034	<0.79	<0.016	<0.000079
Heptane					-	-	-	-	-	-	-	-	-
Hexachloro-1,3-butadiene	**1**		4		340	7	0.034	<1.7	<0.034	<0.00017	<1.7	<0.034	<0.00017
Hexane	**700**		6,500		15,800	316	1.6	1590	31.80	0.16	457	9.1	0.046
Isopropyl Alcohol					<270	<5.4	<0.027	<3.9	<0.078	<0.00039	58.6	1.2	0.0059
Methyl Ethyl Ketone	**5,000**		45,000		122	2	0.012	13.0	0.26	0.0013	12.5	0.25	0.0013
Methyl Isobutyl Ketone	**3,000**		25,000		2570	51	0.26	57.9	1.20	0.0058	4.51	0.09	0.00045
Methylcyclohexane	**2,000**		25,000		233,000	**4,660**	23.3	5510	110.20	0.55	79.9	1.6	0.008
Methyl Butyl Ketone (2-Hexanone)					-	-	-	-	-	-	-	-	-
Methyl Tert-Butyl Ether	**3,000**		25,000		<39	<0.78	<0.0039	<0.56	<0.011	<0.000056	<0.56	<0.011	<0.000056
Naphthalene	**3**		25		<290	*<5.8*	<0.029	<4.2	<0.084	<0.00042	51.0	1	0.0051
2-Propanone					-	-	-	-	-	-	-	-	-
Propene	**2500**		25000		-	-	-	-	-	-	-	-	-
Styrene	**1,000**		9,000		<48	<0.96	<0.0048	<0.68	<0.014	<0.000068	<1.3	<0.026	<0.00013
1,1,1,2-Tetrachloroethane	**1.5**		10		-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	**50**		550		<170	<3.4	<0.017	<4.8	<0.096	<0.00048	<10	<0.2	<0.001
Tetrachloroethylene	**40**		350		<76	<1.5	<0.0076	<1.1	<0.022	<0.00011	74.7	1.5	0.0075
Tetrahydrofuran	**3.5**		30		-	-	-	-	-	-	-	-	-
Toluene	**500**		45,000		651	13	0.065	138	2.80	0.014	18.2	0.36	0.0018
Trichlorofluoromethane	**700**		6,500		-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	**30,000**		250,000		-	-	-	-	-	-	-	-	-
1,2,3-Trimethylbenzene					-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	**7**		65		371	7	0.037	2.6	0.05	0.00026	2.2	0.044	0.00022
1,1,1-Trichloroethane	**5,000**		45,000		<61	<1.2	<0.0061	<0.87	<0.017	<0.000087	<0.87	<0.017	<0.000087
1,1,2-Trichloroethane	**0.5**		2		<820	*<16.4*	<0.082	<0.98	<0.02	<0.000098	<0.87	<0.017	<0.000087
Trichloroethylene	**2**		20		<97	<1.9	<0.0097	<4.8	<0.096	<0.00048	8.22	0.16	0.00082
1,2,4-Trimethylbenzene	**7**		65		30,200	**604**	3	661	13.22	0.066	2,270	**45.4**	0.23
1,3,5-Trimethylbenzene	**4.5**		45		15,000	**300**	1.5	321	6.40	0.032	688	**13.76**	0.069
2,2,4-Trimethylpentane					-	-	-	-	-	-	-	-	-
Vinyl Acetate	**200**		2,000		-	-	-	-	-	-	-	-	-
Vinyl Bromide	**1**		3		-	-	-	-	-	-	-	-	-
Vinyl Chloride	**1**		10		<29	<0.58	<0.0029	<0.41	<0.0082	<0.000041	<0.41	<0.0082	<0.000041
o-Xylene					341	7	0.034	65.4	1.30	0.0065	366	7.3	0.037
m+p-Xylenes					16600	332	1.7	351	7.00	0.035	696	13.92	0.07
Xylenes (Total)	**100**		900		17000	**340**	1.7	416	8.30	0.042	1,060	21.2	0.11
Hydrocarbons													
F1 (C6-C10)	**1,000**	*	11,500	*	3,120,000	**62,400**	312	80,500	1610.00	8.1	62,300	**1,246**	6.2
F2 (C10-C16)					174,000	3480	17.4	8,300	166.00	0.83	26,800	536	2.7
VPHv (C6-C13)	**1,000**		11,500		-	-	-	-	-	-	-	-	-

Probe ID	SV10-04			SV10-04			SV11-01		
Sample Control Number	24413-06			24413-07			22796-02		
Date Sampled	27-Sep-10			27-Sep-10			27-Sep-11		
Probe Depth (meters)	0.88			0.88			1.0		
QA/QC	FDA			FD			FDA		
Applied Attenuation Factor (α)	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$
Volatile Organic Compounds									
Acetone	340	6.8	0.034	<57	<1.1	<0.0057	662	13.24	0.066
Benzene	180	**3.6**	0.018	20.5	0.41	0.0021	19.8	0.4	0.002
Benzyl chloride	-	-	-	-	-	-	-	-	-
Bromodichloromethane	<170	<3.4	<0.017	<24	<0.48	<0.0024	<67	<1.3	<0.0067
Bromoform	<46	<0.92	<0.0046	<1.6	<0.032	<0.00016	21	0.42	0.0021
Bromomethane	<17	<0.34	<0.0017	<0.62	<0.012	<0.000062	<4.3	<0.086	<0.00043
1,3-Butadiene	<9.9	<0.2	<0.00099	<0.35	<0.007	<0.000035	<9.9	<0.2	<0.00099
n-Butane	-	-	-	-	-	-	-	-	-
Carbon Disulfide	360	7.2	0.036	<5.2	<0.1	<0.00052	95	1.9	0.0095
Carbon Tetrachloride	<28	<0.56	<0.0028	<1.0	<0.02	<0.0001	<7.0	<0.14	<0.0007
Chlorobenzene	<2400	<48	<0.24	<530	*<10.6*	<0.053	<880	*<17.6*	<0.088
Chloroethane	-	-	-	-	-	-	-	-	-
Chloroform	<22	<0.44	<0.0022	<0.78	<0.016	<0.000078	<5.5	<0.11	<0.00055
Chloromethane	68.3	1.4	0.0068	2.91	0.058	0.00029	7.3	0.15	0.00073
Cumene	707	14.14	0.071	126	2.5	0.013	63.0	1.3	0.0063
Cyclohexane	-	-	-	-	-	-	-	-	-
Dibromochloromethane	<38	<0.76	<0.0038	<1.4	<0.028	<0.00014	<9.5	<0.19	<0.00095
Decane	42,600	852	4.3	11,800	236	1.2	5,990	119.8	0.6
1,2-Dibromoethane	<34	<0.68	<0.0034	<1.2	<0.024	<0.00012	<8.6	<0.17	<0.00086
1,2-Dichlorobenzene	44	0.88	0.0044	<0.96	<0.019	<0.000096	113	2.3	0.011
1,3-Dichlorobenzene	33	0.66	0.0033	<0.96	<0.019	<0.000096	81.9	1.6	0.0082
1,4-Dichlorobenzene	38	0.76	0.0038	1.44	0.029	0.00014	101	2	0.01
1,1-Dichloroethane	<1.6	<0.032	<0.00016	<0.059	<0.0012	<0.0000059	<0.41	<0.0082	<0.000041
1,2-Dichloroethane	<18	<0.36	<0.0018	<0.65	<0.013	<0.000065	<4.5	<0.09	<0.00045
1,1-Dichloroethene	<18	<0.36	<0.0018	<0.63	<0.013	<0.000063	<4.4	<0.088	<0.00044
cis-1,2-Dichloroethylene	<18	<0.36	<0.0018	<0.63	<0.013	<0.000063	<4.4	<0.088	<0.00044
trans-1,2-Dichloroethene	<18	<0.36	<0.0018	<0.63	<0.013	<0.000063	<4.4	<0.088	<0.00044
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-
Methylene Chloride	1290	25.8	0.13	6.7	0.13	0.00067	<39	<0.78	<0.0039
1,2-Dichloropropane	<21	<0.42	<0.0021	<0.74	<0.015	<0.000074	<5.2	<0.1	<0.00052
cis-1,3-Dichloropropene	<21	<0.42	<0.0021	<0.74	<0.015	<0.000074	<5.2	<0.1	<0.00052
trans-1,3-Dichloropropene	<21	<0.42	<0.0021	<0.74	<0.015	<0.000074	<5.2	<0.1	<0.00052
1,2-Dichlorotetrafluoroethane	-	-	-	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-	-	-	-
Ethanol (ethyl alcohol)	-	-	-	-	-	-	-	-	-
Ethyl Acetate	-	-	-	-	-	-	-	-	-
Ethyl Benzene	2,180	43.6	0.22	361	7.2	0.036	58.3	1.2	0.0058
Ethyl Chloride	<12	<0.24	<0.0012	<0.79	<0.016	<0.000079	<3.0	<0.06	<0.0003
Ethyl Dibromide	-	-	-	-	-	-	-	-	-
4-ethyltoluene	-	-	-	-	-	-	-	-	-
Halocarbon 11	<25	<0.5	<0.0025	0.90	0.018	0.00009	<6.3	<0.13	<0.00063
Halocarbon 12	<22	<0.44	<0.0022	2.18	0.044	0.00022	<5.5	<0.11	<0.00055
Heptane	-	-	-	-	-	-	-	-	-
Hexachloro-1,3-butadiene	546	**10.92**	0.055	<1.7	<0.034	<0.00017	602	**12.04**	0.06
Hexane	428	8.6	0.043	51.2	1	0.0051	134	2.7	0.013
Isopropyl Alcohol	150	3	0.015	12.6	0.25	0.0013	<27	<0.54	<0.0027
Methyl Ethyl Ketone	26	0.52	0.0026	6.57	0.13	0.00066	5.5	0.11	0.00055
Methyl Isobutyl Ketone	<49	<0.98	<0.0049	<14	<0.28	<0.0014	<140	<2.8	<0.014
Methylcyclohexane	7,260	145.2	0.73	940	18.8	0.094	<1,700	<34	<0.17
Methyl Butyl Ketone (2-Hexanone)	-	-	-	-	-	-	-	-	-
Methyl Tert-Butyl Ether	19	0.38	0.0019	<0.56	<0.011	<0.000056	<3.9	<0.078	<0.00039
Naphthalene	230	**4.6**	0.023	14.9	0.3	0.0015	457	**9.1**	0.046
2-Propanone	-	-	-	-	-	-	-	-	-
Propene	-	-	-	-	-	-	-	-	-
Styrene	<19	<0.38	<0.0019	<0.68	<0.014	<0.000068	<21	<0.42	<0.0021
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	<41	<0.82	<0.0041	12.6	0.25	0.0013	<620	<12.4	<0.062
Tetrachloroethylene	68	1.4	0.0068	9.6	0.19	0.00096	<7.6	<0.15	<0.00076
Tetrahydrofuran	-	-	-	-	-	-	-	-	-
Toluene	891	17.82	0.089	145	2.9	0.015	12.3	0.25	0.0012
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-	-	-	-
1,2,3-Trimethylbenzene	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	378	**7.6**	0.038	3.3	0.066	0.00033	649	**12.98**	0.065
1,1,1-Trichloroethane	<24	<0.48	<0.0024	<0.87	<0.017	<0.000087	<6.1	<0.12	<0.00061
1,1,2-Trichloroethane	<24	<0.48	<0.0024	<0.87	<0.017	<0.000087	<65	<1.3	<0.0065
Trichloroethylene	<24	<0.48	<0.0024	<2.7	<0.054	<0.00027	12.7	0.25	0.0013
1,2,4-Trimethylbenzene	18,100	**362**	1.8	5,970	**119.4**	0.6	91.3	1.8	0.0091
1,3,5-Trimethylbenzene	6,830	**136.6**	0.68	1,330	**26.6**	0.13	477	**9.5**	0.048
2,2,4-Trimethylpentane	-	-	-	-	-	-	-	-	-
Vinyl Acetate	-	-	-	-	-	-	-	-	-
Vinyl Bromide	-	-	-	-	-	-	-	-	-
Vinyl Chloride	<11	<0.22	<0.0011	<0.41	<0.0082	<0.000041	<2.9	<0.058	<0.00029
o-Xylene	5,640	112.8	0.56	1010	20.2	0.1	26.5	0.53	0.0027
m+p-Xylenes	14,200	284	1.4	2,460	49.2	0.25	116	2.3	0.012
Xylenes (Total)	19,800	**396**	2	3,470	69.4	0.35	142	2.8	0.014
Hydrocarbons									
F1 (C6-C10)	695,000	**13,900**	69.5	137,000	**2,740**	13.7	231,000	**4,620**	23.1
F2 (C10-C16)	253,000	5,060	25.3	59,500	1,190	6	130,000	2,600	13
VPHv (C6-C13)	-	-	-	-	-	-	-	-	-

Probe ID	SV11-01			SV11-02		
Sample Control Number	22796-03			22796-06		
Date Sampled	27-Sep-11			29-Sep-11		
Probe Depth (meters)	1.0			1.0		
QA/QC	FD					
Applied Attenuation Factor (α)	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$
Volatile Organic Compounds						
Acetone	342	6.8	0.034	168	3.4	0.017
Benzene	16.1	0.32	0.0016	116	2.3	0.012
Benzyl chloride	-	-	-	-	-	-
Bromodichloromethane	<30	<0.6	<0.003	<1,500	<30	<0.15
Bromoform	<11	<0.22	<0.0011	<11	<0.22	<0.0011
Bromomethane	<4.3	<0.086	<0.00043	<4.3	<0.086	<0.00043
1,3-Butadiene	<4.4	<0.088	<0.00044	<77	<1.5	<0.0077
n-Butane	-	-	-	-	-	-
Carbon Disulfide	78	1.6	0.0078	397	7.9	0.04
Carbon Tetrachloride	<7.0	<0.14	<0.0007	<7.0	<0.14	<0.0007
Chlorobenzene	<690	<13.8	<0.069	<9,700	<194	<0.97
Chloroethane	-	-	-	-	-	-
Chloroform	<5.5	<0.11	<0.00055	<5.5	<0.11	<0.00055
Chloromethane	<2.3	<0.046	<0.00023	18.6	0.37	0.0019
Cumene	46.5	0.93	0.0047	1,160	23.2	0.12
Cyclohexane	-	-	-	-	-	-
Dibromochloromethane	<9.5	<0.19	<0.00095	<9.5	<0.19	<0.00095
Decane	5,130	102.6	0.51	443	8.9	0.044
1,2-Dibromoethane	<8.6	<0.17	<0.00086	<8.6	<0.17	<0.00086
1,2-Dichlorobenzene	49.1	0.98	0.0049	23.2	0.46	0.0023
1,3-Dichlorobenzene	39.6	0.79	0.004	15.9	0.32	0.0016
1,4-Dichlorobenzene	49.5	0.99	0.005	19.5	0.39	0.002
1,1-Dichloroethane	<0.41	<0.0082	<0.000041	<0.41	<0.0082	<0.000041
1,2-Dichloroethane	<4.5	<0.09	<0.00045	10.5	0.21	0.0011
1,1-Dichloroethene	<4.4	<0.088	<0.00044	<4.4	<0.088	<0.00044
cis-1,2-Dichloroethylene	<4.4	<0.088	<0.00044	<4.4	<0.088	<0.00044
trans-1,2-Dichloroethene	<4.4	<0.088	<0.00044	<4.4	<0.088	<0.00044
Dichlorodifluoromethane	-	-	-	-	-	-
Methylene Chloride	<39	<0.78	<0.0039	41	0.82	0.0041
1,2-Dichloropropane	<5.2	<0.1	<0.00052	<5.2	<0.1	<0.00052
cis-1,3-Dichloropropene	<5.2	<0.1	<0.00052	<5.2	<0.1	<0.00052
trans-1,3-Dichloropropene	<5.2	<0.1	<0.00052	<16	<0.32	<0.0016
1,2-Dichlorotetrafluoroethane	-	-	-	-	-	-
1,4-Dioxane	-	-	-	-	-	-
Ethanol (ethyl alcohol)	-	-	-	-	-	-
Ethyl Acetate	-	-	-	-	-	-
Ethyl Benzene	38.6	0.77	0.0039	2,560	51.2	0.26
Ethyl Chloride	<3.0	<0.06	<0.0003	8.2	0.16	0.00082
Ethyl Dibromide	-	-	-	-	-	-
4-ethyltoluene	-	-	-	-	-	-
Halocarbon 11	<6.3	<0.13	<0.00063	<8.4	<0.17	<0.00084
Halocarbon 12	<5.5	<0.11	<0.00055	33.5	0.67	0.0034
Heptane	-	-	-	-	-	-
Hexachloro-1,3-butadiene	253	**5.1**	0.025	142	**2.8**	0.014
Hexane	70.7	1.4	0.0071	193	3.9	0.019
Isopropyl Alcohol	<27	<0.54	<0.0027	<27	<0.54	<0.0027
Methyl Ethyl Ketone	5.8	0.12	0.00058	11.1	0.22	0.0011
Methyl Isobutyl Ketone	<9.0	<0.18	<0.0009	<370	<7.4	<0.037
Methylcyclohexane	715	14.3	0.072	25,100	502	2.5
Methyl Butyl Ketone (2-Hexanone)	-	-	-	-	-	-
Methyl Tert-Butyl Ether	<3.9	<0.078	<0.00039	<3.9	<0.078	<0.00039
Naphthalene	275	**5.5**	0.028	44	**0.88**	0.0044
2-Propanone	-	-	-	-	-	-
Propene	-	-	-	-	-	-
Styrene	<13	<0.26	<0.0013	<13	<0.26	<0.0013
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	<890	*<17.8*	<0.089	<5,100	*<102*	<0.51
Tetrachloroethylene	<7.6	<0.15	<0.00076	127	2.5	0.013
Tetrahydrofuran	-	-	-	-	-	-
Toluene	8.0	0.16	0.0008	190	3.8	0.019
Trichlorofluoromethane	-	-	-	-	-	-
Trichlorotrifluoroethane	-	-	-	-	-	-
1,2,3-Trimethylbenzene	-	-	-	-	-	-
1,2,4-Trichlorobenzene	320	**6.4**	0.032	76.1	**1.5**	0.0076
1,1,1-Trichloroethane	<6.1	<0.12	<0.00061	<6.1	<0.12	<0.00061
1,1,2-Trichloroethane	<6.1	<0.12	<0.00061	2,430	48.6	0.24
Trichloroethylene	<8.1	<0.16	<0.00081	93.3	1.9	0.0093
1,2,4-Trimethylbenzene	58.2	1.2	0.0058	525	10.5	0.053
1,3,5-Trimethylbenzene	404	**8.1**	0.04	608	**12.16**	0.061
2,2,4-Trimethylpentane	-	-	-	-	-	-
Vinyl Acetate	-	-	-	-	-	-
Vinyl Bromide	-	-	-	-	-	-
Vinyl Chloride	<2.9	<0.058	<0.00029	<2.9	<0.058	<0.00029
o-Xylene	18.8	0.38	0.0019	4,580	91.6	0.46
m+p-Xylenes	72.1	1.4	0.0072	10,600	212	1.1
Xylenes (Total)	91	1.8	0.0091	15,200	304	1.5
Hydrocarbons						
F1 (C6-C10)	317,000	**6,340**	32	1,260,000	**25,200**	126
F2 (C10-C16)	10,200	204	1	21,300	426	2.1
VPHv (C6-C13)	-	-	-	-	-	-

Notes:
Results are expressed as micrograms per cubic metre (µg/m^3), unless otherwise specified.
BC Ministry of Environment: Contaminated Sites Regulation, Schedule 11 (includes amendments up to B.C. Reg. 286/2010, updated time to time)
Italics indicates the method detection limit exceeds one or more standards
* = Standard for VPH (C6-10) conservatively applied to F1 (C6-10)
FD - Field duplicate; FDA - Field duplicate available

TABLE B9 Results of Soil Vapour Analyses Including Historical Data
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Probe ID	BC CSR Vapour Standards RL	Notes	BC CSR Vapour Standards IL	Notes	SV11-03			SV11-04			SV12-01			SV12-02			SV12-03			SV13-01			SV13-02			SV13-02 (DUP)		
Sample Control Number					22796-04			22796-05			22806-01			22806-02			22806-04			283694-02			283694-03			283694-04		
Date Sampled					29-Sep-11			29-Sep-11			25-Jul-12			24-Jul-12			24-Jul-12			26-Jul-13			26-Jul-13			26-Jul-13		
Probe Depth (meters)					1.0			0.15			-			1.05			-			0.3			1			1		
QA/QC																													
Applied Attenuation Factor (α)					Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0\times10^{-2}$	Outdoor Exposure $\alpha=1.0\times10^{-4}$
Volatile Organic Compounds																													
Acetone	2500		25000		139	2.8	0.014	277	5.5	0.028	798	16	0.08	<800	<16	<0.08	439	9	0.044	185	4	0.019	<340	<6.8	<0.034	<340	<6.8	<0.034
Benzene	1.5		10		24.4	0.49	0.0024	37.3	0.75	0.0037	14.0	0.28	0.0014	32.4	0.65	0.0032	165	**3.3**	0.017	8.59	0.17	0.00086	18.3	0.37	0.0018	23.9	0.48	0.0024
Benzyl chloride	0.2		2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	50		550		<2.7	<0.054	<0.00027	<300	<6	<0.03	<20	<0.4	<0.002	<13	<0.26	<0.0013	<10	<0.2	<0.001	<3.3	<0.066	<0.00033	<15	<0.3	<0.0015	<15	<0.3	<0.0015
Bromoform	9		85		<0.41	<0.0082	<0.000041	<11	<0.22	<0.0011	<0.41	<0.0082	<0.000041	<0.41	<0.0082	<0.000041	<0.41	<0.0082	<0.000041	<0.41	<0.0082	<0.000041	<2.0	<0.04	<0.0002	<2.0	<0.04	<0.0002
Bromomethane	5		45		0.17	0.0034	0.000017	<4.3	<0.086	<0.00043	0.17	0.0034	0.000017	<0.16	<0.0032	<0.000016	0.26	0.0052	0.000026	<0.16	<0.0032	<0.000016	<0.78	<0.016	<0.000078	<0.78	<0.016	<0.000078
1,3-Butadiene	2		3		<77	<1.5	<0.0077	<6.6	<0.13	<0.00066	<22	<0.44	<0.0022	<27	<0.54	<0.0027	<270	*<5.4*	<0.027	<2.0	<0.04	<0.0002	<2.2	<0.044	<0.00022	<2.2	<0.044	<0.00022
n-Butane					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulfide	700		6,500		69.8	1.4	0.007	160	3.2	0.016	8.2	0.16	0.00082	19.3	0.39	0.0019	51.6	1	0.0052	3.9	0.078	0.00039	18.6	0.37	0.0019	20.0	0.4	0.002
Carbon Tetrachloride	1.5		15		0.28	0.0056	0.000028	<7.0	<0.14	<0.0007	<0.25	<0.005	<0.000025	0.32	0.0064	0.000032	0.35	0.007	0.000035	0.38	0.0076	0.000038	<1.3	<0.026	<0.00013	<1.3	<0.026	<0.00013
Chlorobenzene	10		90		<3.2	<0.064	<0.00032	<880	*<17.6*	<0.088	<37	<0.74	<0.0037	<300	<6	<0.03	<9.2	<0.18	<0.00092	14.5	0.29	0.0015	<100	<2	<0.01	113	2.3	0.011
Chloroethane	10,000		90,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	100		900		42.2	0.84	0.0042	<5.5	<0.11	<0.00055	0.67	0.013	0.000067	1.75	0.035	0.00018	5.66	0.11	0.00057	1.23	0.025	0.00012	2.96	0.059	0.0003	3.72	0.074	0.00037
Chloromethane	90		800		441	8.8	0.044	6.8	0.14	0.00068	4.62	0.092	0.00046	1.06	0.021	0.00011	137	2.7	0.014	1.53	0.031	0.00015	1.95	0.039	0.0002	2.06	0.041	0.00021
Cumene	400		3,500		0.31	0.0062	0.000031	210	4.2	0.021	46.7	0.93	0.0047	11.5	0.23	0.0012	1.79	0.036	0.00018	7.57	0.15	0.00076	1.19	0.024	0.00012	1.40	0.028	0.00014
Cyclohexane					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	50		550		<0.34	<0.0068	<0.000034	<9.5	<0.19	<0.00095	<0.34	<0.0068	<0.000034	<0.34	<0.0068	<0.000034	<0.34	<0.0068	<0.000034	<0.34	<0.0068	<0.000034	<1.7	<0.034	<0.00017	<1.7	<0.034	<0.00017
Decane	2,500		25,000		0.79	0.016	0.000079	4,070	81.4	0.41	4170	83.4	0.42	7270	145.4	0.73	51.4	1	0.0051	804	16.08	0.08	525	10.5	0.053	658	13.16	0.066
1,2-Dibromoethane	0.5		0.5		<0.31	<0.0062	<0.000031	<8.6	<0.17	<0.00086	<0.31	<0.0062	<0.000031	<0.31	<0.0062	<0.000031	<0.31	<0.0062	<0.000031	<0.31	<0.0062	<0.000031	<1.5	<0.03	<0.00015	<1.5	<0.03	<0.00015
1,2-Dichlorobenzene	200		2,000		<0.24	<0.0048	<0.000024	26.2	0.52	0.0026	<0.24	<0.0048	<0.000024	<0.24	<0.0048	<0.000024	<0.24	<0.0048	<0.000024	<0.24	<0.0048	<0.000024	<1.2	<0.024	<0.00012	<1.2	<0.024	<0.00012
1,3-Dichlorobenzene	80		850		<0.24	<0.0048	<0.000024	20.7	0.41	0.0021	0.98	0.02	0.000098	<0.24	<0.0048	<0.000024	0.26	0.0052	0.000026	0.94	0.019	0.000094	1.4	0.028	0.00014	1.9	0.038	0.00019
1,4-Dichlorobenzene	800		7,500		<0.24	<0.0048	<0.000024	26.1	0.52	0.0026	0.76	0.015	0.000076	<0.24	<0.0048	<0.000024	<0.24	<0.0048	<0.000024	0.34	0.0068	0.000034	<1.2	<0.024	<0.00012	<1.2	<0.024	<0.00012
1,1-Dichloroethane	500		4,500		<0.074	<0.0015	<0.0000074	<0.41	<0.0082	<0.000041	<0.015	<0.0003	<0.0000015	<0.074	<0.0015	<0.0000074	<0.074	<0.0015	<0.0000074	<0.11	<0.0022	<0.000011	<3.7	<0.074	<0.00037	<3.7	<0.074	<0.00037
1,2-Dichloroethane	5		45		0.44	0.0088	0.000044	<4.5	<0.09	<0.00045	<0.16	<0.0032	<0.000016	0.31	0.0062	0.000031	<1.0	<0.02	<0.0001	<0.16	<0.0032	<0.000016	<0.81	<0.016	<0.000081	<0.81	<0.016	<0.000081
1,1-Dichloroethene	200		2000		<1.6	<0.032	<0.00016	26.0	0.52	0.0026	<16	<0.32	<0.0016	<2.8	<0.056	<0.00028	<17	<0.34	<0.0017	<0.40	<0.008	<0.00004	<1.2	<0.024	<0.00012	<1.2	<0.024	<0.00012
cis-1,2-Dichloroethylene	60		550		<0.59	<0.012	<0.000059	995	19.9	0.1	10.2	0.2	0.001	<0.16	<0.0032	<0.000016	<0.16	<0.0032	<0.000016	<0.16	<0.0032	<0.000016	<0.79	<0.016	<0.000079	<0.79	<0.016	<0.000079
trans-1,2-Dichloroethene	60		550		<0.79	<0.016	<0.000079	35.2	0.7	0.0035	0.25	0.005	0.000025	<0.16	<0.0032	<0.000016	<1.2	<0.024	<0.00012	3.48	0.07	0.00035	<0.79	<0.016	<0.000079	<0.79	<0.016	<0.000079
Dichlorodifluoromethane	100		900		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	600		5500		<1.4	<0.028	<0.00014	<39	<0.78	<0.0039	<7.6	<0.15	<0.00076	5.5	0.11	0.00055	9.0	0.18	0.0009	<1.4	<0.028	<0.00014	33.4	0.67	0.0033	41.1	0.82	0.0041
1,2-Dichloropropane	4		35		<0.18	<0.0036	<0.000018	<5.2	<0.1	<0.00052	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018	<0.92	<0.018	<0.000092	<0.92	<0.018	<0.000092
cis-1,3-Dichloropropene	2.5		25		<0.18	<0.0036	<0.000018	<5.2	<0.1	<0.00052	-	-	-	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018	<0.92	<0.018	<0.000092	<0.92	<0.018	<0.000092
trans-1,3-Dichloropropene	2.5		25		<0.18	<0.0036	<0.000018	<5.2	<0.1	<0.00052	<0.18	<0.0036	<0.000018	<0.92	<0.018	<0.000092	<0.18	<0.0036	<0.000018	<0.18	<0.0036	<0.000018	<0.92	<0.018	<0.000092	<0.92	<0.018	<0.000092
1,2-Dichlorotetrafluoroethane					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dioxane					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethanol (ethyl alcohol)					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Acetate	70		650		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Benzene	1,000		9,000		3.76	0.075	0.00038	280	5.6	0.028	44.3	0.89	0.0044	23.9	0.48	0.0024	19.6	0.39	0.002	19.1	0.38	0.0019	10.6	0.21	0.0011	12.9	0.26	0.0013
Ethyl Chloride	10,000		90,000		21.7	0.43	0.0022	<3.0	<0.06	<0.0003	0.85	0.017	0.000085	0.72	0.014	0.000072	32.3	0.65	0.0032	<0.53	<0.011	<0.000053	<0.53	<0.011	<0.000053	<0.53	<0.011	<0.000053
Ethyl Dibromide	0.5		0.5		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-ethyltoluene					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Halocarbon 11	700		6500		<1.1	<0.022	<0.00011	<6.3	<0.13	<0.00063	<1.7	<0.034	<0.00017	<1.7	<0.034	<0.00017	<2.2	<0.044	<0.00022	1.28	0.026	0.00013	3.1	0.062	0.00031	4.0	0.08	0.0004
Halocarbon 12	100		900		1.41	0.028	0.00014	6.7	0.13	0.00067	0.59	0.012	0.000059	0.59	0.012	0.000059	0.66	0.013	0.000066	2.85	0.057	0.00029	6.42	0.13	0.00064	8.08	0.16	0.00081
Heptane					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachloro-1,3-butadiene	1		4		<0.42	<0.0084	<0.000042	152	**3**	0.015	0.62	0.012	0.000062	1.43	0.029	0.00014	<0.42	<0.0084	<0.000042	<0.42	<0.0084	<0.000042	<2.1	<0.042	<0.00021	<2.1	<0.042	<0.00021
Hexane	700		6,500		99.8	2	0.01	10.4	0.21	0.001	5.27	0.11	0.00053	23.4	0.47	0.0023	95.0	1.9	0.0095	7.76	0.16	0.00078	45.1	0.9	0.0045	58.7	1.2	0.0059
Isopropyl Alcohol					2.08	0.042	0.00021	<27	<0.54	<0.0027	48.4	0.97	0.0048	12.7	0.25	0.0013	7.77	0.16	0.00078	29.4	0.59	0.0029	48.2	0.96	0.0048	72.8	1.5	0.0073
Methyl Ethyl Ketone	5,000		45,000		45.4	0.91	0.0045	11.5	0.23	0.0012	22.2	0.44	0.0022	17.4	0.35	0.0017	39.9	0.8	0.004	38.1	0.76	0.0038	16.9	0.34	0.0017	22.4	0.45	0.0022
Methyl Isobutyl Ketone	3,000		25,000		5.32	0.11	0.00053	8.0	0.16	0.0008	48.2	0.96	0.0048	<16	<0.32	<0.0016	12.6	0.25	0.0013	17.4	0.35	0.0017	<25	<0.5	<0.0025	<25	<0.5	<0.0025
Methylcyclohexane	2,000		25,000		42.7	0.85	0.0043	<320	<6.4	<0.032	<12	<0.24	<0.0012	<280	<5.6	<0.028	124	2.5	0.012	20.4	0.41	0.002	135	2.7	0.014	169	3.4	0.017
Methyl Butyl Ketone (2-Hexanone)					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methyl Tert-Butyl Ether	3,000		25,000		<0.14	<0.0028	<0.000014	<3.9	<0.078	<0.00039	<0.14	<0.0028	<0.000014	<0.35	<0.007	<0.000035	<0.28	<0.0056	<0.000028	<0.35	<0.007	<0.000035	<4.2	<0.084	<0.00042	<4.2	<0.084	<0.00042
Naphthalene	3		25		<1.0	<0.02	<0.0001	239	**4.8**	0.024	636	**12.72**	0.064	<520	*<10.4*	<0.052	11.1	0.22	0.0011	62.2	1.2	0.0062	5.3	0.11	0.00053	<5.2	<0.1	<0.00052
2-Propanone					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propene	2500		25000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	1,000		9,000		0.58	0.012	0.000058	<8.5	<0.17	<0.00085	5.32	0.11	0.00053	5.86	0.12	0.00059	3.65	0.073	0.00037	1.75	0.035	0.00018	<3.4	<0.068	<0.00034	4.79	0.096	0.00048
1,1,1,2-Tetrachloroethane	1.5		10		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	50		550		<1.4	<0.028	<0.00014	<1,300	<26	<0.13	<100	<2	<0.01	<48	<0.96	<0.0048	<15	<0.3	<0.0015	<41	<0.82	<0.0041	<210	<4.2	<0.021	373	7.5	0.037
Tetrachloroethylene	40		350		40.6	0.81	0.0041	21,300	426	2.1	3170	63.4	0.32	1.75	0.035	0.00018	0.37	0.0074	0.000037	420	8.4	0.042	22.9	0.46	0.0023	37.0	0.74	0.0037
Tetrahydrofuran	3.5		30		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	500		45,000		27.8	0.56	0.0028	32.6	0.65	0.0033	23.9	0.48	0.0024	43.0	0.86	0.0043	140	2.8	0.014	35.9	0.72	0.0036	44.3	0.89	0.0044	64.5	1.3	0.0065
Trichlorofluoromethane	700		6,500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorotrifluoroethane	30,000		250,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trimethylbenzene					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	7		65		0.79	0.016	0.000079	163	3.3	0.016	4.06	0.081	0.00041	51.3	1	0.0051	1.02	0.02	0.0001	<3.0	<0.06	<0.0003	2.1	0.042	0.00021	2.8	0.056	0.00028
1,1,1-Trichloroethane	5,000		45,000		<0.22	<0.0044	<0.000022	<6.1	<0.12	<0.00061	<0.22	<0.0044	<0.000022	<0.22	<0.0044	<0.000022	0.26	0.0052	0.000026	<0.22	<0.0044	<0.000022	<1.1	<0.022	<0.00011	<1.1	<0.022	<0.00011
1,1,2-Trichloroethane	0.5		2		<1.1	<0.022	<0.00011	<6.1	<0.12	<0.00061	<2.2	<0.044	<0.00022	115	**2.3**	0.012	<1.1	<0.022	<0.00011	<1.6	<0.032	<0.00016	66.8	**1.3**	0.0067	81.6	**1.6**	0.0082
Trichloroethylene	2		20		2.11	0.042	0.00021	25,900	**518**	**2.6**	1280	**25.6**	0.13	<1.6	<0.032	<0.00016	<1.1	<0.022	<0.00011	26.0	**0.52**	0.0026	1.4	0.028	0.00014	<2.1	<0.042	<0.00021
1,2,4-Trimethylbenzene	7		65		1.49	0.03	0.00015	3,710	**74.2**	0.37	1010	**20.2**	0.1	50.5	1	0.0051	5.27	0.11	0.00053	261	5.2	0.026	11.9	0.24	0.0012	14.0	0.28	0.0014
1,3,5-Trimethylbenzene	4.5		45		0.51	0.01	0.000051	1,360	**27.2**	0.14	534	**10.68**	0.053	111	2.2	0.011	2.96	0.059	0.0003	68.8	1.4	0.0069	9.32	0.19	0.00093	12.5	0.25	0.0013
2,2,4-Trimethylpentane					-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Acetate	200		2,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Bromide	1		3		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	1		10		0.48	0.0096	0.000048	<2.9	<0.058	<0.00029	<0.15	<0.003	<0.000015	<0.10	<0.002	<0.00001	0.56	0.011	0.000056	<0.10	<0.002	<0.00001	<0.51	<0.01	<0.000051	<0.51	<0.01	<0.000051
o-Xylene					2.71	0.054	0.00027	873	17.46	0.087	239	4.8	0.024	38.2	0.76	0.0038	12.8	0.26	0.0013	54.6	1.1	0.0055	12.6	0.25	0.0013	17.2	0.34	0.0017
m+p-Xylenes					8.34	0.17	0.00083	2,260	45.2	0.23	388	7.8	0.039	68.2	1.4	0.0068	27.5	0.55	0.0028	127	2.5	0.013	34.6	0.69	0.0035	46.0	0.92	0.0046
Xylenes (Total)	100		900		11.0	0.22	0.0011	3,130	62.6	0.31	627	12.54	0.063	106	2.1	0.011	40.3	0.81	0.004	182	3.6	0.018	47.2	0.94	0.0047	63.2	1.3	0.0063
Hydrocarbons																													
F1 (C6-C10)	1,000	*	11,500	*	2,730	54.6	0.27	268,000	**5,360**	26.8	17500	350	1.8	210000	**4,200**	21	5750	115	0.58	3810	76	0.38	10600	212	1.1	10900	218	1.1
F2 (C10-C16)					170	3.4	0.017	105,000	2100	10.5	32000	640	3.2	367000	7340	36.7	5970	119.4	0.6	17800	356	1.8	6570	131.4	0.66	5600	112	0.56
VPHv (C6-C13)	1,000		11,500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:
Results are expressed as micrograms per cubic metre (μg/m^3), unless otherwise specified.
BC Ministry of Environment: Contaminated Sites Regulation, Schedule 11 (includes amendments up to B.C. Reg. 286/2010, updated time to time)
Italics indicates the method detection limit exceeds one or more standards
* = Standard for VPH (C6-10) conservatively applied to F1 (C6-10)
FD - Field duplicate; FDA - Field duplicate available

TABLE B9 Results of Soil Vapour Analyses Including Historical Data
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Probe ID	BC CSR Vapour Standards RL	BC CSR Vapour Standards IL	VP14-03			VP14-01			VP14-01			VP14-01			VP14-01			VP15-01			VP14-02			MW16-04		
Sample Control Number			17812-02			17812-04			17812-05			01124-01			01124-02			01124-03			17812-03			01135-01		
Date Sampled			19-Sep-14			20-Sep-14			20-Sep-14			20-Oct-15			20-Oct-15			21-Oct-15			20-Sep-14			9-Sep-16		
Probe Depth (meters)			0.15			1			1			1			1			1			1			0.9		
QA/QC						FDA			FD			FDA			FD											
Applied Attenuation Factor (α)			Laboratory Result	Indoor Exposure α=2.0×10^{-2}	Outdoor Exposure α=1.0×10^{-4}	Laboratory Result	Indoor Exposure α=2.0×10^{-2}	Outdoor Exposure α=1.0×10^{-4}	Laboratory Result	Indoor Exposure α=2.0×10^{-2}	Outdoor Exposure α=1.0×10^{-4}	Laboratory Result	Indoor Exposure α=2.0×10^{-2}	Outdoor Exposure α=1.0×10^{-4}	Laboratory Result	Indoor Exposure α=2.0×10^{-2}	Outdoor Exposure α=1.0×10^{-4}	Laboratory Result	Indoor Exposure α=2.0×10^{-2}	Outdoor Exposure α=1.0×10^{-4}	Laboratory Result	Indoor Exposure α=2.0×10^{-2}	Outdoor Exposure α=1.0×10^{-4}	Laboratory Result	Indoor Exposure α=2.0×10^{-2}	Outdoor Exposure α=1.0×10^{-4}
Volatile Organic Compounds																										
Acetone	**2500**	25000	271	5	0.027	<460	<9.2	<0.046	<1000	<20	<0.1	-	-	-	-	-	-	-	-	-	53.1	1	0.0053	-	-	-
Benzene	**1.5**	10	35.1	0.7	0.0035	174	**3.5**	0.017	261.0	**5.2**	0.026	156	**3.1**	0.016	138	**2.8**	0.014	192	**3.8**	0.019	2.45	0.049	0.00025	7.45	0.15	0.00075
Benzyl chloride	**0.2**	2	-	-	-	-	-	-	-	-	-	<120	*<2.4*	<0.012	<120	*<2.4*	<0.012	<2.6	<0.052	<0.00026	-	-	-	<2.6	<0.052	<0.00026
Bromodichloromethane	**50**	550	<20	<0.4	<0.002	<1200	*<24*	<0.12	<1700	*<34*	<0.17	<62	<1.2	<0.0062	<62	<1.2	<0.0062	<1.3	<0.026	<0.00013	<1.3	<0.026	<0.00013	<1.3	<0.026	<0.00013
Bromoform	**9**	85	<4.1	<0.082	<0.00041	<4.1	<0.082	<0.00041	<57	<1.1	<0.0057	<95	<1.9	<0.0095	<95	<1.9	<0.0095	<2.1	<0.042	<0.00021	<0.41	<0.0082	<0.000041	<2.1	<0.042	<0.00021
Bromomethane	**5**	45	<1.6	<0.032	<0.00016	<1.6	<0.032	<0.00016	<22	<0.44	<0.0022	<18	<0.36	<0.0018	<18	<0.36	<0.0018	<0.39	<0.0078	<0.000039	<0.16	<0.0032	<0.000016	<0.78	<0.016	<0.000078
1,3-Butadiene	**2**	3	<6.6	<0.13	<0.00066	<15	<0.3	<0.0015	<20	<0.4	<0.002	<51	<1	<0.0051	<51	<1	<0.0051	<150	*<3*	<0.015	<3.3	<0.066	<0.00033	<1.1	<0.022	<0.00011
n-Butane			-	-	-	-	-	-	-	-	-	3780	75.6	0.38	3510	70.2	0.35	1170	23.4	0.12	-	-	-	-	-	-
Carbon Disulfide	**700**	6,500	19.0	0.38	0.0019	<13	<0.26	<0.0013	420.0	8.4	0.042	<72	<1.4	<0.0072	<72	<1.4	<0.0072	57.7	1.2	0.0058	5.9	0.12	0.00059	9.3	0.19	0.00093
Carbon Tetrachloride	**1.5**	15	<2.5	<0.05	<0.00025	<2.5	<0.05	<0.00025	<35	<0.7	<0.0035	<29	<0.58	<0.0029	<29	<0.58	<0.0029	<0.63	<0.013	<0.000063	0.47	0.0094	0.000047	<0.63	<0.013	<0.000063
Chlorobenzene	**10**	90	<60	<1.2	<0.006	<3500	*<70*	<0.35	<4100	*<82*	<0.41	<21	<0.42	<0.0021	<21	<0.42	<0.0021	<0.46	<0.0092	<0.000046	3.94	0.079	0.00039	<0.46	<0.0092	<0.000046
Chloroethane	**10,000**	90,000	-	-	-	-	-	-	-	-	-	<36	<0.72	<0.0036	<36	<0.72	<0.0036	1.80	0.036	0.00018	-	-	-	<0.79	<0.016	<0.000079
Chloroform	**100**	900	2.00	0.04	0.0002	<1.9	<0.038	<0.00019	<27	<0.54	<0.0027	<90	<1.8	<0.009	<90	<1.8	<0.009	7.5	0.15	0.00075	0.28	0.0056	0.000028	<0.98	<0.02	<0.000098
Chloromethane	**90**	800	<0.83	<0.017	<0.000083	<0.83	<0.017	<0.000083	14	0.28	0.0014	<29	<0.58	<0.0029	<29	<0.58	<0.0029	5.02	0.1	0.0005	4.67	0.093	0.00047	<0.41	<0.0082	<0.000041
Cumene	**400**	3,500	8.7	0.17	0.00087	519	10.38	0.052	524	10.48	0.052	-	-	-	-	-	-	-	-	-	1.23	0.025	0.00012	<2.5	<0.05	<0.00025
Cyclohexane			-	-	-	-	-	-	-	-	-	3830	76.6	0.38	3200	64	0.32	726	14.5	0.073	-	-	-	-	-	-
Dibromochloromethane	**50**	550	<3.4	<0.068	<0.00034	<3.4	<0.068	<0.00034	<48	<0.96	<0.0048	<78	<1.6	<0.0078	<78	<1.6	<0.0078	<1.7	<0.034	<0.00017	<0.34	<0.0068	<0.000034	<1.7	<0.034	<0.00017
Decane	**2,500**	25,000	<1300	<26	<0.13	10900	218	1.1	10700	214	1.1	<2900	<58	<0.29	<2700	<54	<0.27	49.7	0.99	0.005	65.6	1.3	0.0066	59.8	1.2	0.006
1,2-Dibromoethane	**0.5**	0.5	<3.1	<0.062	<0.00031	<3.1	<0.062	<0.00031	<43	<0.86	<0.0043	<35	*<0.7*	<0.0035	<35	*<0.7*	<0.0035	<0.77	<0.015	<0.000077	<0.31	<0.0062	<0.000031	-	-	-
1,2-Dichlorobenzene	**200**	2,000	<2.4	<0.048	<0.00024	<2.4	<0.048	<0.00024	<34	<0.68	<0.0034	<28	<0.56	<0.0028	<28	<0.56	<0.0028	<0.60	<0.012	<0.00006	<0.24	<0.0048	<0.000024	<0.60	<0.012	<0.00006
1,3-Dichlorobenzene	**80**	850	<2.4	<0.048	<0.00024	<2.4	<0.048	<0.00024	<34	<0.68	<0.0034	<110	<2.2	<0.011	<110	<2.2	<0.011	2.7	0.054	0.00027	<0.24	<0.0048	<0.000024	<2.4	<0.048	<0.00024
1,4-Dichlorobenzene	**800**	7,500	<2.4	<0.048	<0.00024	<2.4	<0.048	<0.00024	<34	<0.68	<0.0034	<28	<0.56	<0.0028	<28	<0.56	<0.0028	1.11	0.022	0.00011	<0.24	<0.0048	<0.000024	<0.60	<0.012	<0.00006
1,1-Dichloroethane	**500**	4,500	<0.15	<0.003	<0.000015	<0.55	<0.011	<0.000055	<2.1	<0.042	<0.00021	<19	<0.38	<0.0019	<19	<0.38	<0.0019	1.85	0.037	0.00019	<0.022	<0.00044	<0.0000022	<0.81	<0.016	<0.000081
1,2-Dichloroethane	**5**	45	1.9	0.038	0.00019	13.8	0.28	0.0014	34	0.68	0.0034	<19	<0.38	<0.0019	<19	<0.38	<0.0019	0.56	0.011	0.000056	0.17	0.0034	0.000017	<0.40	<0.008	<0.00004
1,1-Dichloroethene	**200**	2000	<1.6	<0.032	<0.00016	<1.6	<0.032	<0.00016	<22	<0.44	<0.0022	<18	<0.36	<0.0018	<18	<0.36	<0.0018	<0.40	<0.008	<0.00004	<0.16	<0.0032	<0.000016	<0.79	<0.016	<0.000079
cis-1,2-Dichloroethylene	**60**	550	<1.6	<0.032	<0.00016	<1.6	<0.032	<0.00016	<22	<0.44	<0.0022	<18	<0.36	<0.0018	<18	<0.36	<0.0018	<1.2	<0.024	<0.00012	<0.16	<0.0032	<0.000016	<0.79	<0.016	<0.000079
trans-1,2-Dichloroethene	**60**	550	<1.6	<0.032	<0.00016	<1.6	<0.032	<0.00016	<22	<0.44	<0.0022	<18	<0.36	<0.0018	<18	<0.36	<0.0018	1.35	0.027	0.00014	<0.16	<0.0032	<0.000016	<0.79	<0.016	<0.000079
Dichlorodifluoromethane	**100**	900	-	-	-	-	-	-	-	-	-	<46	<0.92	<0.0046	<46	<0.92	<0.0046	2.57	0.051	0.00026	-	-	-	2.45	0.049	0.00025
Methylene Chloride	**600**	5500	<14	<0.28	<0.0014	<14	<0.28	<0.0014	560	11.2	0.056	<180	<3.6	<0.018	<160	<3.2	<0.016	3.3	0.066	0.00033	1.6	0.032	0.00016	<1.4	<0.028	<0.00014
1,2-Dichloropropane	**4**	35	<1.8	<0.036	<0.00018	<1.8	<0.036	<0.00018	<26	<0.52	<0.0026	<21	<0.42	<0.0021	<21	<0.42	<0.0021	<0.46	<0.0092	<0.000046	<0.18	<0.0036	<0.000018	<0.46	<0.0092	<0.000046
cis-1,3-Dichloropropene	**2.5**	25	<1.8	<0.036	<0.00018	<1.8	<0.036	<0.00018	<26	<0.52	<0.0026	<21	<0.42	<0.0021	<21	<0.42	<0.0021	<0.45	<0.009	<0.000045	<0.18	<0.0036	<0.000018	<0.45	<0.009	<0.000045
trans-1,3-Dichloropropene	**2.5**	25	<1.8	<0.036	<0.00018	<5.5	<0.11	<0.00055	<26	<0.52	<0.0026	<21	<0.42	<0.0021	<21	<0.42	<0.0021	<0.45	<0.009	<0.000045	<0.18	<0.0036	<0.000018	<0.45	<0.009	<0.000045
1,2-Dichlorotetrafluoroethane			-	-	-	-	-	-	-	-	-	<55	<1.1	<0.0055	<55	<1.1	<0.0055	<1.2	<0.024	<0.00012	-	-	-	-	-	-
1,4-Dioxane			-	-	-	-	-	-	-	-	-	<170	<3.4	<0.017	<170	<3.4	<0.017	<3.6	<0.072	<0.00036	-	-	-	-	-	-
Ethanol (ethyl alcohol)			-	-	-	-	-	-	-	-	-	<370	<7.4	<0.037	<250	<5	<0.025	791	15.8	0.079	-	-	-	-	-	-
Ethyl Acetate	**70**	650	-	-	-	-	-	-	-	-	-	<170	<3.4	<0.017	<170	<3.4	<0.017	<6.1	<0.12	<0.00061	-	-	-	9.1	0.18	0.00091
Ethyl Benzene	**1,000**	9,000	27.2	0.54	0.0027	1120	22.4	0.11	1200	24	0.12	216	4.3	0.022	197	3.9	0.02	32.2	0.64	0.0032	5.48	0.11	0.00055	8.32	0.17	0.00083
Ethyl Chloride	**10,000**	90,000	<1.1	<0.022	<0.00011	1.2	0.024	0.00012	<15	<0.3	<0.0015	-	-	-	-	-	-	-	-	-	1.48	0.03	0.00015	-	-	-
Ethyl Dibromide	**0.5**	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.38	<0.0076	<0.000038
4-ethyltoluene			-	-	-	-	-	-	-	-	-	<110	<2.2	<0.011	<110	<2.2	<0.011	3.0	0.06	0.0003	-	-	-	-	-	-
Halocarbon 11	**700**	6500	0.89	0.018	0.000089	<2.2	<0.044	<0.00022	<31	<0.62	<0.0031	-	-	-	-	-	-	-	-	-	1.34	0.027	0.00013	-	-	-
Halocarbon 12	**100**	900	3.44	0.069	0.00034	2.9	0.058	0.00029	<28	<0.56	<0.0028	-	-	-	-	-	-	-	-	-	2.23	0.045	0.00022	-	-	-
Heptane			-	-	-	-	-	-	-	-	-	88	1.8	0.0088	86	1.7	0.0086	422	8.4	0.042	-	-	-	-	-	-
Hexachloro-1,3-butadiene	**1**	4	<4.2	<0.084	<0.00042	<4.2	<0.084	<0.00042	61	1.2	0.0061	<250	*<5*	<0.025	<250	*<5*	<0.025	<5.3	<0.11	<0.00053	<0.42	<0.0084	<0.000042	<5.3	<0.11	<0.00053
Hexane	**700**	6,500	87.5	1.8	0.0088	1110	22.2	0.11	1460	29.2	0.15	494	9.9	0.049	448	9	0.045	567	11.3	0.057	10.5	0.21	0.0011	17.4	0.35	0.0017
Isopropyl Alcohol			10.0	0.2	0.001	<9.8	<0.2	<0.00098	<140	<2.8	<0.014	<160	<3.2	<0.016	<570	<11.4	<0.057	33.9	0.68	0.0034	2.22	0.044	0.00022	-	-	-
Methyl Ethyl Ketone	**5,000**	45,000	127.0	2.5	0.013	21.4	0.43	0.0021	44	0.88	0.0044	<140	<2.8	<0.014	<140	<2.8	<0.014	-	-	-	7.08	0.14	0.00071	-	-	-
Methyl Isobutyl Ketone	**3,000**	25,000	<33	<0.66	<0.0033	<1200	<24	<0.12	<1600	<32	<0.16	<190	<3.8	<0.019	<190	<3.8	<0.019	68.5	1.4	0.0069	<4.1	<0.082	<0.00041	<4.1	<0.082	<0.00041
Methylcyclohexane	**2,000**	25,000	289	5.8	0.029	14400	288	1.4	16700	334	1.7	-	-	-	-	-	-	-	-	-	11.4	0.23	0.0011	9.1	0.18	0.00091
Methyl Butyl Ketone (2-Hexanone)			-	-	-	-	-	-	-	-	-	<190	<3.8	<0.019	<190	<3.8	<0.019	<4.1	<0.082	<0.00041	-	-	-	<11	<0.22	<0.0011
Methyl Tert-Butyl Ether	**3,000**	25,000	<1.4	<0.028	<0.00014	<1.4	<0.028	<0.00014	<20	<0.4	<0.002	<33	<0.66	<0.0033	<33	<0.66	<0.0033	<0.72	<0.014	<0.000072	0.65	0.013	0.000065	<0.72	<0.014	<0.000072
Naphthalene	**3**	25	27	0.54	0.0027	627	**12.54**	0.063	290	**5.8**	0.029	<120	<2.4	<0.012	<120	<2.4	<0.012	<2.6	<0.052	<0.00026	2.5	0.05	0.00025	<2.6	<0.052	<0.00026
2-Propanone			-	-	-	-	-	-	-	-	-	<710	<14.2	<0.071	<560	<11.2	<0.056	913	18.3	0.091	-	-	-	3.2	0.064	0.00032
Propene	**2500**	25000	-	-	-	-	-	-	-	-	-	<710	<14.2	<0.071	<670	<13.4	<0.067	1120	22.4	0.11	-	-	-	-	-	-
Styrene	**1,000**	9,000	<1.7	<0.034	<0.00017	<4.3	<0.086	<0.00043	<24	<0.48	<0.0024	<20	<0.4	<0.002	<20	<0.4	<0.002	1.42	0.028	0.00014	0.27	0.0054	0.000027	<0.85	<0.017	<0.000085
1,1,1,2-Tetrachloroethane	**1.5**	10	-	-	-	-	-	-	-	-	-	<32	<0.64	<0.0032	<32	<0.64	<0.0032	<0.69	<0.014	<0.000069	-	-	-	<0.69	<0.014	<0.000069
1,1,2,2-Tetrachloroethane	**50**	550	<140	<2.8	<0.014	<2400	<48	<0.24	<5400	*<108*	<0.54	<32	<0.64	<0.0032	<32	<0.64	<0.0032	<0.69	<0.014	<0.000069	<6.9	<0.14	<0.00069	<0.69	<0.014	<0.000069
Tetrachloroethylene	**40**	350	15.0	0.3	0.0015	3.1	0.062	0.00031	<38	<0.76	<0.0038	<31	<0.62	<0.0031	<31	<0.62	<0.0031	83.2	1.7	0.0083	0.33	0.0066	0.000033	<1.4	<0.028	<0.00014
Tetrahydrofuran	**3.5**	30	-	-	-	-	-	-	-	-	-	<54	<1.1	<0.0054	<54	<1.1	<0.0054	<1.2	<0.024	<0.00012	-	-	-	1.3	0.026	0.00013
Toluene	**500**	45,000	35.4	0.71	0.0035	39.5	0.79	0.004	92	1.8	0.0092	<87	<1.7	<0.0087	<69	<1.4	<0.0069	243	4.9	0.024	8.17	0.16	0.00082	24.2	0.48	0.0024
Trichlorofluoromethane	**700**	6,500	-	-	-	-	-	-	-	-	-	<52	<1	<0.0052	<52	<1	<0.0052	<1.1	<0.022	<0.00011	-	-	-	3.6	0.072	0.00036
Trichlorotrifluoroethane	**30,000**	250,000	-	-	-	-	-	-	-	-	-	<53	<1.1	<0.0053	<53	<1.1	<0.0053	<1.2	<0.024	<0.00012	-	-	-	<1.2	<0.024	<0.00012
1,2,3-Trimethylbenzene			-	-	-	-	-	-	-	-	-	<110	<2.2	<0.011	<110	<2.2	<0.011	2.8	0.056	0.00028	-	-	-	-	-	-
1,2,4-Trichlorobenzene	**7**	65	<3.0	<0.06	<0.0003	<3.0	<0.06	<0.0003	<42	<0.84	<0.0042	<170	<3.4	<0.017	<170	<3.4	<0.017	<3.7	<0.074	<0.00037	<0.30	<0.006	<0.00003	<3.7	<0.074	<0.00037
1,1,1-Trichloroethane	**5,000**	45,000	<2.2	<0.044	<0.00022	<2.2	<0.044	<0.00022	<31	<0.62	<0.0031	<25	<0.5	<0.0025	<25	<0.5	<0.0025	<0.55	<0.011	<0.000055	<0.22	<0.0044	<0.000022	<1.1	<0.022	<0.00011
1,1,2-Trichloroethane	**0.5**	2	30.8	**0.62**	0.0031	1270	**25.4**	0.13	1470	**29.4**	0.15	<25	<0.5	<0.0025	<25	<0.5	<0.0025	<0.55	<0.011	<0.000055	<0.22	<0.0044	<0.000022	<0.55	<0.011	<0.000055
Trichloroethylene	**2**	20	4.7	0.094	0.00047	<2.1	<0.042	<0.00021	<54	<1.1	<0.0054	<25	<0.5	<0.0025	<25	<0.5	<0.0025	4.24	0.085	0.00042	<0.21	<0.0042	<0.000021	<0.48	<0.0096	<0.000048
1,2,4-Trimethylbenzene	**7**	65	223	4.5	0.022	767	**15.34**	0.077	668	**13.36**	0.067	<110	<2.2	<0.011	<110	<2.2	<0.011	8.3	0.17	0.00083	8.62	0.17	0.00086	6.1	0.12	0.00061
1,3,5-Trimethylbenzene	**4.5**	45	179	3.6	0.018	3910	**78.2**	0.39	3480	**69.6**	0.35	556	**11.1**	0.056	545	**10.9**	0.055	6.4	0.13	0.00064	7	0.14	0.0007	3.5	0.07	0.00035
2,2,4-Trimethylpentane			-	-	-	-	-	-	-	-	-	3610	72.2	0.36	3040	60.8	0.3	239	4.8	0.024	-	-	-	-	-	-
Vinyl Acetate	**200**	2,000	-	-	-	-	-	-	-	-	-	<660	<13.2	<0.066	<580	<11.6	<0.058	<110	<2.2	<0.011	-	-	-	<1.4	<0.028	<0.00014
Vinyl Bromide	**1**	3	-	-	-	-	-	-	-	-	-	<40	<0.8	<0.004	<40	<0.8	<0.004	<0.87	<0.017	<0.000087	-	-	-	<0.87	<0.017	<0.000087
Vinyl Chloride	**1**	10	<1.0	<0.02	<0.0001	<1.0	<0.02	<0.0001	<14	<0.28	<0.0014	<12	<0.24	<0.0012	<12	<0.24	<0.0012	<0.26	<0.0052	<0.000026	<0.10	<0.002	<0.00001	<0.51	<0.01	<0.000051
o-Xylene			96.3	1.9	0.0096	120	2.4	0.012	143	2.9	0.014	<40	<0.8	<0.004	<20	<0.4	<0.002	51.9	1	0.0052	4.79	0.096	0.00048	9.62	0.19	0.00096
m+p-Xylenes			162	3.2	0.016	354	7.1	0.035	417	8.3	0.042	<80	<1.6	<0.008	<80	<1.6	<0.008	112	2.2	0.011	11.0	0.22	0.0011	24	0.48	0.0024
Xylenes (Total)	**100**	900	258	5.2	0.026	474	9.5	0.047	560	11.2	0.056	<120	<2.4	<0.012	<120	<2.4	<0.012	164	3.3	0.016	15.8	0.32	0.0016	33.6	0.67	0.0034
Hydrocarbons																										
F1 (C6-C10)	**1,000** *	11,500 *	12300	246	1.2	45700	914	4.6	400000	**8,000**	40	322000	**6,440**	32.2	310000	**6,200**	31	14000	280	1.4	814	16	0.081	-	-	-
F2 (C10-C16)			15800	316	1.6	33200	664	3.3	265000	5300	26.5	74900	1498	7.5	78200	1564	7.8	564	11.3	0.056	3100	62	0.31	-	-	-
VPHv (C6-C13)	**1,000**	11,500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1020	20.4	0.1

Notes:
Results are expressed as micrograms per cubic metre (µg/m^3), unless otherwise specified.
BC Ministry of Environment: Contaminated Sites Regulation, Schedule 11 (includes amendments up to B.C. Reg. 286/2010, updated time to time)
Italics indicates the method detection limit exceeds one or more standards
* = Standard for VPH (C6-10) conservatively applied to F1 (C6-10)
FD - Field duplicate; FDA - Field duplicate available

TABLE B9 Results of Soil Vapour Analyses Including Historical Data
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Probe ID / Sample Control Number / Date Sampled / Probe Depth (meters) / QA/QC	BC CSR Vapour Standards RL	Notes	BC CSR Vapour Standards IL	Notes	BH16-16 01135-02 9-Sep-16 0.9			BH16-08 01135-03 9-Sep-16 0.9		
Applied Attenuation Factor (α)					Laboratory Result	Indoor Exposure $\alpha=2.0x10^{-2}$	Outdoor Exposure $\alpha=1.0x10^{-4}$	Laboratory Result	Indoor Exposure $\alpha=2.0x10^{-2}$	Outdoor Exposure $\alpha=1.0x10^{-4}$
Volatile Organic Compounds										
Acetone	**2500**		25000		-	-	-	-	-	-
Benzene	**1.5**		10		173	**3.5**	0.017	9.02	0.18	0.0009
Benzyl chloride	**0.2**		2		<10	<0.2	<0.001	<2.6	<0.052	<0.00026
Bromodichloromethane	**50**		550		<5.4	<0.11	<0.00054	<1.3	<0.026	<0.00013
Bromoform	**9**		85		<8.3	<0.17	<0.00083	<2.1	<0.042	<0.00021
Bromomethane	**5**		45		<3.1	<0.062	<0.00031	<0.78	<0.016	<0.000078
1,3-Butadiene	**2**		3		<4.4	<0.088	<0.00044	<1.1	<0.022	<0.00011
n-Butane					-	-	-	-	-	-
Carbon Disulfide	**700**		6,500		27.7	0.55	0.0028	38.8	0.78	0.0039
Carbon Tetrachloride	**1.5**		15		<2.5	<0.05	<0.00025	<0.63	<0.013	<0.000063
Chlorobenzene	**10**		90		<1.8	<0.036	<0.00018	<0.46	<0.0092	<0.000046
Chloroethane	**10,000**		90,000		<3.2	<0.064	<0.00032	6.21	0.12	0.00062
Chloroform	**100**		900		<3.9	<0.078	<0.00039	2.13	0.043	0.00021
Chloromethane	**90**		800		<1.7	<0.034	<0.00017	59.9	1.2	0.006
Cumene	**400**		3,500		136	2.7	0.014	2.8	0.056	0.00028
Cyclohexane					-	-	-	-	-	-
Dibromochloromethane	**50**		550		<6.8	<0.14	<0.00068	<1.7	<0.034	<0.00017
Decane	**2,500**		25,000		493	9.9	0.049	<2.9	<0.058	<0.00029
1,2-Dibromoethane	**0.5**		0.5		-	-	-	-	-	-
1,2-Dichlorobenzene	**200**		2,000		<2.4	<0.048	<0.00024	<0.60	<0.012	<0.00006
1,3-Dichlorobenzene	**80**		850		<9.6	<0.19	<0.00096	<2.4	<0.048	<0.00024
1,4-Dichlorobenzene	**800**		7,500		<2.4	<0.048	<0.00024	0.66	0.013	0.000066
1,1-Dichloroethane	**500**		4,500		<3.2	<0.064	<0.00032	<0.81	<0.016	<0.000081
1,2-Dichloroethane	**5**		45		<1.6	<0.032	<0.00016	<0.40	<0.008	<0.00004
1,1-Dichloroethene	**200**		2000		<3.2	<0.064	<0.00032	<0.79	<0.016	<0.000079
cis-1,2-Dichloroethylene	**60**		550		<3.2	<0.064	<0.00032	<0.79	<0.016	<0.000079
trans-1,2-Dichloroethene	**60**		550		<3.2	<0.064	<0.00032	<0.79	<0.016	<0.000079
Dichlorodifluoromethane	**100**		900		<4.0	<0.08	<0.0004	5	0.1	0.0005
Methylene Chloride	**600**		5500		<5.6	<0.11	<0.00056	<1.4	<0.028	<0.00014
1,2-Dichloropropane	**4**		35		<1.8	<0.036	<0.00018	<0.46	<0.0092	<0.000046
cis-1,3-Dichloropropene	**2.5**		25		<1.8	<0.036	<0.00018	<0.45	<0.009	<0.000045
trans-1,3-Dichloropropene	**2.5**		25		<1.8	<0.036	<0.00018	<0.45	<0.009	<0.000045
1,2-Dichlorotetrafluoroethane					-	-	-	-	-	-
1,4-Dioxane					-	-	-	-	-	-
Ethanol (ethyl alcohol)					-	-	-	-	-	-
Ethyl Acetate	**70**		650		<14	<0.28	<0.0014	<3.6	<0.072	<0.00036
Ethyl Benzene	**1,000**		9,000		702	14.04	0.07	20	0.4	0.002
Ethyl Chloride	**10,000**		90,000		-	-	-	-	-	-
Ethyl Dibromide	**0.5**		0.5		<1.5	<0.03	<0.00015	<0.38	<0.0076	<0.000038
4-ethyltoluene					-	-	-	-	-	-
Halocarbon 11	**700**		6500		-	-	-	-	-	-
Halocarbon 12	**100**		900		-	-	-	-	-	-
Heptane					-	-	-	-	-	-
Hexachloro-1,3-butadiene	**1**		4		<21	<0.42	<0.0021	<5.3	<0.11	<0.00053
Hexane	**700**		6,500		317	6.3	0.032	17.5	0.35	0.0018
Isopropyl Alcohol					-	-	-	-	-	-
Methyl Ethyl Ketone	**5,000**		45,000		-	-	-	-	-	-
Methyl Isobutyl Ketone	**3,000**		25,000		<16	<0.32	<0.0016	<4.1	<0.082	<0.00041
Methylcyclohexane	**2,000**		25,000		309	6.2	0.031	30.4	0.61	0.003
Methyl Butyl Ketone (2-Hexanone)					<210	<4.2	<0.021	<15	<0.3	<0.0015
Methyl Tert-Butyl Ether	**3,000**		25,000		<2.9	<0.058	<0.00029	<0.72	<0.014	<0.000072
Naphthalene	**3**		25		2570	**51.4**	0.26	6.2	0.12	0.00062
2-Propanone					159	3.2	0.016	21.7	0.43	0.0022
Propene	**2500**		25000		-	-	-	-	-	-
Styrene	**1,000**		9,000		48.8	0.98	0.0049	<0.85	<0.017	<0.000085
1,1,1,2-Tetrachloroethane	**1.5**		10		<2.7	<0.054	<0.00027	<0.69	<0.014	<0.000069
1,1,2,2-Tetrachloroethane	**50**		550		<2.7	<0.054	<0.00027	<0.69	<0.014	<0.000069
Tetrachloroethylene	**40**		350		<5.4	<0.11	<0.00054	<1.4	<0.028	<0.00014
Tetrahydrofuran	**3.5**		30		<4.7	<0.094	<0.00047	<1.2	<0.024	<0.00012
Toluene	**500**		45,000		864	17.28	0.086	38.2	0.76	0.0038
Trichlorofluoromethane	**700**		6,500		<4.5	<0.09	<0.00045	<1.1	<0.022	<0.00011
Trichlorotrifluoroethane	**30,000**		250,000		<4.6	<0.092	<0.00046	<1.2	<0.024	<0.00012
1,2,3-Trimethylbenzene					-	-	-	-	-	-
1,2,4-Trichlorobenzene	**7**		65		<15	<0.3	<0.0015	<3.7	<0.074	<0.00037
1,1,1-Trichloroethane	**5,000**		45,000		<4.4	<0.088	<0.00044	<1.1	<0.022	<0.00011
1,1,2-Trichloroethane	**0.5**		2		<2.2	<0.044	<0.00022	<0.55	<0.011	<0.000055
Trichloroethylene	**2**		20		<1.9	<0.038	<0.00019	<0.48	<0.0096	<0.000048
1,2,4-Trimethylbenzene	**7**		65		1370	**27.4**	0.14	5.5	0.11	0.00055
1,3,5-Trimethylbenzene	**4.5**		45		580	**11.6**	0.058	3.2	0.064	0.00032
2,2,4-Trimethylpentane					-	-	-	-	-	-
Vinyl Acetate	**200**		2,000		<25	<0.5	<0.0025	<2.5	<0.05	<0.00025
Vinyl Bromide	**1**		3		<3.5	<0.07	<0.00035	<0.87	<0.017	<0.000087
Vinyl Chloride	**1**		10		<2.0	<0.04	<0.0002	<0.51	<0.01	<0.000051
o-Xylene					952	19.04	0.095	15.9	0.32	0.0016
m+p-Xylenes					1890	37.8	0.19	37.3	0.75	0.0037
Xylenes (Total)	**100**		900		2840	56.8	0.28	53.2	1.1	0.0053
Hydrocarbons										
F1 (C6-C10)	**1,000**	*	11,500	*	-	-	-	-	-	-
F2 (C10-C16)					-	-	-	-	-	-
VPHv (C6-C13)	**1,000**		11,500		30100	602	3	696	13.92	0.07

Notes:
Results are expressed as micrograms per cubic metre ($\mu g/m^3$), unless otherwise specified.
BC Ministry of Environment: Contaminated Sites Regulation, Schedule 11 (includes amendments up to B.C. Reg. 286/2010, updated time to time)
Italics indicates the method detection limit exceeds one or more standards
* = Standard for VPH (C6-10) conservatively applied to F1 (C6-10)
FD - Field duplicate; FDA - Field duplicate available

TABLE B10 Results of Historical Indoor Air Analyses
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BC CSR Vapour Standards RL	BC CSR Vapour Standards IL	Indoor Air Workshop	Indoor Air Workshop	Indoor Air Workshop	Indoor Air Workshop	Indoor Air Workshop	Indoor Air Workshop
Sample Control Number			09-020145-07	22796-01	22806-05	283694-01	17812-01	01124-04
Date Sampled			10-Oct-09	26-Sep-11	24-Jul-12	26-Jul-13	18-Sep-14	20-Oct-15
Volatile Organic Compounds								
Acetone	**2500**	25000	329	1.94	29.4	<46	7.15	-
Benzene	**1.5**	10	**3.51**	0.57	**4.77**	**3.59**	**16.3**	**3.22**
Benzyl chloride	**0.2**	2	-	-	-	-	-	*<2.6*
Bromodichloromethane	**50**	550.0	<0.30	<0.27	<1.3	<0.27	<10	<1.3
Bromoform	**9**	85	<0.40	<0.41	<0.41	0.59	<0.41	<2.1
Bromomethane	**5**	45	<0.20	<0.16	<0.16	<0.16	<0.16	<0.39
1,3-Butadiene	**2**	3	<0.090	<0.66	<2.7	<0.22	<0.088	<1.1
n-Butane			-	-	-	-	-	82.6
Carbon Disulfide	**700**	6,500	20.1	<1.3	2.9	2.4	<1.3	<1.6
Carbon Tetrachloride	**1.5**	15	0.50	0.44	0.47	0.58	0.55	<0.63
Chlorobenzene	**10**	90	1.01	0.20	<0.18	0.27	<1.8	<0.46
Chloroethane	**10,000**	90,000	-	-	-	-	-	<0.79
Dibromochloromethane	**50**	550	<0.30	<0.34	<0.34	<0.34	<0.34	<1.7
Ethyl chloride	**10,000**	90,000	<0.10	<0.11	0.13	<0.11	<0.11	-
Chloroform	**100**	900	2.58	<0.19	<0.19	<0.19	<0.19	<0.49
Chloromethane	**90**	800	1.40	1.23	1.68	1.15	1.02	0.95
Cumene	**400**	3,500	0.44	0.25	<0.20	<0.20	1.18	-
Cyclohexane			-	-	-	-	-	0.73
Decane	**2,500**	25,000	32.5	5.18	2.24	2.84	18.1	20.0
1,2-Dibromoethane	**0.5**	0.5	<0.30	<0.31	<0.31	**0.6**	**0.54**	*<0.77*
1,2-Dichlorobenzene	**200**	2,000	<0.20	<0.24	<0.24	0.49	0.24	<0.60
1,3-Dichlorobenzene	**80**	850	0.78	<0.24	<0.24	0.52	0.31	<2.4
1,4-Dichlorobenzene	**800**	7,500	<0.20	<0.24	<0.24	0.58	0.32	<0.60
1,1-Dichloroethane	**500**	4,500	<0.010	<0.015	<0.015	<0.22	<0.074	<0.40
1,2-Dichloroethane	**5**	45	0.32	<0.16	<0.16	0.29	0.64	<0.40
1,1-Dichloroethene	**200**	2000	<0.20	<0.16	<0.16	<0.16	<0.16	<0.40
cis-1,2-Dichloroethylene	**60**	550	0.16	<0.16	<0.16	<0.16	<0.16	<0.40
trans-1,2-Dichloroethene	**60**	550	<0.20	<2.0	0.91	3.21	1.08	2.75
Dichlorodifluoromethane	**100**	900	-	-	-	-	-	2.79
Methylene Chloride	**600**	5500	189	<1.4	5.5	<1.4	2.6	<2.8
1,2-Dichloropropane	**4**	35	<0.20	<0.18	<0.18	<0.18	<0.18	<0.46
cis-1,3-Dichloropropene	**2.5**	25	<0.20	<0.18	<0.18	<0.18	0.27	<0.45
trans-1,3-Dichloropropene	**2.5**	25	<0.20	<0.18	<0.18	0.27	<0.46	<0.45
1,2-Dichlorotetrafluoroethane			-	-	-	-	-	<1.2
1,4-Dioxane			-	-	-	-	-	<3.6
Ethanol (ethyl alcohol)			-	-	-	-	-	<1.9
Ethyl Acetate	**70**	650	-	-	-	-	-	<3.6
EthylBenzene	**1,000**	9,000	3.25	1.37	6.63	1.87	14.3	27.0
Ethyl chloride	**10,000**	90,000	-	-	-	-	-	-
4-ethyltoluene			-	-	-	-	-	9.4
Halocarbon 11	**700**	6500	1.69	<1.7	<2.2	1.53	1.34	-
Halocarbon 12	**100**	900	2.77	3.34	2.83	3.10	2.45	-
Heptane			-	-	-	-	-	3.2
Hexachloro-1,3-butadiene	**1**	4	<0.40	<0.42	<0.42	0.82	<0.42	*<5.3*
Hexane	**700**	6,500	40.6	0.14	3.9	4.08	46.9	3.1
Isopropyl Alcohol			325	<0.98	1.31	4.13	2.79	<2.5
Methyl Ethyl Ketone	**5,000**	45,000	5.71	0.34	0.91	3.25	3.09	<2.9
Methyl Isobutyl Ketone	**3,000**	25,000	<0.020	<0.16	<0.16	0.35	<4.1	<4.1
Methylcyclohexane	**2,000**	25,000	1.73	<0.60	<2.4	0.69	31.2	-
Methyl Butyl Ketone (2-Hexanone)			-	-	-	-	-	<4.1
Methyl Tert-Butyl Ether	**3,000**	25,000	<0.10	<0.14	<0.14	<0.35	<0.14	<0.72
Naphthalene	**3**	25	<1.0	1.2	1.2	1.6	1.6	<2.6
2-Propanone			-	-	-	-	-	4.4
Propene	**2500**	25000	-	-	-	-	-	<6.9
Styrene	**1,000**	9,000	0.30	<0.17	<0.17	0.17	0.3	<0.43
1,1,1,2-Tetrachloroethane	**1.5**	10	-	-	-	-	-	<0.69
1,1,2,2-Tetrachloroethane	**50**	550	0.34	<0.27	<0.27	0.31	*<3.4*	<0.69
Tetrachloroethylene	**40**	350	14.2	<0.27	1.01	8.27	2.83	<0.68
Tetrahydrofuran	**3.5**	30	-	-	-	-	-	<1.2
Toluene	**500**	45,000	50.3	1.29	35.1	9.84	64.5	30.3
Trichlorofluoromethane	**700**	6,500	-	-	-	-	-	1.2
Trichlorotrifluoroethane	**30,000**	250,000	-	-	-	-	-	<1.2
1,2,3-Trimethylbenzene			-	-	-	-	-	7.6
1,2,4-Trichlorobenzene	**7**	65	<0.30	0.45	0.4	1.23	<0.30	<3.7
1,1,1-Trichloroethane	**5,000**	45,000	<0.20	<0.22	<0.22	<0.22	<0.22	<0.55
1,1,2-Trichloroethane	**0.5**	2	<0.20	<0.22	<0.22	<0.22	<0.22	<0.55
Trichloroethylene	**2**	20	<0.20	<0.21	0.81	<0.43	0.35	*<0.54*
1,2,4-Trimethylbenzene	**7**	65	3.49	3.58	4.17	2.30	**34**	**28.3**
1,3,5-Trimethylbenzene	**4.5**	45	**17.7**	1.16	1.05	0.41	**9.71**	**8.5**
2,2,4-Trimethylpentane			-	-	-	-	-	17.7
Vinyl Acetate	**200**	2,000	-	-	-	-	-	<1.1
Vinyl Bromide	**1**	3	-	-	-	-	-	<0.87
Vinyl Chloride	**1**	10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.26
o-Xylene			5.69	1.41	6.05	1.33	20.0	43.8
m+p-Xylenes			15.6	3.21	25.5	4.76	53.4	110
Xylenes (Total)	**100**	900	21.3	4.62	31.6	6.09	73.4	**154**
Hydrocarbons								
F1 (C6-C10)	**1,000** *	11,500 *	417	<30	103	50	907	546
F2 (C10-C16)			425	44	<30	60	380	694

Notes:
Results are expressed as micrograms per cubic metre (ug/m^3), unless otherwise specified.
BC Ministry of Environment: Contaminated Sites Regulation, Schedule 11 (includes amendment BC Reg. 4/2014)
Italics indicates the method detection limit exceeds one or more standards
* = Standard for VPH (C6-10) conservatively applied to F1 (C6-10)

TABLE B11 Results of Quality Control/Quality Assurance Analyses - Soil - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BH16-03 S1	BH16-03 S1	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	BH16-10 S2	BH16-10 S2	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	02022-09	02022-10					02026-02	02026-03				
Laboratory ID	-	-					-	-				
Depth (m bgs)	0.15-0.45 m	0.15-0.45 m					0.9-1.3 m	0.9-1.3 m				
Date Sampled	6-Sep-16	6-Sep-16					9-Sep-16	9-Sep-16				
QA/QC	FDA	FD					FDA	FD				
Ions by Sat Paste												
Chloride	15	15.7	2.7	15.35	4.56%	NA	2250	2190	20	2220	2.70%	NA
Sodium	21	22.9	2.7	21.95	8.66%	NA	1370	1390	195	1380	1.45%	NA
Metals												
Aluminum	7030	8070	100	7550	13.77%	NA	5070	5370	100	5220	5.75%	NA
Antimony	0.45	0.51	0.10	0.48	NA	0.60	0.72	1.10	0.10	0.91	**41.76%**	NA
Arsenic	7.97	5.60	0.50	6.785	34.93%	NA	5.51	5.15	0.50	5.33	6.75%	NA
Barium	169	162	0.10	165.5	4.23%	NA	313	327	0.10	320	4.38%	NA
Beryllium	< 0.40	< 0.40	0.40	NA	NA	NA	< 0.40	< 0.40	0.40	NA	NA	NA
Bismuth	0.12	0.11	0.10	0.115	NA	0.10	< 0.10	< 0.10	0.10	NA	NA	NA
Cadmium	0.288	0.184	0.050	0.236	NA	2.08	0.663	0.712	0.050	0.6875	7.13%	NA
Calcium	1430	2810	100	2120	**65.09%**	NA	54100	58600	100	56350	7.99%	NA
Chromium	9.2	10.1	1.0	9.65	9.33%	NA	11.0	12.7	1.0	11.85	14.35%	NA
Cobalt	2.57	2.65	0.30	2.61	3.07%	NA	4.46	4.46	0.30	4.46	0.00%	NA
Copper	5.14	5.55	0.50	5.345	7.67%	NA	10.0	10.8	0.50	10.4	7.69%	NA
Iron	16600	13800	100	15200	18.42%	NA	13900	14000	100	13950	0.72%	NA
Lead	9.41	8.89	0.10	9.15	5.68%	NA	6.60	6.74	0.10	6.67	2.10%	NA
Lithium	5.0	6.4	5.0	5.7	NA	0.28	9.4	10.5	5.0	9.95	NA	0.22
Magnesium	977	1840	100	1408.5	**61.27%**	NA	17100	18500	100	17800	7.87%	NA
Manganese	68.1	73.5	0.20	70.8	7.63%	NA	673	598	0.20	635.5	11.80%	NA
Mercury	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA
Molybdenum	1.09	0.92	0.10	1.005	16.92%	NA	1.78	1.81	0.10	1.795	1.67%	NA
Nickel	6.92	7.23	0.80	7.075	4.38%	NA	15.5	15.6	0.80	15.55	0.64%	NA
Phosphorus	495	341	10	418	**36.84%**	NA	1240	1270	10	1255	2.39%	NA
Potassium	628	615	100	621.5	2.09%	NA	968	1050	100	1009	8.13%	NA
Selenium	< 0.50	< 0.50	0.50	NA	NA	NA	< 0.50	< 0.50	0.50	NA	NA	NA
Silver	0.151	0.207	0.050	0.179	NA	1.12	0.061	0.074	0.050	0.0675	NA	0.26
Sodium	142	149	100	145.5	NA	0.07	2360	2310	100	2335	2.14%	NA
Strontium	11.6	11.7	0.10	11.65	0.86%	NA	55.2	60.3	0.10	57.75	8.83%	NA
Thallium	0.105	0.131	0.050	0.118	NA	0.52	0.143	0.142	0.050	0.1425	NA	0.02
Tin	0.37	0.39	0.10	0.38	NA	0.20	0.23	0.24	0.10	0.235	NA	0.10
Titanium	39.6	42.3	1.0	40.95	6.59%	NA	70.1	73.4	1.0	71.75	4.60%	NA
Uranium	0.413	0.369	0.050	0.391	11.25%	NA	1.02	0.974	0.050	0.997	4.61%	NA
Vanadium	35.5	32.9	2.0	34.2	7.60%	NA	28.9	31.8	2.0	30.35	9.56%	NA
Zinc	39.0	40.9	1.0	39.95	4.76%	NA	52.7	54.1	1.0	53.4	2.62%	NA
Zirconium	< 0.50	< 0.50	0.50	NA	NA	NA	1.67	1.77	0.50	1.72	NA	0.20

Notes:

Results are expressed in micrograms per gram (mg/kg),

SCN = sample control number

FDA = field duplicate available

FD = field duplicate

QA/QC = quality assurance/quality control

Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.

Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).

Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.

Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.

NA = not applicable

BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B11 Results of Quality Control/Quality Assurance Analyses - Soil - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	MW16-06-S4	MW16-06-S4	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW16-07-S1	MW16-07-S1	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	MW16-06-S4	MW16-06-S4					MW16-07-S1	MW16-07-S1				
Laboratory ID	-	-					-	-				
Depth (m bgs)	2.8-3.13 m	2.8-3.13 m					0.16-0.49 m	0.16-0.49 m				
Date Sampled	4-Sep-16	4-Sep-16					4-Sep-16	4-Sep-16				
QA/QC	FDA	FD					FDA	FD				
Ions by Sat Paste												
Chloride	266	239	2.5	252.5	10.69%	NA	8.1	7	2.7	7.55	NA	0.41
Sodium	115	123	2.5	119	6.72%	NA	13	13.3	2.7	13.15	NA	0.11
Metals												
Aluminum	8170	9070	100	8620	10.44%	NA	7690	6680	100	7185	14.06%	NA
Antimony	0.46	0.45	0.10	0.455	NA	0.10	0.57	0.53	0.10	0.55	7.27%	NA
Arsenic	7.32	6.96	0.50	7.14	5.04%	NA	7.89	6.70	0.50	7.295	16.31%	NA
Barium	501	361	0.10	431	32.48%	NA	595	478	0.10	536.5	21.81%	NA
Beryllium	0.57	0.56	0.40	0.565	NA	0.02	0.68	0.52	0.40	0.6	NA	0.40
Bismuth	0.12	0.13	0.10	0.125	NA	0.10	0.11	0.10	0.10	0.105	NA	0.10
Cadmium	0.362	0.546	0.050	0.454	**40.53%**	NA	0.362	0.516	0.050	0.439	**35.08%**	NA
Calcium	2390	3660	100	3025	**41.98%**	NA	16800	25000	100	20900	**39.23%**	NA
Chromium	13.7	13.8	1.0	13.75	0.73%	NA	12.8	21.8	1.0	17.3	**52.02%**	NA
Cobalt	6.46	6.77	0.30	6.615	4.69%	NA	6.62	5.99	0.30	6.305	9.99%	NA
Copper	13.8	16.6	0.50	15.2	18.42%	NA	13.8	12.7	0.50	13.25	8.30%	NA
Iron	16100	17200	100	16650	6.61%	NA	17600	15600	100	16600	12.05%	NA
Lead	9.00	9.79	0.10	9.395	8.41%	NA	9.99	9.98	0.10	9.985	0.10%	NA
Lithium	8.7	9.4	5.0	9.05	NA	0.14	10.1	9.6	5.0	9.85	NA	0.10
Magnesium	1980	2690	100	2335	30.41%	NA	6090	9300	100	7695	**41.72%**	NA
Manganese	166	209	0.20	187.5	22.93%	NA	227	282	0.20	254.5	21.61%	NA
Mercury	0.061	0.063	0.050	0.062	NA	0.04	0.058	< 0.050	0.050	NA	NA	NA
Molybdenum	0.98	1.00	0.10	0.99	2.02%	NA	1.25	1.55	0.10	1.4	21.43%	NA
Nickel	18.5	21.4	0.80	19.95	14.54%	NA	18.2	16.7	0.80	17.45	8.60%	NA
Phosphorus	518	518	10	518	0.00%	NA	655	728	10	691.5	10.56%	NA
Potassium	1150	1270	100	1210	9.92%	NA	1120	996	100	1058	11.72%	NA
Selenium	< 0.50	< 0.50	0.50	NA	NA	NA	< 0.50	< 0.50	0.50	NA	NA	NA
Silver	0.148	0.169	0.050	0.1585	NA	0.42	0.096	0.101	0.050	0.0985	NA	0.10
Sodium	298	391	100	344.5	NA	0.93	192	131	100	161.5	NA	0.61
Strontium	27.0	28.0	0.10	27.5	3.64%	NA	31.8	35.2	0.10	33.5	10.15%	NA
Thallium	0.162	0.174	0.050	0.168	NA	0.24	0.144	0.139	0.050	0.1415	NA	0.10
Tin	0.35	0.37	0.10	0.36	NA	0.20	0.38	0.31	0.10	0.345	NA	0.70
Titanium	55.3	77.6	1.0	66.45	33.56%	NA	37.9	35.9	1.0	36.9	5.42%	NA
Uranium	0.836	0.906	0.050	0.871	8.04%	NA	0.820	0.765	0.050	0.7925	6.94%	NA
Vanadium	25.1	26.1	2.0	25.6	3.91%	NA	26.7	27.3	2.0	27	2.22%	NA
Zinc	77.2	71.8	1.0	74.5	7.25%	NA	89.5	110	1.0	99.75	20.55%	NA
Zirconium	3.81	5.36	0.50	4.585	33.81%	NA	2.42	2.03	0.50	2.225	NA	0.78

Notes:

Results are expressed in micrograms per gram (mg/kg),

SCN = sample control number

FDA = field duplicate available

FD = field duplicate

QA/QC = quality assurance/quality control

Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.

Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).

Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.

Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.

NA = not applicable

BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B11 Results of Quality Control/Quality Assurance Analyses - Soil - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	SS-4	SS-4	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	TP16-03 S1	TP16-03 S1	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	SS-4A	SS-4B					02025-07	02025-08				
Laboratory ID	-	-					-	-				
Depth (m bgs)	0.5-0.5 m	0.5-0.5 m					0.5-0.5 m	0.5-0.5 m				
Date Sampled	31-Aug-16	31-Aug-16					6-Sep-16	6-Sep-16				
QA/QC	FDA	FD					FDA	FD				
Ions by Sat Paste												
Chloride	7.9	10.6	2.5	9.25	NA	1.08	32	29.7	3.6	30.85	7.46%	NA
Sodium	10.9	2.9	2.5	6.9	NA	**3.20**	35.9	40.7	3.6	38.3	12.53%	NA
Metals												
Aluminum	3570	3740	100	3655	4.65%	NA	8890	9200	100	9045	3.43%	NA
Antimony	0.49	0.46	0.10	0.475	NA	0.30	0.58	0.61	0.10	0.595	5.04%	NA
Arsenic	4.30	4.82	0.50	4.56	11.40%	NA	8.72	9.65	0.50	9.185	10.13%	NA
Barium	207	249	0.10	228	18.42%	NA	471	474	0.10	472.5	0.63%	NA
Beryllium	< 0.40	< 0.40	0.40	NA	NA	NA	0.65	0.73	0.40	0.69	NA	0.20
Bismuth	< 0.10	< 0.10	0.10	NA	NA	NA	0.14	0.16	0.10	0.15	NA	0.20
Cadmium	0.783	0.710	0.050	0.7465	9.78%	NA	0.329	0.346	0.050	0.3375	5.04%	NA
Calcium	53400	53800	100	53600	0.75%	NA	2900	3160	100	3030	8.58%	NA
Chromium	10.1	8.9	1.0	9.5	12.63%	NA	12.6	14.0	1.0	13.3	10.53%	NA
Cobalt	3.81	3.88	0.30	3.845	1.82%	NA	10.0	9.22	0.30	9.61	8.12%	NA
Copper	10.7	11.0	0.50	10.85	2.76%	NA	17.2	19.5	0.50	18.35	12.53%	NA
Iron	10700	10600	100	10650	0.94%	NA	18400	19500	100	18950	5.80%	NA
Lead	5.39	5.50	0.10	5.445	2.02%	NA	12.4	13.4	0.10	12.9	7.75%	NA
Lithium	8.3	8.4	5.0	8.35	NA	0.02	10.3	10.8	5.0	10.55	NA	0.10
Magnesium	17500	18600	100	18050	6.09%	NA	2100	2280	100	2190	8.22%	NA
Manganese	456	401	0.20	428.5	12.84%	NA	213	210	0.20	211.5	1.42%	NA
Mercury	< 0.050	< 0.050	0.050	NA	NA	NA	0.066	0.061	0.050	0.0635	NA	0.10
Molybdenum	1.60	1.72	0.10	1.66	7.23%	NA	1.24	1.35	0.10	1.295	8.49%	NA
Nickel	14.6	14.9	0.80	14.75	2.03%	NA	21.6	22.5	0.80	22.05	4.08%	NA
Phosphorus	1160	1130	10	1145	2.62%	NA	547	549	10	548	0.36%	NA
Potassium	611	688	100	649.5	11.86%	NA	1050	1080	100	1065	2.82%	NA
Selenium	< 0.50	< 0.50	0.50	NA	NA	NA	< 0.50	< 0.50	0.50	NA	NA	NA
Silver	0.060	0.080	0.050	0.07	NA	0.40	0.103	0.104	0.050	0.1035	NA	0.02
Sodium	< 100	< 100	100	NA	NA	NA	1400	1890	100	1645	29.79%	NA
Strontium	54.5	53.8	0.10	54.15	1.29%	NA	19.2	20.6	0.10	19.9	7.04%	NA
Thallium	0.130	0.138	0.050	0.134	NA	0.16	0.135	0.144	0.050	0.1395	NA	0.18
Tin	0.30	0.26	0.10	0.28	NA	0.40	0.42	0.44	0.10	0.43	NA	0.20
Titanium	42.9	45.0	1.0	43.95	4.78%	NA	35.6	29.9	1.0	32.75	17.40%	NA
Uranium	0.814	0.848	0.050	0.831	4.09%	NA	0.929	1.01	0.050	0.9695	8.35%	NA
Vanadium	24.7	27.4	2.0	26.05	10.36%	NA	27.6	28.2	2.0	27.9	2.15%	NA
Zinc	63.6	66.2	1.0	64.9	4.01%	NA	163	139	1.0	151	15.89%	NA
Zirconium	0.76	0.78	0.50	0.77	NA	0.04	3.07	3.52	0.50	3.295	13.66%	NA

Notes:

Results are expressed in micrograms per gram (mg/kg),

SCN = sample control number

FDA = field duplicate available

FD = field duplicate

QA/QC = quality assurance/quality control

Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.

Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).

Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.

Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.

NA = not applicable

BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B11 Results of Quality Control/Quality Assurance Analyses - Soil - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	TP16-06 S1	TP16-06 S1	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	TP16-12 S1	TP16-12 S1	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	01129-04	01129-05					02028-10	02028-11				
Laboratory ID	-	-					-	-				
Depth (m bgs)	0.5-0.5 m	0.5-0.5 m					0.5-0.5 m	0.5-0.5 m				
Date Sampled	7-Sep-16	7-Sep-16					7-Sep-16	7-Sep-16				
QA/QC	FDA	FD					FDA	FD				
Ions by Sat Paste												
Chloride	14.2	5.7	2.3	9.95	NA	**3.70**	163	183	2.9	173	11.56%	NA
Sodium	16	6.9	2.3	11.45	NA	**3.96**	< 290	< 280	280	NA	NA	NA
Metals												
Aluminum	7980	7280	100	7630	9.17%	NA	8670	8650	100	8660	0.23%	NA
Antimony	0.60	0.52	0.10	0.56	14.29%	NA	0.48	0.49	0.10	0.485	NA	0.10
Arsenic	8.95	8.86	0.50	8.905	1.01%	NA	8.35	8.03	0.50	8.19	3.91%	NA
Barium	1130	1200	0.10	1165	6.01%	NA	194	190	0.10	192	2.08%	NA
Beryllium	0.69	0.62	0.40	0.655	NA	0.18	0.42	0.51	0.40	0.465	NA	0.23
Bismuth	0.11	0.12	0.10	0.115	NA	0.10	0.15	0.14	0.10	0.145	NA	0.10
Cadmium	0.297	0.256	0.050	0.2765	14.83%	NA	0.194	0.304	0.050	0.249	NA	2.20
Calcium	2270	2020	100	2145	11.66%	NA	4620	7560	100	6090	48.28%	NA
Chromium	11.3	10.5	1.0	10.9	7.34%	NA	12.2	12.8	1.0	12.5	4.80%	NA
Cobalt	9.99	9.78	0.30	9.885	2.12%	NA	5.82	6.06	0.30	5.94	4.04%	NA
Copper	15.5	14.7	0.50	15.1	5.30%	NA	13.4	15.2	0.50	14.3	12.59%	NA
Iron	18400	17300	100	17850	6.16%	NA	17000	17000	100	17000	0.00%	NA
Lead	11.2	11.1	0.10	11.15	0.90%	NA	11.1	10.9	0.10	11	1.82%	NA
Lithium	8.7	8.1	5.0	8.4	NA	0.12	9.0	10.1	5.0	9.55	NA	0.22
Magnesium	1640	1650	100	1645	0.61%	NA	2600	3780	100	3190	36.99%	NA
Manganese	203	211	0.20	207	3.86%	NA	127	177	0.20	152	32.89%	NA
Mercury	0.057	0.054	0.050	0.0555	NA	0.06	< 0.050	< 0.050	0.050	NA	NA	NA
Molybdenum	1.21	1.07	0.10	1.14	12.28%	NA	1.28	1.18	0.10	1.23	8.13%	NA
Nickel	24.9	24.0	0.80	24.45	3.68%	NA	13.5	14.9	0.80	14.2	9.86%	NA
Phosphorus	501	461	10	481	8.32%	NA	445	538	10	491.5	18.92%	NA
Potassium	1000	836	100	918	17.86%	NA	865	882	100	873.5	1.95%	NA
Selenium	< 0.50	< 0.50	0.50	NA	NA	NA	< 0.50	< 0.50	0.50	NA	NA	NA
Silver	0.077	0.090	0.050	0.0835	NA	0.26	0.085	0.080	0.050	0.0825	NA	0.10
Sodium	355	424	100	389.5	NA	0.69	769	778	100	773.5	1.16%	NA
Strontium	24.7	23.4	0.10	24.05	5.41%	NA	20.2	22.4	0.10	21.3	10.33%	NA
Thallium	0.139	0.133	0.050	0.136	NA	0.12	0.120	0.101	0.050	0.1105	NA	0.38
Tin	0.32	0.33	0.10	0.325	NA	0.10	0.36	0.36	0.10	0.36	NA	0.00
Titanium	39.4	34.0	1.0	36.7	14.71%	NA	37.6	33.0	1.0	35.3	13.03%	NA
Uranium	1.02	0.993	0.050	1.0065	2.68%	NA	0.799	0.962	0.050	0.8805	18.51%	NA
Vanadium	27.0	24.3	2.0	25.65	10.53%	NA	29.3	27.5	2.0	28.4	6.34%	NA
Zinc	102	96.7	1.0	99.35	5.33%	NA	70.1	75.7	1.0	72.9	7.68%	NA
Zirconium	2.69	2.46	0.50	2.575	8.93%	NA	1.24	1.42	0.50	1.33	NA	0.36

Notes:

Results are expressed in micrograms per gram (mg/kg),

SCN = sample control number

FDA = field duplicate available

FD = field duplicate

QA/QC = quality assurance/quality control

Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.

Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).

Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.

Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.

NA = not applicable

BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B11 Results of Quality Control/Quality Assurance Analyses - Soil - Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	TP16-31	TP16-31	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	BH16-13 S2	BH16-13 S2	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	TP16-31-S2	TP16-31-S2FD					01132-02	01132-03				
Laboratory ID							-	-				
Depth (m bgs)	1.8-1.9	1.8-1.9					0.91-1.22	0.91-1.22				
Date Sampled	7-Nov-16	7-Nov-16					9-Sep-16	9-Sep-16				
QA/QC	FDA	FD					FDA	FD				
Ions by Sat Paste												
Chloride	1410	1370	35	1390	2.88%	NA	70.4	54.4	3.1	62.4	25.64%	NA
Sodium	760	791	3.5	775.5	4.00%	NA	16.3	13	3.1	14.65	NA	1.06
Metals												
Aluminum	7860	8620	100	8240	9.22%	NA	10600	11500	100	11050	8.14%	NA
Antimony	0.47	0.51	0.10	0.49	NA	0.40	0.60	0.55	0.10	0.575	8.70%	NA
Arsenic	7.78	8.36	0.50	8.07	7.19%	NA	9.30	9.76	0.50	9.53	4.83%	NA
Barium	304	304	0.10	304	0.00%	NA	737	732	0.10	734.5	0.68%	NA
Beryllium	0.63	0.63	0.40	0.63	NA	0.00	0.75	0.81	0.40	0.78	NA	0.15
Bismuth	0.18	0.19	0.10	0.185	NA	0.10	0.17	0.20	0.10	0.185	NA	0.30
Cadmium	0.498	0.437	0.050	0.4675	13.05%	NA	0.444	0.535	0.050	0.4895	18.59%	NA
Calcium	3410	3480	100	3445	2.03%	NA	2490	2730	100	2610	9.20%	NA
Chromium	15.6	16.7	1.0	16.15	6.81%	NA	17.2	19.1	1.0	18.15	10.47%	NA
Cobalt	9.98	9.27	0.30	9.625	7.38%	NA	9.07	10.1	0.30	9.585	10.75%	NA
Copper	21	21.7	0.50	21.35	3.28%	NA	19.8	23.1	0.50	21.45	15.38%	NA
Iron	18300	19700	100	19000	7.37%	NA	26800	21000	100	23900	24.27%	NA
Lead	11.6	11.9	0.10	11.75	2.55%	NA	12.4	13.4	0.10	12.9	7.75%	NA
Lithium	10.2	11.2	5.0	10.7	NA	0.20	11.6	11.8	5.0	11.7	NA	0.04
Magnesium	2820	3080	100	2950	8.81%	NA	2290	2570	100	2430	11.52%	NA
Manganese	383	322	0.20	352.5	17.30%	NA	346	298	0.20	322	14.91%	NA
Mercury	<0.050	0.05	0.050	NA	NA	NA	0.073	0.072	0.050	NA	NA	NA
Molybdenum	1.26	1.31	0.10	1.285	3.89%	NA	1.75	1.60	0.10	1.675	8.96%	NA
Nickel	34	34.5	0.80	34.25	1.46%	NA	29.7	31.0	0.80	30.35	4.28%	NA
Phosphorus	559	543	10	551	2.90%	NA	671	613	10	642	9.03%	NA
Potassium	1000	1150	100	1075	13.95%	NA	1490	1610	100	1550	7.74%	NA
Selenium	<0.50	<0.50	0.50	NA	NA	NA	0.56	0.51	0.50	NA	NA	NA
Silver	0.094	0.101	0.050	0.0975	NA	0.14	0.128	0.144	0.050	0.136	NA	0.32
Sodium	1470	1420	100	NA	NA	NA	< 100	111	100	NA	NA	NA
Strontium	30.6	31	0.10	30.8	1.30%	NA	33.1	38.0	0.10	35.55	13.78%	NA
Thallium	0.242	0.221	0.050	0.2315	NA	0.42	0.229	0.230	0.050	0.2295	NA	0.02
Tin	0.58	0.57	0.10	0.575	1.74%	NA	0.50	0.54	0.10	0.52	7.69%	NA
Titanium	34.6	47.8	1.0	41.2	32.04%	NA	41.6	45.9	1.0	43.75	9.83%	NA
Uranium	0.867	0.901	0.050	0.884	3.85%	NA	1.10	1.05	0.050	1.075	4.65%	NA
Vanadium	25.3	27.9	2.0	26.6	9.77%	NA	36.5	38.0	2.0	37.25	4.03%	NA
Zinc	73.4	78.4	1.0	75.9	6.59%	NA	106	105	1.0	105.5	0.95%	NA
Zirconium	5.39	5.11	0.50	5.25	5.33%	NA	3.86	4.70	0.50	4.28	19.63%	NA

Notes:

Results are expressed in micrograms per gram (mg/kg),

SCN = sample control number

FDA = field duplicate available

FD = field duplicate

QA/QC = quality assurance/quality control

Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.

Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).

Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.

Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.

NA = not applicable

BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B12 Results of Quality Control/Quality Assurance Analyses - Soil Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BH16-03 S1	BH16-03 S1	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	BH16-10 S2	BH16-10 S2	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW16-06-S4	MW16-06-S4	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	02022-09	02022-10					02026-02	02026-03					MW16-06-S4	MW16-06-S4				
Laboratory ID	-	-					-	-					-	-				
Depth (m bgs)	0.15-0.45 m	0.15-0.45 m					0.9-1.3 m	0.9-1.3 m					2.8-3.13 m	2.8-3.13 m				
Date Sampled	6-Sep-16	6-Sep-16					9-Sep-16	9-Sep-16					4-Sep-16	4-Sep-16				
QA/QC	FDA	FD					FDA	FD					FDA	FD				
Polycyclic Aromatic Hydrocarbons																		
Acenaphthene	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA
Acenaphthylene	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA
Anthracene	< 0.0040	< 0.0040	0.004	NA	NA	NA	< 0.0040	< 0.0040	0.004	NA	NA	NA	< 0.0040	< 0.0040	0.004	NA	NA	NA
Benzo(a)anthracene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Benzo(a)pyrene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Benzo(g,h,i)perylene	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
Benzo(k)fluoranthene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Chrysene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Dibenzo(a,h)anthracene	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
Fluoranthene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Benzo(a)pyrene Total Potency Equivalence (TPE)	0.041	0.041	0.01	0.041	NA	0.00	0.041	0.041	0.01	0.041	NA	0.00	0.041	0.041	0.01	0.041	NA	0.00
Benzo(b,j) fluoranthene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Fluorene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
Index of Additive Cancer Risk (IACR)	0.31	0.31	0.1	0.31	NA	0.00	0.31	0.31	0.1	0.31	NA	0.00	0.31	0.31	0.1	0.31	NA	0.00
Naphthalene	< 0.010	< 0.010	0.01	NA	NA	NA	< 0.010	< 0.010	0.01	NA	NA	NA	< 0.010	< 0.010	0.01	NA	NA	NA
Phenanthrene	0.010	< 0.010	0.01	NA	NA	NA	0.013	< 0.010	0.01	NA	NA	NA	< 0.010	< 0.010	0.01	NA	NA	NA
Pyrene	< 0.020	< 0.020	0.01	NA	NA	NA	< 0.020	0.026	0.01	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
2-methylnaphthalene	< 0.020	< 0.020	0.01	NA	NA	NA	< 0.020	< 0.020	0.01	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
PAH, Low Molecular Weight	< 0.050	< 0.050	0.04	NA	NA	NA	< 0.050	< 0.050	0.04	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
PAH, High Molecular Weight	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
PAH, Total	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
EPH (C10-C19)	< 100	< 100	100.0	NA	NA	NA	< 100	< 100	100.0	NA	NA	NA	< 100	< 100	100.0	NA	NA	NA
LEPH (C10-C19) Less PAHs	< 100	< 100	100.0	NA	NA	NA	< 100	< 100	100.0	NA	NA	NA	< 100	< 100	100.0	NA	NA	NA
EPH (C19-C32)	< 100	< 100	100.0	NA	NA	NA	< 100	160	100.0	NA	NA	NA	< 100	< 100	100.0	NA	NA	NA
HEPH (C19-C32) Less PAHs	< 100	< 100	100.0	NA	NA	NA	< 100	160	100.0	NA	NA	NA	< 100	< 100	100.0	NA	NA	NA
VPH (C6-C10)	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA
VHC (C6-C10)	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA
Petroleum Hydrocarbons - F1 (C6-C10)	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA
Petroleum Hydrocarbons - F2 (C10-C16)	< 10	< 10	10.0	NA	NA	NA	15	< 10	10.0	NA	NA	NA	< 10	< 10	10.0	NA	NA	NA
Petroleum Hydrocarbons - F3 (C16-C34)	65	44	10.0	54.5	**38.53%**	NA	110	220	10.0	165	**66.67%**	NA	18	17	10.0	17.5	NA	0.10
Petroleum Hydrocarbons - F4 (C34-C50)	14	14	10.0	14	NA	0.00	43	29	10.0	36	NA	1.40	< 10	< 10	10.0	NA	NA	NA

Notes:
Results are expressed in micrograms per gram (mg/kg), unless otherwise indicated.
SCN = sample control number
FDA = field duplicate available
FD = field duplicate
QA/QC = quality assurance/quality control
Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.
Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).
Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.
Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.
NA = not applicable
BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B12 Results of Quality Control/Quality Assurance Analyses - Soil Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	MW16-08	MW16-08					TP16-12 S1	TP16-12 S1					TP16-29	TP16-29				
SCN	MW16-08-S4	MW16-08-S4	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	02028-10	02028-11	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	TP16-29	TP16-29	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
Laboratory ID	-	-					-	-					TP16-29-S3	TP16-29-S3 FD				
Depth (m bgs)	1.97-2.30 m	1.97-2.30 m					0.5-0.5 m	0.5-0.5 m					3.0-3.2	3.0-3.2				
Date Sampled	5-Sep-16	5-Sep-16					7-Sep-16	7-Sep-16					7-Nov-16	7-Nov-16				
QA/QC	FDA	FD					FDA	FD					FDA	FD				
Polycyclic Aromatic Hydrocarbons																		
Acenaphthene	0.015	0.0074	0.005	0.0112	NA	1.52	0.050	0.069	0.005	0.0595	31.93%	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA
Acenaphthylene	< 0.0050	< 0.0050	0.005	NA	NA	NA	0.018	0.023	0.005	0.0205	NA	1.00	< 0.0050	< 0.0050	0.005	NA	NA	NA
Anthracene	< 0.0040	< 0.0040	0.004	NA	NA	NA	0.0069	0.0087	0.004	0.0078	NA	0.45	< 0.0040	< 0.0040	0.004	NA	NA	NA
Benzo(a)anthracene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Benzo(a)pyrene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Benzo(g,h,i)perylene	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
Benzo(k)fluoranthene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Chrysene	0.023	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Dibenzo(a,h)anthracene	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
Fluoranthene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Benzo(a)pyrene Total Potency Equivalence (TPE)	0.041	0.041	0.01	0.041	NA	0.00	0.041	0.041	0.01	0.041	NA	0.00	0.041	0.041	0.01	0.041	NA	0.00
Benzo(b,j) fluoranthene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
Fluorene	0.022	< 0.020	0.02	NA	NA	NA	0.079	0.10	0.02	0.0895	NA	1.05	< 0.020	< 0.020	0.02	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
Index of Additive Cancer Risk (IACR)	0.31	0.31	0.1	0.31	NA	0.00	0.31	0.31	0.1	0.31	NA	0.00	0.31	0.31	0.1	0.31	NA	0.00
Naphthalene	0.22	0.18	0.01	0.2	20.00%	NA	0.031	0.14	0.01	0.0855	127.49%	NA	< 0.010	< 0.010	0.01	NA	NA	NA
Phenanthrene	0.037	0.024	0.01	0.0305	NA	1.30	0.074	0.11	0.01	0.092	39.13%	NA	< 0.010	< 0.010	0.01	NA	NA	NA
Pyrene	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA
2-methylnaphthalene	0.42	0.31	0.02	0.365	30.14%	NA	0.32	0.78	0.02	0.55	83.64%	NA	< 0.020	< 0.020	0.02	NA	NA	NA
PAH, Low Molecular Weight	0.72	0.52	0.02	0.62	32.26%	NA	0.57	1.2	0.02	0.885	71.19%	NA	< 0.050	< 0.050	0.02	NA	NA	NA
PAH, High Molecular Weight	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA
PAH, Total	0.74	0.52	0.05	0.63	34.92%	NA	0.57	1.2	0.05	0.885	71.19%	NA	< 0.050	< 0.050	0.05	NA	NA	NA
EPH (C10-C19)	320	180	100	250	NA	1.40	1000	1300	100.0	1150	26.09%	NA	< 100	< 100	100	NA	NA	NA
LEPH (C10-C19) Less PAHs	320	180	100	250	NA	1.40	1000	1300	100.0	1150	26.09%	NA	< 100	< 100	100	NA	NA	NA
EPH (C19-C32)	190	140	100	165	NA	0.50	< 100	110	100.0	NA	NA	NA	< 100	< 100	100	NA	NA	NA
HEPH (C19-C32) Less PAHs	190	140	100	165	NA	0.50	< 100	110	100.0	NA	NA	NA	< 100	< 100	100	NA	NA	NA
VPH (C6-C10)	56	31	10	43.5	NA	**2.50**	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10	NA	NA	NA
VHC (C6-C10)	60	33	10	46.5	NA	**2.70**	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10	NA	NA	NA
Petroleum Hydrocarbons - F1 (C6-C10)-BTEX	59	37	10	48	NA	**2.20**	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10	NA	NA	NA
Petroleum Hydrocarbons - F1 (C6-C10)	63	39	10	51	**47.06%**	NA	< 10	< 10	10.0	NA	NA	NA	< 10	< 10	10	NA	NA	NA
Petroleum Hydrocarbons - F2 (C10-C16)	280	150	10	215	**60.47%**	NA	1000	1300	10.0	1150	26.09%	NA	< 10	< 10	10	NA	NA	NA
Petroleum Hydrocarbons - F3 (C16-C34)	320	220	10	270	**37.04%**	NA	200	290	10.0	245	36.73%	NA	35	15	10	25	NA	**2.00**
Petroleum Hydrocarbons - F4 (C34-C50)	110	72	10	91	**41.76%**	NA	11	27	10.0	19	NA	1.60	< 10	< 10	10	NA	NA	NA

Notes:
Results are expressed in micrograms per gram (mg/kg), unless otherwise indicated.
SCN = sample control number
FDA = field duplicate available
FD = field duplicate
QA/QC = quality assurance/quality control
Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.
Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).
Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.
Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.
NA = not applicable
BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B13 Results of Quality Control/Quality Assurance Analyses - Soil Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	BH16-03 S1	BH16-03 S1	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	BH16-10 S2	BH16-10 S2	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW16-06-S4	MW16-06-S4	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	02022-09	02022-10					02026-02	02026-03					MW16-06-S4	MW16-06-S4				
Laboratory ID	-	-					-	-					-	-				
Depth (m bgs)	0.15-0.45 m	0.15-0.45 m					0.9-1.3 m	0.9-1.3 m					2.8-3.13 m	2.8-3.13 m				
Date Sampled	6-Sep-16	6-Sep-16					9-Sep-16	9-Sep-16					4-Sep-16	4-Sep-16				
QA/QC	FDA	FD					FDA	FD					FDA	FD				
Volatile Organic Compounds																		
Bromodichloromethane (BDCM)	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA
Bromomethane (Methyl bromide)	< 0.30	< 0.30	0.300	NA	NA	NA	< 0.30	< 0.30	0.300	NA	NA	NA	< 0.30	< 0.30	0.300	NA	NA	NA
Bromoform (Tribromomethane)	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA
Carbon Tetrachloride	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
Chlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.0250	NA	NA	NA	< 0.025	< 0.025	0.0250	NA	NA	NA
Chloroethane	< 0.10	< 0.10	0.100	NA	NA	NA	< 0.10	< 0.10	0.100	NA	NA	NA	< 0.10	< 0.10	0.100	NA	NA	NA
Chloroform	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA
Chloromethane	< 0.10	< 0.10	0.100	NA	NA	NA	< 0.10	< 0.10	0.10	NA	NA	NA	< 0.10	< 0.10	0.10	NA	NA	NA
Dichloromethane (DCM) (Methylene Chloride)	< 0.30	< 0.30	0.300	NA	NA	NA	< 0.10	< 0.10	0.10	NA	NA	NA	< 0.10	< 0.10	0.10	NA	NA	NA
Dibromochloromethane (DBCM)	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA
1,2-dibromoethane (Ethylene Dibromide) (EDB)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,2-dichlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,3-dichlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,4-dichlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,1-dichloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,2-dichloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,1-dichloroethene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,2-dichloropropane (Propylene Dichloride)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,3-dichloropropene (Cis)	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA
1,3-dichloropropene (Trans)	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA
1,1,1,2-tetrachloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,1,2,2-tetrachloroethane	0.03	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
Tetrachloroethylene (PCE/PERC)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,1,1-trichloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,1,2-trichloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
Trichloroethylene (TCE)	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA
Trichlorofluoromethane (Freon 11)	< 0.20	< 0.20	0.20	NA	NA	NA	< 0.20	< 0.20	0.200	NA	NA	NA	< 0.20	< 0.20	0.200	NA	NA	NA
Vinyl Chloride (Chloroethene)	< 0.060	< 0.060	0.06	NA	NA	NA	< 0.060	< 0.060	0.060	NA	NA	NA	< 0.060	< 0.060	0.060	NA	NA	NA
Benzene	< 0.0050	< 0.0050	0.01	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA
Toluene	0.091	< 0.020	0.02	NA	NA	NA	1.5	0.48	0.020	0.99	**103.03%**	NA	< 0.020	< 0.020	0.020	NA	NA	NA
Ethylbenzene	< 0.010	< 0.010	0.01	NA	NA	NA	< 0.010	< 0.010	0.010	NA	NA	NA	< 0.010	< 0.010	0.010	NA	NA	NA
Xylenes, Total	0.097	0.052	0.05	0.0745	NA	0.87	< 0.040	< 0.040	0.040	NA	NA	NA	< 0.040	< 0.040	0.040	NA	NA	NA
o-Xylene	< 0.040	< 0.040	0.04	NA	NA	NA	< 0.040	< 0.040	0.040	NA	NA	NA	< 0.040	< 0.040	0.040	NA	NA	NA
Styrene	< 0.030	< 0.030	0.03	NA	NA	NA	< 0.030	< 0.030	0.030	NA	NA	NA	< 0.030	< 0.030	0.030	NA	NA	NA
Methyl tert-Butyl Ether	< 0.10	0.14	0.10	NA	NA	NA	< 0.10	< 0.10	0.100	NA	NA	NA	< 0.10	< 0.10	0.100	NA	NA	NA
m,p-Xylenes	0.097	0.052	0.04	0.0745	NA	1.13	< 0.040	< 0.040	0.040	NA	NA	NA	< 0.040	< 0.040	0.040	NA	NA	NA
1,2,3-Trichlorobenzene	< 0.025	< 0.025	0.03	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
1,2,4-Trichlorobenzene	< 0.025	< 0.025	0.03	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA
Hexachlorobutadiene	< 0.20	< 0.20	0.20	NA	NA	NA	< 0.20	< 0.20	0.200	NA	NA	NA	< 0.20	< 0.20	0.200	NA	NA	NA

Notes:
Results are expressed in micrograms per gram (mg/kg), unless otherwise indicated.

SCN = sample control number

FDA = field duplicate available

FD = field duplicate

QA/QC = quality assurance/quality control

Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.

Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).

Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.

Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.

NA = not applicable

BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B13 Results of Quality Control/Quality Assurance Analyses - Soil Volatile Organic Compounds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	MW16-08	MW16-08	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	TP16-12 S1	TP16-12 S1	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	TP16-29	TP16-29	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	BH16-13 S2	BH16-13 S2	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	MW16-08-S4	MW16-08-S4					02028-10	02028-11					TP16-29	TP16-29					01132-02	01132-03				
Laboratory ID	-	-					-	-					TP16-29-S3	TP16-29-S3 FD					-	-				
Depth (m bgs)	1.97-2.30 m	1.97-2.30 m					0.5-0.5 m	0.5-0.5 m					3.0-3.2	3.0-3.2					0.91-1.22	0.91-1.22				
Date Sampled	5-Sep-16	5-Sep-16					7-Sep-16	7-Sep-16					7-Nov-16	7-Nov-16					9-Sep-16	9-Sep-16				
QA/QC	FDA	FD					FDA	FD					FDA	FD					FDA	FD				
Volatile Organic Compounds																								
Bromodichloromethane (BDCM)	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	-	-	-	NA	NA	NA
Bromomethane (Methyl bromide)	< 0.30	< 0.30	0.3	NA	NA	NA	< 0.30	< 0.30	0.300	NA	NA	NA	< 0.30	< 0.30	0.3	NA	NA	NA	-	-	-	NA	NA	NA
Bromoform (Tribromomethane)	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	-	-	-	NA	NA	NA
Carbon Tetrachloride	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
Chlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.0250	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
Chloroethane	< 0.10	< 0.10	0.1	NA	NA	NA	< 0.10	< 0.10	0.100	NA	NA	NA	< 0.10	< 0.10	0.1	NA	NA	NA	-	-	-	NA	NA	NA
Chloroform	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	-	-	-	NA	NA	NA
Chloromethane	< 0.10	< 0.10	0.1	NA	NA	NA	< 0.10	< 0.10	0.10	NA	NA	NA	< 0.10	< 0.10	0.1	NA	NA	NA	-	-	-	NA	NA	NA
Dichloromethane (DCM) (Methylene Chloride)	< 0.10	< 0.10	0.1	NA	NA	NA	< 0.10	< 0.10	0.10	NA	NA	NA	< 0.10	< 0.10	0.1	NA	NA	NA	-	-	-	NA	NA	NA
Dibromochloromethane (DBCM)	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	-	-	-	NA	NA	NA
1,2-dibromoethane (Ethylene Dibromide) (EDB)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,2-dichlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,3-dichlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,4-dichlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,1-dichloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,2-dichloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,1-dichloroethene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,2-dichloroethylene (Cis) (1,2-dichloroethene)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,2-dichloroethylene (Trans) (1,2-dichloroethene)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,2-dichloropropane (Propylene Dichloride)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,3-dichloropropene (Cis)	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	-	-	-	NA	NA	NA
1,3-dichloropropene (Trans)	< 0.050	< 0.050	0.05	NA	NA	NA	< 0.050	< 0.050	0.050	NA	NA	NA	< 0.050	< 0.050	0.05	NA	NA	NA	-	-	-	NA	NA	NA
1,1,1,2-tetrachloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,1,2,2-tetrachloroethane	0.76	0.49	0.025	0.625	**43.20%**	NA	< 0.025	0.041	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
Tetrachloroethylene (PCE/PERC)	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,1,1-trichloroethane	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,1,2-trichloroethane	0.067	0.033	0.025	0.05	NA	1.36	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
Trichloroethylene (TCE)	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	-	-	-	NA	NA	NA
Trichlorofluoromethane (Freon 11)	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.200	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA	-	-	-	NA	NA	NA
Vinyl Chloride (Chloroethene)	< 0.060	< 0.060	0.06	NA	NA	NA	< 0.060	< 0.060	0.060	NA	NA	NA	< 0.060	< 0.060	0.06	NA	NA	NA	-	-	-	NA	NA	NA
Benzene	0.025	0.02	0.005	0.0225	NA	1.00	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	0.013	0.005	NA	NA	NA
Toluene	0.091	0.059	0.02	0.075	NA	1.60	0.22	< 0.020	0.020	NA	NA	NA	< 0.020	< 0.020	0.02	NA	NA	NA	0.022	0.044	0.020	0.033	NA	1.10
Ethylbenzene	0.72	0.33	0.01	0.525	**74.29%**	NA	< 0.010	< 0.010	0.010	NA	NA	NA	< 0.010	< 0.010	0.01	NA	NA	NA	< 0.010	0.015	0.010	NA	NA	NA
Xylenes, Total	3.3	1.7	0.04	2.5	**64.00%**	NA	< 0.040	< 0.040	0.040	NA	NA	NA	< 0.040	< 0.040	0.04	NA	NA	NA	< 0.040	0.057	0.040	NA	NA	NA
o-Xylene	1.5	0.77	0.04	1.135	**64.32%**	NA	< 0.040	< 0.040	0.040	NA	NA	NA	< 0.040	< 0.040	0.04	NA	NA	NA	< 0.040	< 0.040	0.040	NA	NA	NA
Styrene	< 0.030	< 0.030	0.03	NA	NA	NA	< 0.030	< 0.030	0.030	NA	NA	NA	< 0.030	< 0.030	0.03	NA	NA	NA	< 0.030	< 0.030	0.030	NA	NA	NA
Methyl tert-Butyl Ether	< 0.10	< 0.10	0.1	NA	NA	NA	< 0.10	< 0.10	0.100	NA	NA	NA	< 0.10	< 0.10	0.1	NA	NA	NA	< 0.10	< 0.10	0.100	NA	NA	NA
m,p-Xylenes	1.8	0.92	0.04	1.36	**64.71%**	NA	< 0.040	< 0.040	0.040	NA	NA	NA	< 0.040	< 0.040	0.04	NA	NA	NA	< 0.040	0.057	0.040	NA	NA	NA
1,2,3-Trichlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
1,2,4-Trichlorobenzene	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	< 0.025	< 0.025	0.025	NA	NA	NA	-	-	-	NA	NA	NA
Hexachlorobutadiene	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.200	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA	-	-	-	NA	NA	NA

Notes:
Results are expressed in micrograms per gram (mg/kg), unless otherwise indicated.

SCN = sample control number

FDA = field duplicate available

FD = field duplicate

QA/QC = quality assurance/quality control

Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.

Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).

Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.

Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.

NA = not applicable

BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B14 Results of Quality Control/Quality Assurance Analyses - Leachable Soil
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	MW16-08/SA4 (FD)	MW16-08/SA4	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
SCN	503297-10-01	503297-10-01				
Laboratory ID	PL6977	PL6978				
Depth (m bgs)	1.97-2.3 m	1.97-2.3 m				
Date Sampled	5-Sep-16	5-Sep-16				
QA/QC	FDA	FD				
Leachate F2 (C10-C16 Hydrocarbons)	<200	<200	200	NA	NA	NA
Leachate F3 (C16-C34 Hydrocarbons)	<200	<200	200	NA	NA	NA
Leachate F4 (C34-C50 Hydrocarbons)	<3000	<3000	3000	NA	NA	NA
Leachable Benzene	<10	<10	10.0	NA	NA	NA
Leachable Bromodichloromethane	<10	<10	10.0	NA	NA	NA
Leachable Bromoform	<10	<10	10.0	NA	NA	NA
Leachable Bromomethane	<10	<10	10.0	NA	NA	NA
Leachable Carbon tetrachloride	<10	<10	10.0	NA	NA	NA
Leachable Chlorobenzene	<10	<10	10.0	NA	NA	NA
Leachable Chlorodibromomethane	<10	<10	10.0	NA	NA	NA
Leachable Chloroethane	<10	<10	10.0	NA	NA	NA
Leachable Chloroform	<10	<10	10.0	NA	NA	NA
Leachable Chloromethane	<10	<10	10.0	NA	NA	NA
Leachable 1,2-dibromoethane	<10	<10	10.0	NA	NA	NA
Leachable 1,2-dichlorobenzene	<10	<10	10.0	NA	NA	NA
Leachable 1,3-dichlorobenzene	<10	<10	10.0	NA	NA	NA
Leachable 1,4-dichlorobenzene	<10	<10	10.0	NA	NA	NA
Leachable 1,1-dichloroethane	<10	<10	10.0	NA	NA	NA
Leachable 1,2-dichloroethane	<10	<10	10.0	NA	NA	NA
Leachable 1,1-dichloroethene	<10	<10	10.0	NA	NA	NA
Leachable cis-1,2-dichloroethene	<10	<10	10.0	NA	NA	NA
Leachable trans-1,2-dichloroethene	<10	<10	10.0	NA	NA	NA
Leachable Dichloromethane	<10	<10	10.0	NA	NA	NA
Leachable 1,2-dichloropropane	<10	<10	10.0	NA	NA	NA
Leachable cis-1,3-dichloropropene	<10	<10	10.0	NA	NA	NA
Leachable trans-1,3-dichloropropene	<10	<10	10.0	NA	NA	NA
Leachable Ethylbenzene	<10	<10	10.0	NA	NA	NA
Leachable Methyl methacrylate	<10	<10	10.0	NA	NA	NA
Leachable Methyl-tert-butylether (MTBE)	<10	<10	10.0	NA	NA	NA
Leachable Styrene	<10	<10	10.0	NA	NA	NA
Leachable 1,1,1,2-tetrachloroethane	<10	<10	10.0	NA	NA	NA
Leachable 1,1,2,2-tetrachloroethane	<10	<10	10.0	NA	NA	NA
Leachable Tetrachloroethene	<10	<10	10.0	NA	NA	NA
Leachable Toluene	<10	<10	10.0	NA	NA	NA
Leachable 1,2,3-trichlorobenzene	<10	<10	10.0	NA	NA	NA
Leachable 1,2,4-trichlorobenzene	<10	<10	10.0	NA	NA	NA
Leachable 1,3,5-trichlorobenzene	<10	<10	10.0	NA	NA	NA
Leachable 1,1,1-trichloroethane	<10	<10	10.0	NA	NA	NA
Leachable 1,1,2-trichloroethane	<10	<10	10.0	NA	NA	NA
Leachable Trichloroethene	<10	<10	10.0	NA	NA	NA
Leachable Trichlorofluoromethane	<10	<10	10.0	NA	NA	NA
Leachable 1,2,4-trimethylbenzene	18	28	10.0	23	NA	1.00
Leachable 1,3,5-trimethylbenzene	<10	<10	10.0	NA	NA	NA
Leachable Vinyl chloride	<10	<10	10.0	NA	NA	NA
Leachable Xylenes (Total)	<10	<10	10.0	NA	NA	NA
Leachable m & p-Xylene	<20	<20	20.00	NA	NA	NA
Leachable o-Xylene	<10	<10	10.0	NA	NA	NA
Leachate LEPH (C10-C19 less PAH)	<200	<200	200.00	NA	NA	NA
Leachate HEPH (C19-C32 less PAH)	<200	<200	200.00	NA	NA	NA
Leachate EPH (C10-C19)	200	<200	200.00	NA	NA	NA
Leachate EPH (C19-C32)	<200	<200	200.00	NA	NA	NA
Leachate Low Molecular Weight PAH`s	9.4	7.4	0.50	8.4	23.81%	NA
Leachate High Molecular Weight PAH`s	<0.20	<0.20	0.20	NA	NA	NA
Leachate Total PAH	9.4	7.4	0.5	8.4	23.81%	NA
Leachate Naphthalene	4.3	3.2	0.10	3.75	29.33%	NA
Leachate 2-Methylnaphthalene	4.9	3.8	0.10	4.35	25.29%	NA
Leachate Quinoline	<0.50	<0.50	0.50	NA	NA	NA
Leachate Acenaphthylene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Acenaphthene	0.1	<0.10	0.10	NA	NA	NA
Leachate Fluorene	0.15	0.26	0.26	0.205	NA	0.42
Leachate Phenanthrene	<0.10	0.15	0.15	NA	NA	NA
Leachate Anthracene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Acridine	<0.50	<0.50	0.5	NA	NA	NA
Leachate Fluoranthene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Pyrene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Benzo(a)anthracene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Chrysene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Benzo(b&j)fluoranthene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Benzo(k)fluoranthene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Benzo(a)pyrene	<0.10	<0.10	0.10	NA	NA	NA
Leachate Indeno(1,2,3-cd)pyrene	<0.20	<0.20	0.2	NA	NA	NA
Leachate Dibenz(a,h)anthracene	<0.20	<0.20	0.2	NA	NA	NA
Leachate Benzo(g,h,i)perylene	<0.20	<0.20	0.2	NA	NA	NA

Notes:
Results are expressed in micrograms per litre (ug/L), unless otherwise indicated.
SCN = sample control number
FDA = field duplicate available
FD = field duplicate
QA/QC = quality assurance/quality control
Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.
Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).
Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.
Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.
NA = not applicable
BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B15 Results of Quality Control/Quality Assurance Analyses - Groundwater Dissolved Metals
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	MW16-08	MW16-08					MW09-01	MW09-01					MW16-02	MW16-02				
SCN	MW16-08A	MW16-08B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW09-01A	MW09-01B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW16-02A	MW16-02B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
Laboratory ID	MW16-08A	MW16-08B					MW09-01A	MW09-01B					MW16-02A	MW16-02B				
Date Sampled	8-Sep-16	8-Sep-16					3-Sep-16	3-Sep-16					6-Nov-16	6-Nov-16				
QA/QC	FDA	FD					FDA	FD					FDA	FD				
Anions and Nutrients																		
Chloride (Cl)	740	770	5.0	755	3.97%	NA	130	130	5.0	130	0.00%	NA	6800	6700	5.0	6750	1.48%	NA
Total Sodium (Na)	248	250	0.05	249	0.80%	NA	-	-	0.05	NA	NA	NA	2600	2700	0.05	NA	NA	NA
Dissolved Metals																		
Aluminum	0.0467	0.0444	0.003	0.04555	5.05%	NA	0.167	0.171	0.003	0.169	2.37%	NA	0.0082	0.0077	0.003	0.00795	NA	0.17
Antimony	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.0010	< 0.0010	0.0005	NA	NA	NA
Arsenic	0.00030	0.00033	0.0001	0.000315	NA	0.30	0.00019	0.00020	0.0001	0.000195	NA	0.10	0.00024	0.0003	0.0001	0.00027	NA	0.60
Barium	3.46	3.36	0.001	3.41	2.93%	NA	1.53	1.55	0.001	1.54	1.30%	NA	16.8	18.7	0.001	17.75	10.70%	NA
Beryllium	< 0.00010	< 0.00010	0.0001	NA	NA	NA	< 0.00010	< 0.00010	0.0001	NA	NA	NA	< 0.00020	< 0.00020	0.0001	NA	NA	NA
Bismuth	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0020	< 0.0020	0.001	NA	NA	NA
Boron	< 0.05	< 0.05	0.050	NA	NA	NA	< 0.05	< 0.05	0.050	NA	NA	NA	< 0.1	< 0.1	0.050	NA	NA	NA
Cadmium	0.00113	0.00109	0.00001	0.00111	3.60%	NA	0.000177	0.000189	0.00001	0.000183	6.56%	NA	0.00223	0.00237	0.00001	0.0023	6.09%	NA
Calcium	159	155	0.050	157	2.55%	NA	22.1	21.6	0.050	21.85	2.29%	NA	707	751	0.050	729	6.04%	NA
Chromium	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0020	< 0.0020	0.001	NA	NA	NA
Cobalt	0.0134	0.0136	0.001	0.0135	1.48%	NA	0.00078	0.00080	0.001	0.00079	NA	0.02	0.0029	0.0031	0.001	0.003	NA	0.20
Copper	0.00268	0.00273	0.0002	0.002705	1.85%	NA	0.00169	0.00168	0.0002	0.001685	0.59%	NA	0.00269	0.00293	0.0002	0.00281	8.54%	NA
Iron	0.212	0.204	0.005	0.208	3.85%	NA	0.0818	0.0829	0.005	0.08235	1.34%	NA	0.04	0.041	0.005	0.0405	2.47%	NA
Lead	< 0.00020	< 0.00020	0.0002	NA	NA	NA	< 0.00020	< 0.00020	0.0002	NA	NA	NA	< 0.00040	< 0.00040	0.0002	NA	NA	NA
Lithium	0.0260	0.0256	0.005	0.0258	1.55%	NA	0.0056	0.0058	0.005	0.0057	NA	0.04	0.072	0.077	0.005	0.0745	6.71%	NA
Magnesium	39.1	40.6	0.050	39.85	3.76%	NA	5.61	5.45	0.050	5.53	2.89%	NA	117	124	0.050	120.5	5.81%	NA
Manganese	1.08	1.13	0.001	1.105	4.52%	NA	0.0731	0.0720	0.001	0.07255	1.52%	NA	0.795	0.847	0.001	0.821	6.33%	NA
Mercury	< 0.000010	< 0.000010	0.00001	NA	NA	NA	< 0.000010	< 0.000010	0.00001	NA	NA	NA	< 0.000010	< 0.000010	0.00001	NA	NA	NA
Molybdenum	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	0.0023	0.0025	0.001	NA	NA	NA
Nickel	0.0460	0.0488	0.001	0.0474	5.91%	NA	0.0106	0.0111	0.001	0.01085	4.61%	NA	0.0197	0.0206	0.001	0.02015	4.47%	NA
Phosphorus	-	-	-	NA	NA	NA	-	-	-	NA	NA	NA	-	-	-	NA	NA	NA
Potassium	8.06	8.31	0.050	8.185	3.05%	NA	2.56	2.52	0.050	2.54	1.57%	NA	27.7	28.8	0.050	28.25	3.89%	NA
Selenium	0.00020	0.00029	0.0001	0.000245	NA	0.90	0.00021	0.00019	0.0001	0.0002	NA	0.20	0.00047	0.00047	0.0001	0.00047	NA	0.00
Silicon	3.21	3.19	0.1	3.2	0.63%	NA	2.39	2.48	0.1	2.435	3.70%	NA	4.86	5.04	0.1	4.95	3.64%	NA
Silver	< 0.000020	< 0.000020	0.00002	NA	NA	NA	< 0.000020	< 0.000020	0.00002	NA	NA	NA	0.000145	0.00013	0.00002	NA	NA	NA
Sodium	236	246	0.050	241	4.15%	NA	84.1	81.1	0.050	82.6	3.63%	NA	2600	2700	0.050	2650	3.77%	NA
Strontium	0.887	0.904	0.001	0.8955	1.90%	NA	0.133	0.14	0.001	0.1365	5.13%	NA	4.98	5.15	0.001	5.065	3.36%	NA
Sulphur	< 3.0	< 3.0	3.0	NA	NA	NA	< 3.0	< 3.0	3.0	NA	NA	NA	< 6.0	7.1	3.0	NA	NA	NA
Thallium	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.00010	< 0.00010	0.00005	NA	NA	NA
Tin	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.01	< 0.01	0.005	NA	NA	NA
Titanium	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.01	< 0.01	0.005	NA	NA	NA
Uranium	0.00063	0.00066	0.0001	0.000645	4.65%	NA	0.00012	0.00012	0.0001	0.00012	NA	0.00	0.00468	0.00482	0.0001	0.00475	2.95%	NA
Vanadium	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.0050	< 0.0050	0.005	NA	NA	NA	< 0.01	< 0.01	0.005	NA	NA	NA
Zinc	0.0414	0.0415	0.005	0.04145	0.24%	NA	0.0160	0.0162	0.005	0.0161	NA	0.04	0.014	0.016	0.005	0.015	NA	0.40
Zirconium	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.0010	< 0.0010	0.0005	NA	NA	NA

Notes:
Results are expressed in micrograms per gram (mg/L), unless otherwise indicated.
SCN = sample control number
FDA = field duplicate available
FD = field duplicate
QA/QC = quality assurance/quality control
Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.
Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).
Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.
Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.
NA = not applicable
BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B16 Results of Quality Control/Quality Assurance Analyses - Groundwater Petroleum Hydrocarbons
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	MW16-08	MW16-08					MW09-01	MW09-01					MW16-02	MW16-02				
SCN	MW16-08A	MW16-08B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW09-01A	MW09-01B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW16-02A	MW16-02B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
Laboratory ID	MW16-08A	MW16-08B					MW09-01A	MW09-01B					MW16-02A	MW16-02B				
Date Sampled	8-Sep-16	8-Sep-16					3-Sep-16	3-Sep-16					6-Nov-16	6-Nov-16				
QA/QC	FDA	FD					FDA	FD					FDA	FD				
Hydrocarbons																		
EPH10-19	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA
EPH19-32	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA
LEPH	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA
HEPH	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA	< 0.20	< 0.20	0.2	NA	NA	NA
Volatile Hydrocarbons (VH6-10)	< 0.3	< 0.3	0.3	NA	NA	NA	< 0.3	< 0.3	0.3	NA	NA	NA	< 0.3	< 0.3	0.3	NA	NA	NA
VPH (C6-C10)	< 0.3	< 0.3	0.3	NA	NA	NA	< 0.3	< 0.3	0.3	NA	NA	NA	< 0.3	< 0.3	0.3	NA	NA	NA
Polycyclic Aromatic Hydrocarbons																		
Acenaphthene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Acenaphthylene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Acridine	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Anthracene	< 0.000010	< 0.000010	0.00001	NA	NA	NA	< 0.000010	< 0.000010	0.00001	NA	NA	NA	< 0.000010	< 0.000010	0.00001	NA	NA	NA
Benz(a)anthracene	< 0.000010	< 0.000010	0.00001	NA	NA	NA	< 0.000010	< 0.000010	0.00001	NA	NA	NA	< 0.000010	< 0.000010	0.00001	NA	NA	NA
Benzo(a)pyrene	< 0.0000090	< 0.0000090	0.000009	NA	NA	NA	< 0.0000090	< 0.0000090	0.000009	NA	NA	NA	< 0.0000090	< 0.0000090	0.000009	NA	NA	NA
Benzo(b)fluoranthene	-	-	-	NA	NA	NA	-	-	-	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Benzo(b,j) fluoranthene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Benzo(g,h,i)perylene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Benzo(k)fluoranthene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Chrysene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Dibenz(a,h)anthracene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Fluoranthene	< 0.000020	< 0.000020	0.00002	NA	NA	NA	< 0.000020	< 0.000020	0.00002	NA	NA	NA	< 0.000020	< 0.000020	0.00002	NA	NA	NA
Fluorene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Indeno(1,2,3-c,d)pyrene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
Naphthalene	< 0.00010	< 0.00010	0.0001	NA	NA	NA	< 0.00010	< 0.00010	0.0001	NA	NA	NA	0.00012	0.00010	0.0001	0.00011	NA	0.20
Phenanthrene	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	0.00011	0.00010	0.00005	0.000105	NA	0.20
Pyrene	< 0.000020	< 0.000020	0.00002	NA	NA	NA	< 0.000020	< 0.000020	0.00002	NA	NA	NA	0.000029	0.000026	0.00002	0.0000275	NA	0.15
Quinoline	< 0.00024	< 0.00024	0.00024	NA	NA	NA	< 0.00024	< 0.00024	0.00024	NA	NA	NA	< 0.00024	< 0.00024	0.00024	NA	NA	NA
2-methylnaphthalene	0.00013	0.00013	0.0001	0.00013	NA	0.00	< 0.00010	< 0.00010	0.0001	NA	NA	NA	0.00019	0.00017	0.0001	0.00018	NA	0.20
PAH, Low Molecular Weight	< 0.00024	< 0.00024	0.00024	NA	NA	NA	< 0.00024	< 0.00024	0.00024	NA	NA	NA	0.00041	0.00037	0.00024	0.00039	NA	0.17
PAH, High Molecular Weight	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA	< 0.000050	< 0.000050	0.00005	NA	NA	NA
PAH, Total	< 0.00024	< 0.00024	0.00024	NA	NA	NA	< 0.00024	< 0.00024	0.00024	NA	NA	NA	0.00044	0.00040	0.00024	0.00042	NA	0.17

Notes:
Results are expressed in micrograms per gram (mg/L), unless otherwise indicated.
SCN = sample control number
FDA = field duplicate available
FD = field duplicate
QA/QC = quality assurance/quality control
Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.
Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).
Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.
Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.
NA = not applicable
BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

TABLE B17 Results of Quality Control/Quality Assurance Analyses - Groundwater Volatile Organic Compunds
Steamboat Maintenance Camp, Kilometre 537.9, Alaska Highway, BC

Location	MW16-08	MW16-08					MW09-01	MW09-01					MW16-02	MW16-02				
SCN	MW16-08A	MW16-08B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW09-01A	MW09-01B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)	MW16-02A	MW16-02B	Method Reporting Limit	Mean	Relative Percent Difference	Difference Factor (DF)
Laboratory ID	MW16-08A	MW16-08B					MW09-01A	MW09-01B					MW16-02A	MW16-02B				
Date Sampled	8-Sep-16	8-Sep-16					3-Sep-16	3-Sep-16					6-Nov-16	6-Nov-16				
QA/QC	FDA	FD					FDA	FD					FDA	FD				
Volatile Organic Compounds																		
Benzene	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA
Bromodichloromethane	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
Bromoform	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
Bromomethane	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
Carbon Tetrachloride	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
Chlorobenzene	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
Dibromochloromethane	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
Chloroethane	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
Chloroform	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
Chloromethane	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	0.0013	< 0.0010	0.001	NA	NA	NA
1,2-Dichlorobenzene	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
1,3-Dichlorobenzene	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
1,4-Dichlorobenzene	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
1,1-Dichloroethane	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
1,2-Dichloroethane	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
1,1-Dichloroethylene	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
cis-1,2-Dichloroethylene	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
trans-1,2-Dichloroethylene	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
Dichloromethane	< 0.0020	< 0.0020	0.002	NA	NA	NA	< 0.0020	< 0.0020	0.002	NA	NA	NA	0.0028	< 0.0020	0.002	NA	NA	NA
1,2-Dichloropropane	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
cis-1,3-Dichloropropylene	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
trans-1,3-Dichloropropylene	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA	< 0.0010	< 0.0010	0.001	NA	NA	NA
Ethylbenzene	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA
Methyl t-butyl ether (MTBE)	< 0.0040	< 0.0040	0.0040	NA	NA	NA	< 0.0040	< 0.0040	0.0040	NA	NA	NA	< 0.0040	< 0.0040	0.0040	NA	NA	NA
Styrene	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
1,1,1,2-Tetrachloroethane	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
1,1,2,2-Tetrachloroethane	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
Tetrachloroethylene	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
Toluene	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA
1,1,1-Trichloroethane	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
1,1,2-Trichloroethane	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
Trichloroethylene	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
Trichlorofluoromethane	< 0.0040	< 0.0040	0.004	NA	NA	NA	< 0.0040	< 0.0040	0.004	NA	NA	NA	< 0.0040	< 0.0040	0.004	NA	NA	NA
Vinyl Chloride	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA	< 0.00050	< 0.00050	0.0005	NA	NA	NA
ortho-Xylene	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA
meta- & para-Xylene	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA
Xylenes	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA	< 0.00040	< 0.00040	0.0004	NA	NA	NA
1,2-dibromoethane (Ethylene Dibromide) (EDB)	-	-	-	-	-	-	< 0.00020	< 0.00020	0.0002000	NA	NA	NA	< 0.00020	< 0.00020	0.0002000	NA	NA	NA
1,2,3-Trichlorobenzene	-	-	-	-	-	-	< 0.0020	< 0.0020	0.0020000	NA	NA	NA	< 0.0020	< 0.0020	0.0020000	NA	NA	NA
1,2,4-Trichlorobenzene	-	-	-	-	-	-	< 0.0020	< 0.0020	0.0020000	NA	NA	NA	< 0.0020	< 0.0020	0.0020000	NA	NA	NA
Dichlorodifluoromethane (Freon 12)	-	-	-	-	-	-	< 0.0020	< 0.0020	0.0020000	NA	NA	NA	< 0.0020	< 0.0020	0.0020000	NA	NA	NA
Hexachlorobutadiene	-	-	-	-	-	-	< 0.00050	< 0.00050	0.0005000	NA	NA	NA	< 0.00050	< 0.00050	0.0005000	NA	NA	NA
Freon 113	-	-	-	-	-	-	< 0.0020	< 0.0020	0.0020000	NA	NA	NA	< 0.0020	< 0.0020	0.0020000	NA	NA	NA

Notes:
Results are expressed in micrograms per gram (mg/L), unless otherwise indicated.
SCN = sample control number
FDA = field duplicate available
FD = field duplicate
QA/QC = quality assurance/quality control
Method Reporting Limit indicates the minimum concentration that could be measured by laboratory instrumentation for a specific sample.
Mean indicates the mean or average value calculated of a field duplicate pair (the FDA and the FD).
Relative Percent Difference (RPD) is calculated when the mean value is greater than five times the method reporting limit; Golder's internal QA/QC target is less than 35%.
Difference Factor (DF) is calculated when the mean value is less than five times the method reporting limit; Golder's internal QA/QC target is less than 2.
NA = not applicable
BOLD font indicates the parameter analysed exceeds Golder's internal QA/QC targets.

APPENDIX C
Borehole Logs

Project No:

Project: Alaska Higway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-01

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Clay. Domestic debris.	1				
1		Clay with trapped water. Discoloration due to free product. Domestic debris.	2				
2		Clay and gravel. Sheen on trapped water.	3				
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-02

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Pit run fill material. No odour. No debris.	1				
1		Pit run fill material. No odour. No debris.	2				
		Clay and organics. No odour. No debris.	3				
2							
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-03

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration	
Depth	Symbol	Description	Number	Type	Recovery	ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
0		Ground Surface					
		Pit run fill materials. No odour. No debris.	1				
1		Clay. No odour. Crushed drum at 1.0 m. Parent geological material at 3.5 m.					
2			2				
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-04

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration	
Depth	Symbol	Description	Number	Type	Recovery	ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
0		Ground Surface					
		Clay. No debris. No odour.	1				
1							
2							
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-05

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Pit run fill materials. No debris. No odour.	1				
1		Dense Clay. No debris. No odour.					
2			2				
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-06

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration	
Depth	Symbol	Description	Number	Type	Recovery	ppm: 100 200 300 400 / %LEL: 20 40 60 80	Lab Analysis
0		Ground Surface					
		Pit run fill material. No debris. No odour.	1				
1		Dense Clay. Very odouous. Some rebar debris.	2				
2							
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-07

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Pit run fill material. Odour resembling diesel fuel.	1				
1		Clay with gravel. No odour. No debris.	2				
2		Fractured parent geological material. No debris. No odour.	3				
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-08

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration	
Depth	Symbol	Description	Number	Type	Recovery	ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
0		Ground Surface					
0		Pit run fill material. No odour. No debris.	1				
3		Large rock at 3.2 m. Excavation stopped.					
15							

Drill Method:

Drill Date:

Hole Size:

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-09

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
0		Pit run fill material. No odour. No debris. Black material, possibly oil - no odour - at 2.5 m.	1				
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-10

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
0		Pit run fill material. Sample taken for salt concentration analysis. Creosote lumber encountered.	1				
2		Fill material and fractured parent geological material. Large fractured rock at 4 m. No debris. No odour.					
15							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-11

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration	
Depth	Symbol	Description	Number	Type	Recovery	ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
0		Ground Surface					
		Pit run fill material. Sample taken for salinity analysis. Bedrock after 0.1 m. No odour. No debris.	1				
1							
2							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-12

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm (100 200 300 400) %LEL (20 40 60 80)	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
		Ground Surface					
0		Pit run fill material. Sample taken for salinity at 0.5 m. Bedrock at 0.8 m.	1				
1							
2							

Drill Method:

Drill Date:

Hole Size:

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-13

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm (100 200 300 400) %LEL (20 40 60 80)	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-14

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
		Ground Surface					
0–3		Native soils. Sample taken at 3.2 m has definite hydrocarbon odour. No debris.	1				
3–4.6		Silt, gravel and small amounts of clay. Bedrock at 4.6 m. No apparent odour.	2				

Drill Method:

Drill Date:

Hole Size:

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-15

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Clayey silt. Slight hydrocarbon odour. No debris.	1				
1							
2		Clayey silt. Slight hydrocarbon odour. No debris.	2				
		Clayey silt. No apprent odour. No debris.	3				
3							
4		Clay, red in color. No apparent odour. Bedrock at 4.8 m.	4				
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-16

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Rock, clay, silt mix. No apparent odour.	1				
1		Rock, clay, silt mix. No apparent odour.	2				
2		Rock, clay, silt mix. No apparent odour.	3				
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-17

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration	
Depth	Symbol	Description	Number	Type	Recovery	ppm: 100 200 300 400 / %LEL: 20 40 60 80	Lab Analysis
0		Ground Surface					
		Clays with gravel. Slight hydrocarbon odour. Staining on soils.	1				
1		Clays with gravel. Slight hydrocarbon odour. Staining on soils.	2				
2							
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highways Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-18

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration	
Depth	Symbol	Description	Number	Type	Recovery	ppm: 100 200 300 400 / %LEL: 20 40 60 80	Lab Analysis
0		Ground Surface					
		Clay with gravel. No apparent odour.	1				
1		Clay with gravel. No apparent odour. Bedrock at 3.6 m.	2				
2							
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-19

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Hard pack clay. Hydrocarbon fuel odour.	1				
1		Hard pack clay. No apparent odour. Soils appeared stained.	2				
2							
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-20

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
		Ground Surface					
0		Hard pack clay. No apparent odour. Sample taken along contour of bedrock. Bedrock at 1.8 m.	1				
1							
2							
3							

Drill Method:

Drill Date:

Hole Size:

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-21

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm (100 200 300 400) %LEL (20 40 60 80)	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
0 – 3		Native soils, red and grey clays. Household debris, wire debris at 0.5 m.	1				
3 – 15							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-22

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Clay intermixed with shale. 205 L drum debris as well as oil can debris.	1				
1		Clay and shales. More debris of similar nature. Bedrock at 3.5 m.	2				
2							
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

Project No:

Project: Alaska Highway Maintenance Camps

Client:

Location: Steamboat

Log of Borehole: SB-23

Enclosure:

Technician: Laurie Washington

SUBSURFACE PROFILE			SAMPLE			VOC Concentration ppm 100 200 300 400 / %LEL 20 40 60 80	Lab Analysis
Depth	Symbol	Description	Number	Type	Recovery		
0		Ground Surface					
		Clay, gravel and shale. No apparent odour.	1				
1		Clay, shale. Bedrock at 3.1 m. No apparent odour.	2				
2							
3							
4							
5							
6							

Drill Method:

Drill Date:

Hole Size:

ACME Consulting Limited
44 Canadian Oaks Drive
Whitby, Ontario

Datum:

Checked by:

Sheet: 1 of 1

APPENDIX C

BOREHOLE LOGS

APPENDIX D

TEST PIT LOGS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

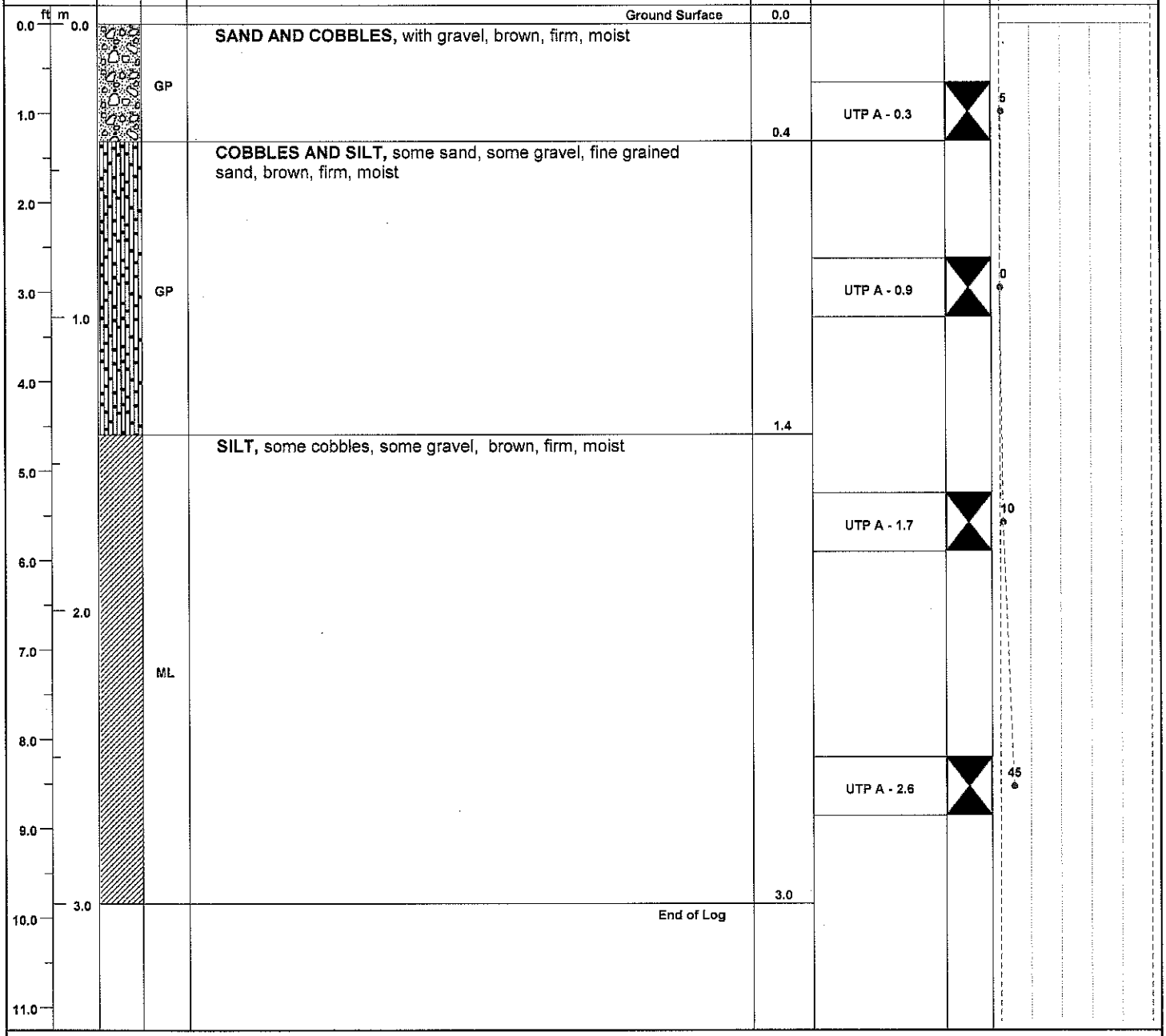
TEST PIT LOG

TEST PIT No. **UTP A**

SAMPLE LOCATION: **On SW corner of garage**

ELEVATION:

Ground: **1069m**



DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Excavator**

DATE: **August 2, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

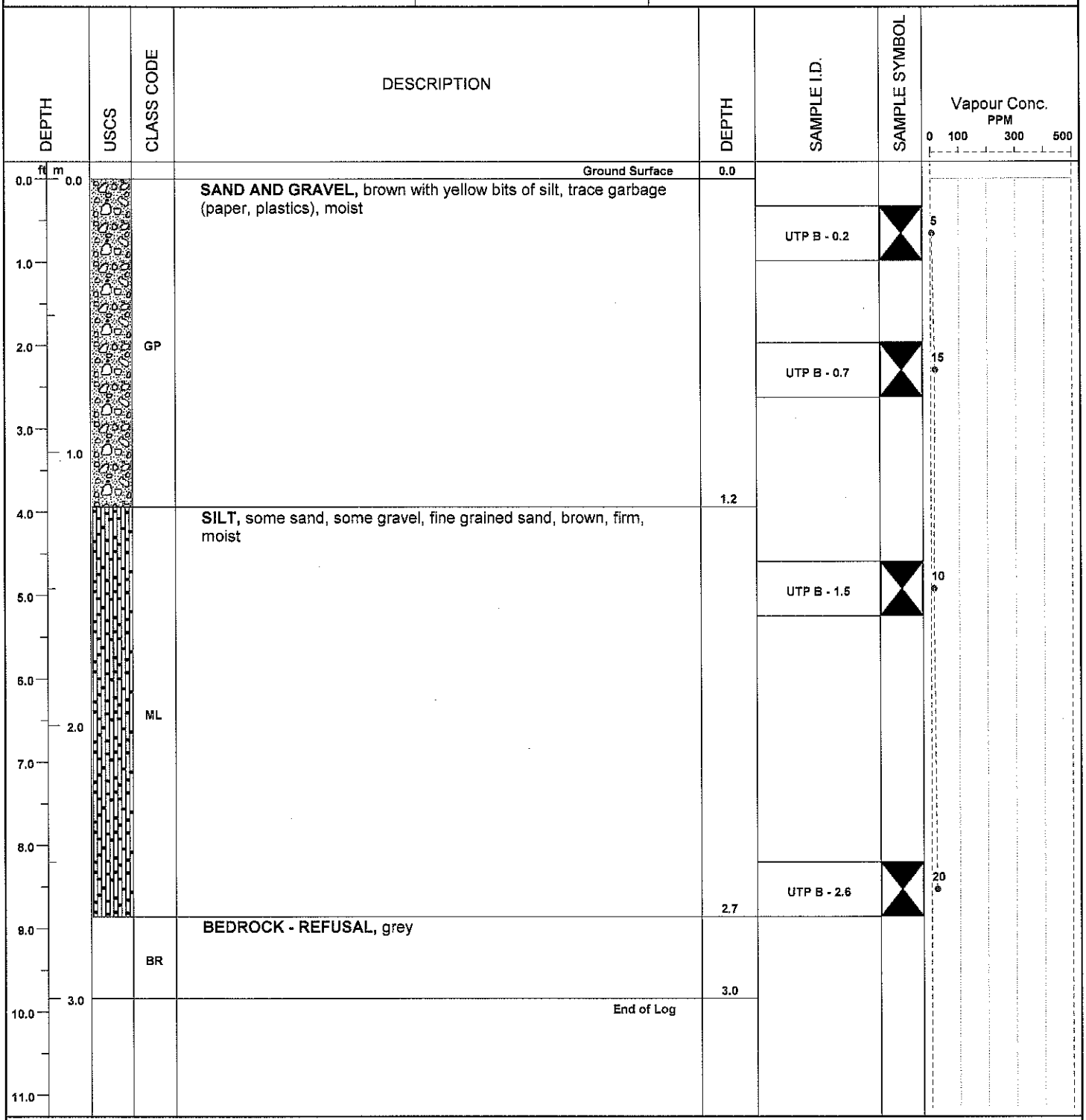
TEST PIT LOG

TEST PIT No. **UTP B**

SAMPLE LOCATION: **NE of metal and drum debris pile**

ELEVATION:

Ground:



DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Excavator**

DATE: **August 2, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

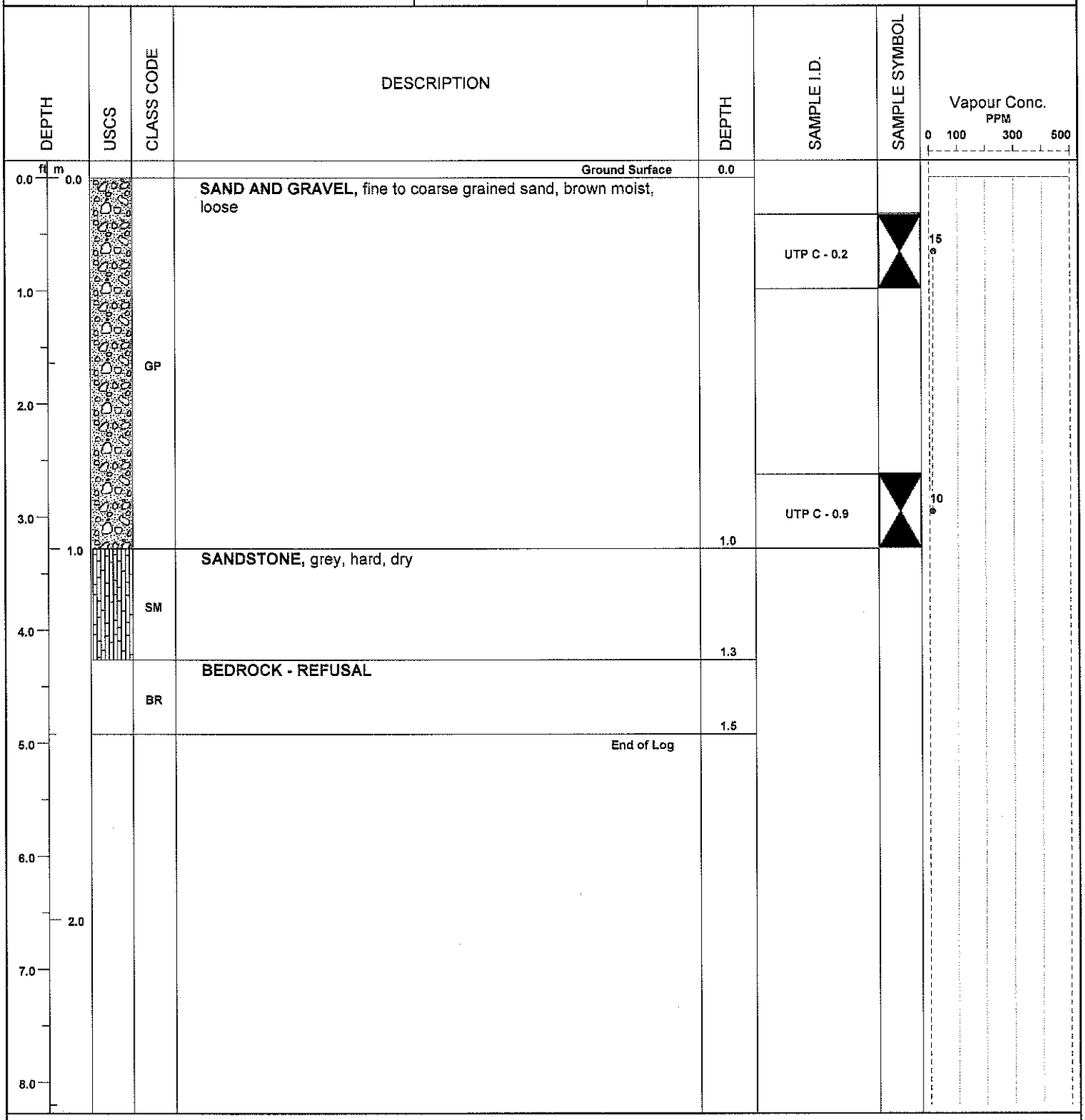
TEST PIT LOG

TEST PIT No. **UTP C**

SAMPLE LOCATION: **East of drum area**

ELEVATION:

Ground:



DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Excavator**

DATE: **August 2, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

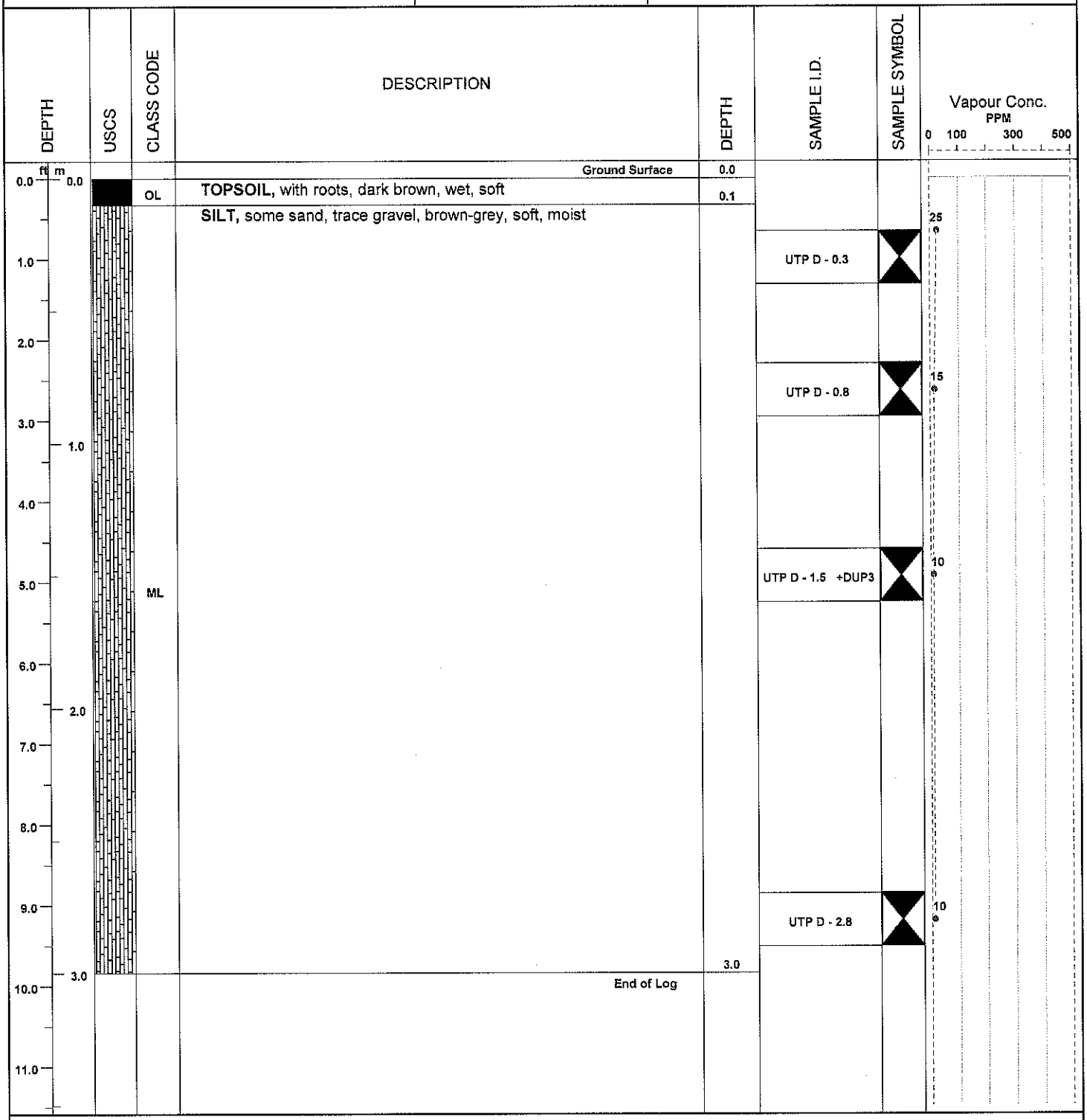
TEST PIT LOG

TEST PIT No. **UTP D**

SAMPLE LOCATION: **9m SW of URS BH03**

ELEVATION:

Ground:



DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Excavator**

DATE: **August 3, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

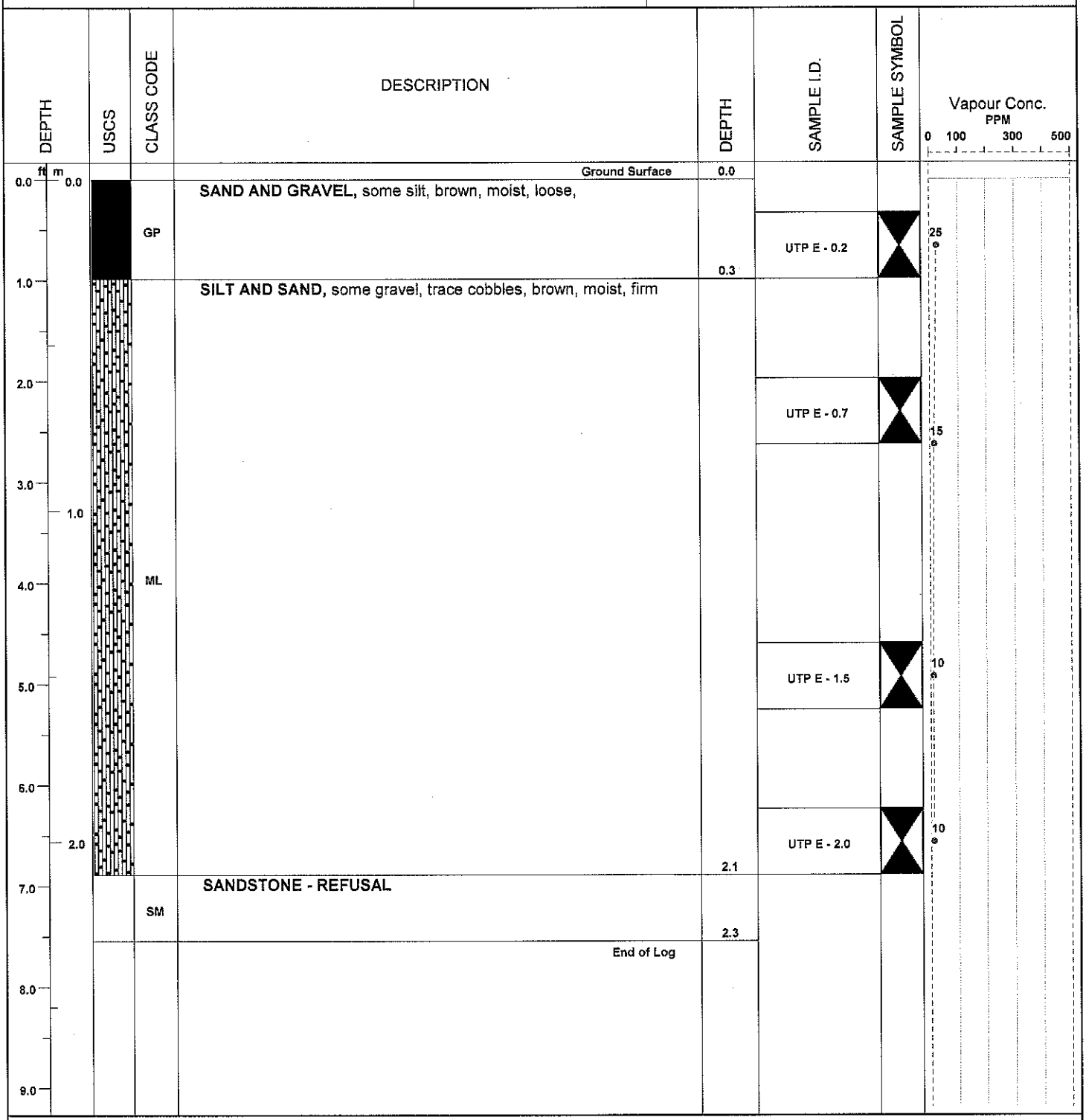
TEST PIT LOG

TEST PIT No. **UTP E**

SAMPLE LOCATION: **Between UTP G & UTP F**

ELEVATION:

Ground: **1064 m**



DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Track mounted excavator**

DATE: **August 2, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

TEST PIT LOG

TEST PIT No. **UTP F**

SAMPLE LOCATION: **10m east of trailer**

ELEVATION:
Ground: **1064 m**

DEPTH (ft)	DEPTH (m)	USCS	CLASS CODE	DESCRIPTION	DEPTH	SAMPLE I.D.	SAMPLE SYMBOL	Vapour Conc. PPM (0 100 300 500)
				Ground Surface	0.0			
0.0	0.0			**SAND AND GRAVEL,** with silt, brown, dry, firm				
1.0			GP			UTP F - 0.4		5
					0.6			
2.0				**SILT,** some sand, some gravel, brown, moist, firm				
						UTP F - 0.8		30
3.0	1.0							
4.0								
5.0						UTP F - 1.5		10
6.0			ML					
	2.0							
7.0								
8.0								
9.0						UTP F - 2.8 +DUP2		10
	3.0				3.0			
10.0			SM	**SANDSTONE - REFUSAL**	3.2			
				End of Log				
11.0								

DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Track mounted excavator**

DATE: **August 2, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

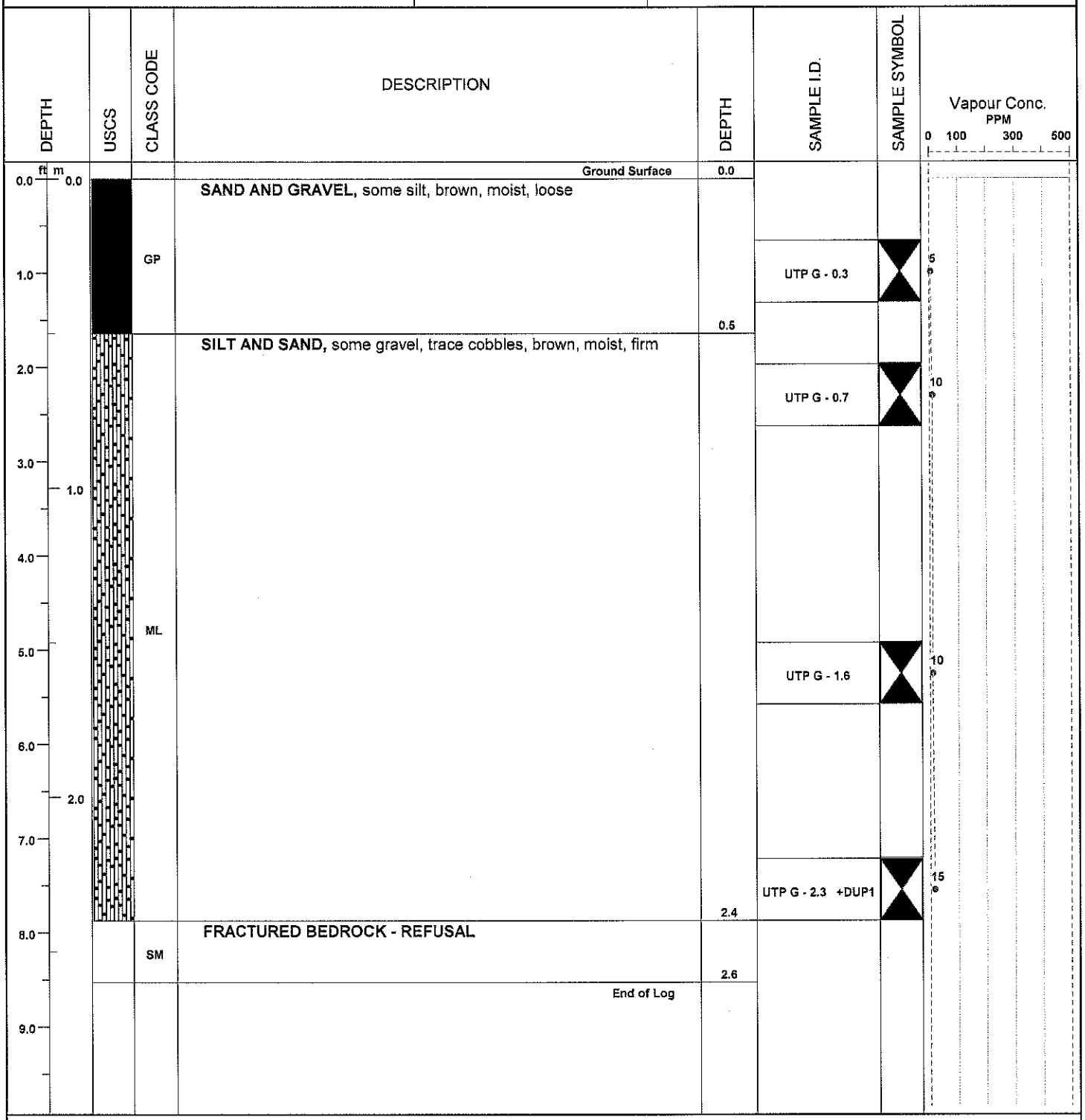
TEST PIT LOG

TEST PIT No. **UTP G**

SAMPLE LOCATION:**10m east of trailer**

ELEVATION:

Ground: **1068 m**



DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Track mounted excavator**

DATE: **August 2, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

TEST PIT LOG

TEST PIT No. **UTP H**

SAMPLE LOCATION: **SE of TP 5**

ELEVATION:

Ground: **1064 m**

DEPTH (ft)	DEPTH (m)	USCS	CLASS CODE	DESCRIPTION	DEPTH	SAMPLE I.D.	SAMPLE SYMBOL	Vapour Conc. PPM (0 100 300 500)
				Ground Surface	0.0			
0.0	0.0		GP	**GRAVEL AND SAND**, fine to coarse sand, brown-grey, dry, loose	0.2	UTP H - 0.1		5
1.0			ML	**SILT**, some gravel, some sand, brown, moist, soft				
2.0						UTP H - 0.7		20
3.0	1.0							
4.0								
5.0						UTP H - 1.5		25
6.0								
7.0	2.0							
8.0								
9.0						UTP H - 2.7		15
10.0	3.0		SM	**SANDSTONE - REFUSAL**	3.0			
11.0					3.4			
				End of Log				

DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Track mounted excavator**

DATE: **August 3, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

TEST PIT LOG

TEST PIT No. **UTP I**

SAMPLE LOCATION:

ELEVATION:

Ground: **1061 m**

DEPTH (ft / m)	USCS	CLASS CODE	DESCRIPTION	DEPTH	SAMPLE I.D.	SAMPLE SYMBOL
			Ground Surface	0.0		
0.0 / 0.0		GP	**SAND AND GRAVEL**, some debris(wood, logs, metal, plastic), moist, loose			
1.0					UTP I 0.3	
2.0				0.8		
3.0 / 1.0		OL	**ORGANIC SILT,** some sand and gravel, trace odour, grey with black mottling, moist, soft		UTP I - 0.9	
4.0				1.2		
		ML	**SILT AND SAND,** brown, firm, moist			
5.0					UTP I - 1.5	
6.0 / 2.0						
7.0						
8.0						
9.0					UTP I - 2.8	
				2.9		
10.0 / 3.0		SM	**SANDSTONE - REFUSAL**	3.1		
			End of Log			
11.0						

Vapour Conc. PPM

0 100 300 500

30

300

60

35

DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Excavator**

DATE: **August 3, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

TEST PIT LOG

TEST PIT No. **UTP J**

SAMPLE LOCATION: **SW of TP-3**

ELEVATION:

Ground: **1064 m**

DEPTH (ft)	DEPTH (m)	USCS	CLASS CODE	DESCRIPTION	DEPTH	SAMPLE I.D.	SAMPLE SYMBOL	Vapour Conc. PPM (0 100 300 500)
				Ground Surface	0.0			
0.0	0.0			**SAND AND GRAVEL**, some silt, some metal debris, moist, loose				
						UTP J - 0.2		15
1.0			GP					
					0.6			
2.0				**SILT**, some sand, some gravel, brown, moist, firm				
						UTP J - 0.8		25
3.0	1.0							
4.0								
						UTP J - 1.5 +DUP5		20
5.0								
6.0			? ???????					
	2.0							
7.0								
8.0								
						UTP J - 2.7		10
9.0								
	3.0				3.0			
10.0				End of Log				

DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Excavator**

DATE: **August 3, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

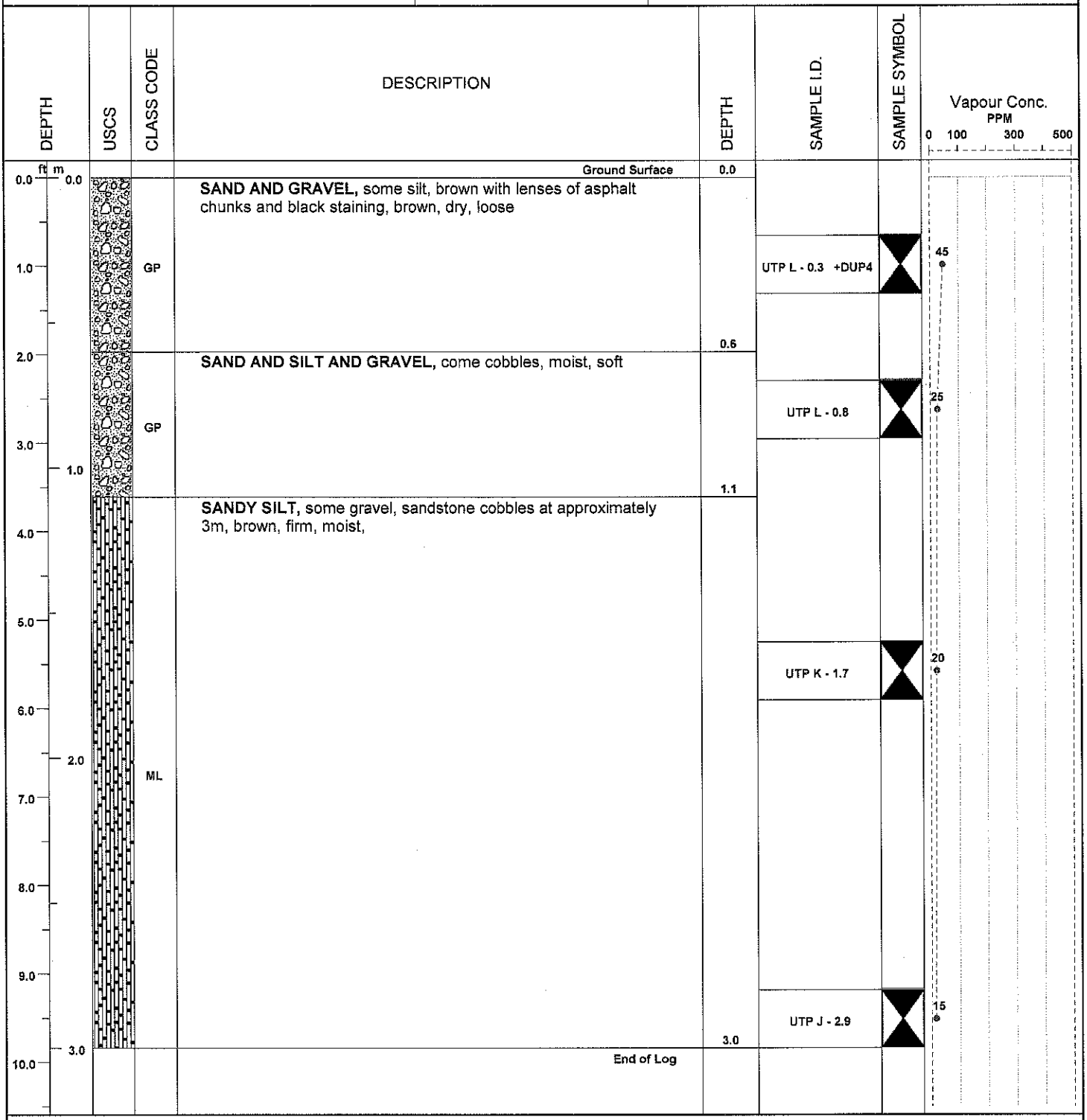
TEST PIT LOG

TEST PIT No. **UTP L**

SAMPLE LOCATION: **At SS URS 25**

ELEVATION:

Ground: **1063 m**



DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Excavator**

DATE: **August 3, 2006**

LOGGED BY: **Dan McCrank**

URS

CLIENT: **PWGSC**

PROJECT: **Steamboat Maintenance Camp**

JOB#: **39548746**

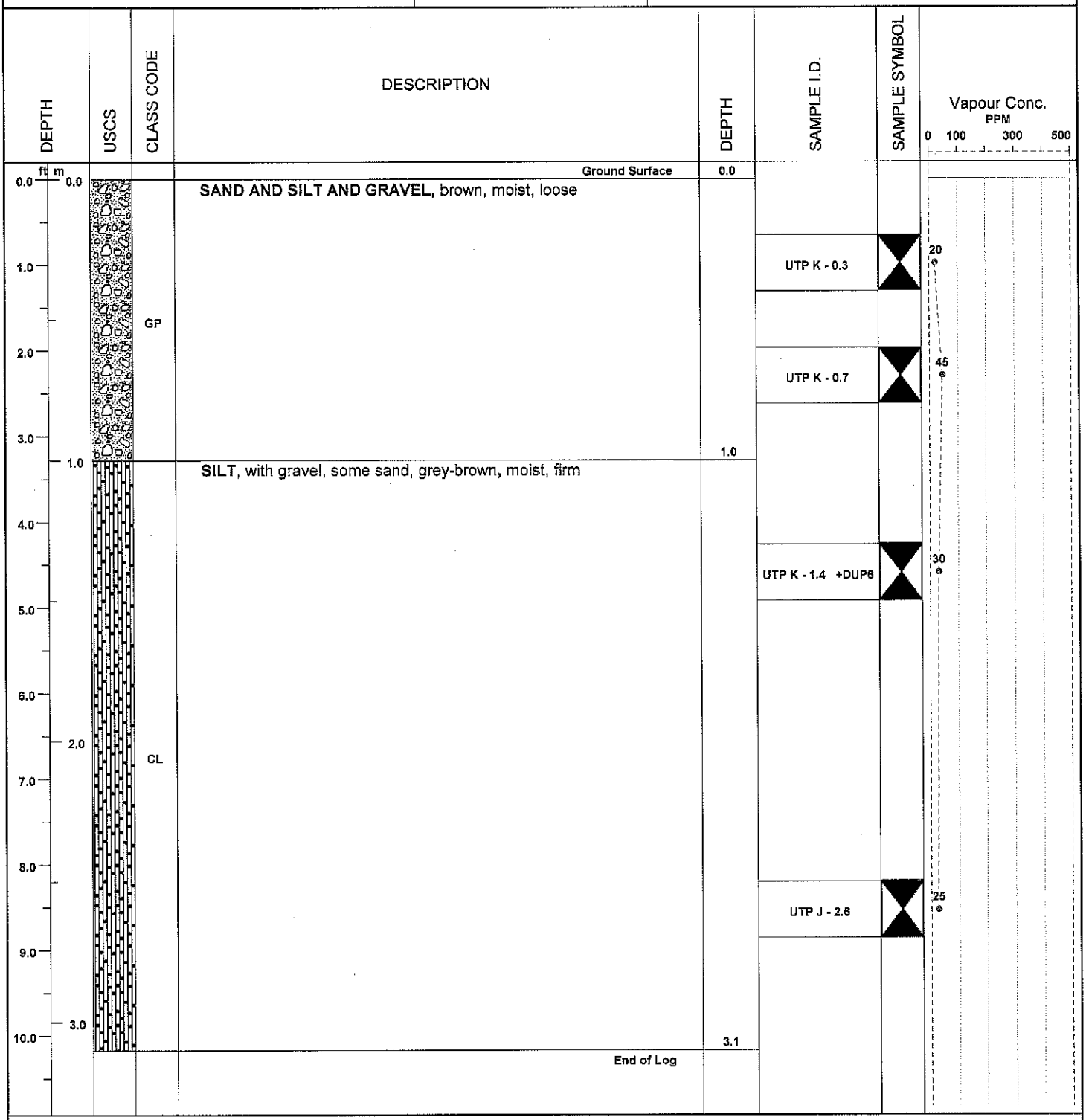
TEST PIT LOG

TEST PIT No. **UTP K**

SAMPLE LOCATION: **At SS URS 25**

ELEVATION:

Ground: **1065 m**



DRILLING CONTRACTOR: **LaPrairie Group Contractors**

EXCAVATION METHOD: **Excavator**

DATE: **August 3, 2006**

LOGGED BY: **Dan McCrank**

URS

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-01

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm 125 250 375 / %LEL 10 30 50 70 90	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
ft m		Ground Surface	0					
0 0		Drill start time: 3:39pm	-1					
1		A cloud of grey-beige smoke emanated suddenly from the borehole. A distinct, yet unidentifiable odour was noted.	-2					Blow Count: 13@0"
2			-3					
3 1		A cloud of grey-beige smoke emanated suddenly from the borehole. A distinct, yet unidentifiable odour was noted.						
4		***SB-BH-01-01*** Sampling at 2.5' due to refusal w/ hollow stem. No sample.						
5								
6		Shale bedrock encountered. Abandon due to refusal						
7 2		End of Borehole						
8								
9								
10 3								
11								
12								
13 4								
14								
15								

Drill Method: Hollow Stem - Split Spoon

Drill Date: 03-02-01

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-02

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm 125 250 375 / %LEL 10 30 50 70 90	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
ft / m		Ground Surface	0					GPS: 10m accuracy 10 V 0455771 UTM 6504843
0 / 0		Drill start time: 4:30pm						
2			-3					
3 / 1		Hollow stem refused. Switch to solid stem. 4:50pm	-4					
4		***SB-BH-02-01 (4:55pm)*** Sample taken from auger flyte Clay (60%) and silt No odour apparent					70	Blow Count: None
6 / 2								
8			-9					
9		***SB-BH-02-02 (5:10pm)*** Clay (90%) and silt **Very** cohesive No odour apparent					80	Blow Count: 12-20@12"
10 / 3								
12			-12					
12		Bedrock encountered. Abandon due to refusal.						
13 / 4		End of Borehole						
14								
15								

Drill Method: Hollow Stem - Split Spoon

Drill Date: 03-02-01

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-03

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth (ft / m)	Symbol	Description	Elev.	Number	Type	Recovery	ppm: 125, 250, 375; %LEL: 10, 30, 50, 70, 90	
0 ft / 0 m		Ground Surface	0					GPS: 10m accuracy 10 V 0455778 UTM 6504831
		Drill start time: 5:45pm						
1 ft / 1 m								
2 ft								
3 ft			-4					
4 ft		***SB-BH-03-01 (5:50pm)*** Sample taken from auger flyte Clay (80%), silt(10%), gravel(5%) and wood fibres. Slight odour noted, uncertain if it is PHCs. Alarm 1 on the EAGLE probe, apparently for oxygen rich environments (>21%), sounded immediately when sample was tested.					85	Lowest Oxygen reading was 19.2%
5 ft								
6 ft / 2 m								
7 ft								
8 ft								
9 ft			-9					
10 ft / 3 m		***SB-BH-03-02 (6:05pm)*** Clay **Extremely** cohesive PHC odour noted						
11 ft			-12					
12 ft		Bedrock encountered. Abandon due to refusal.						
13 ft / 4 m		End of Borehole						
14 ft								
15 ft								

Drill Method: Solid stem

Drill Date: 03-02-01

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-04

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm (125, 250, 375) / %LEL (10, 30, 50, 70, 90)	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
ft / m		Ground Surface	0					
0 / 0		Drill start time: 10:20am						
2			-2					
3 / 1		Solid stem used because hollow stem was refused at 2.5'.	-3					
4			-4				50	
5		***SB-BH-04-01 (10:34am)*** Sample taken from auger flyte Clay (30%), silt(60%) and wood fibres. Slight creosote-like odour noted High organic content						
6 / 2								
7		Absolute refusal Abandon						
8		End of Borehole						
9								
10 / 3								
11								
12								
13 / 4								
14								
15								

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-05

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery	ppm 125 250 375 / %LEL 10 30 50 70 90	
ft / m		Ground Surface	0					GPS: 10m accuracy 10 V 0455673 UTM 6504983
0 / 0		Drill start time: 11:00am						
1								
2								
3 / 1			-4				150	
4		***SB-BH-05-01 (11:15am)*** Sample taken from auger flyte Silt No odour apparent						
5								
6 / 2								
7								
8			-9				65	
9		***SB-BH-05-02 (11:30am)*** Sample taken from auger flyte Clay No odour apparent	-10					Blow Count: 11-17-18
10 / 3							70	
11		***SB-BH-05-03 (11:38am)*** Split spoon sampling Clay (hard packed) Very cohesive No odour apparent Orange colour noted throughout sample						
12								
13 / 4								
14			-14				55	
15			-15					Blow Count: 18-18-18

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 2

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-05

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm 125 250 375 / %LEL 10 30 50 70 90	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
16 – 5		***SB-BH-05-04 (11:58am)*** Taken from auger flyte Clay No odour apparent					45	~~Blow Count: 18-18-18~~
17		***SB-BH-05-05 (12:02pm)*** Clay (70%) and cobbles Very cohesive No odour apparent Orange-red (copper) colour noted throughout	~~17~~ ~~18~~					
18								
19 – 6		Absolute refusal Abandon						
20		End of Borehole						
21								
22								
23 – 7								
24								
25								
26 – 8								
27								
28								
29 – 9								
30								

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 2 of 2

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-06

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm 125 250 375 / %LEL 10 30 50 70 90	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
ft m		Ground Surface	0					GPS: 9m accuracy
0 0		Photo 601 shows location						10 V 0455668
1								UTM 6504967
2								
3 1								
4			-5				55	
5		***SB-BH-06-01 (12:42am)*** Sample taken from auger flyte Silt (50%) and clay Non-cohesive No odour apparent	-6					
6								
7 2		Absolute refusal (shale bedrock) Abandon						
8		End of Borehole						
9								
10 3								
11								
12								
13 4								
14								
15								

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-07

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm (125, 250, 375) / %LEL (10, 30, 50, 70, 90)	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
ft / m		Ground Surface	0					GPS: 9m accuracy 10 V 0455779 UTM 6504808
0 / 0		Drill start time: 1:45pm Photo 601 shows location						
1 / 2 / 3 / 1			-4				90	Alarm 1 (oxygen) went off
4 / 5		***SB-BH-07-01 (1:50pm)*** Sample taken from auger flyte Silt (20%), clay (75%) and sand Somewhat cohesive No odour apparent						
6 / 2 / 7 / 8			-9				55	Alarm 1 (oxygen) went off
9 / 10 / 3		***SB-BH-07-02 (2:00pm)*** Taken from auger flyte Cohesive clay No odour apparent	-11				55 45	Blow Count: 10-18-12
11		***SB-BH-07-02 (2:00pm)*** Cohesive clay No odour apparent	-11					
12		***SB-BH-07-04 (2:15pm)*** Taken from auger flyte Clay (33%), silt (33%) and sand No odour apparent Absolute refusal Abandon						
13 / 4 / 14 / 15								

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

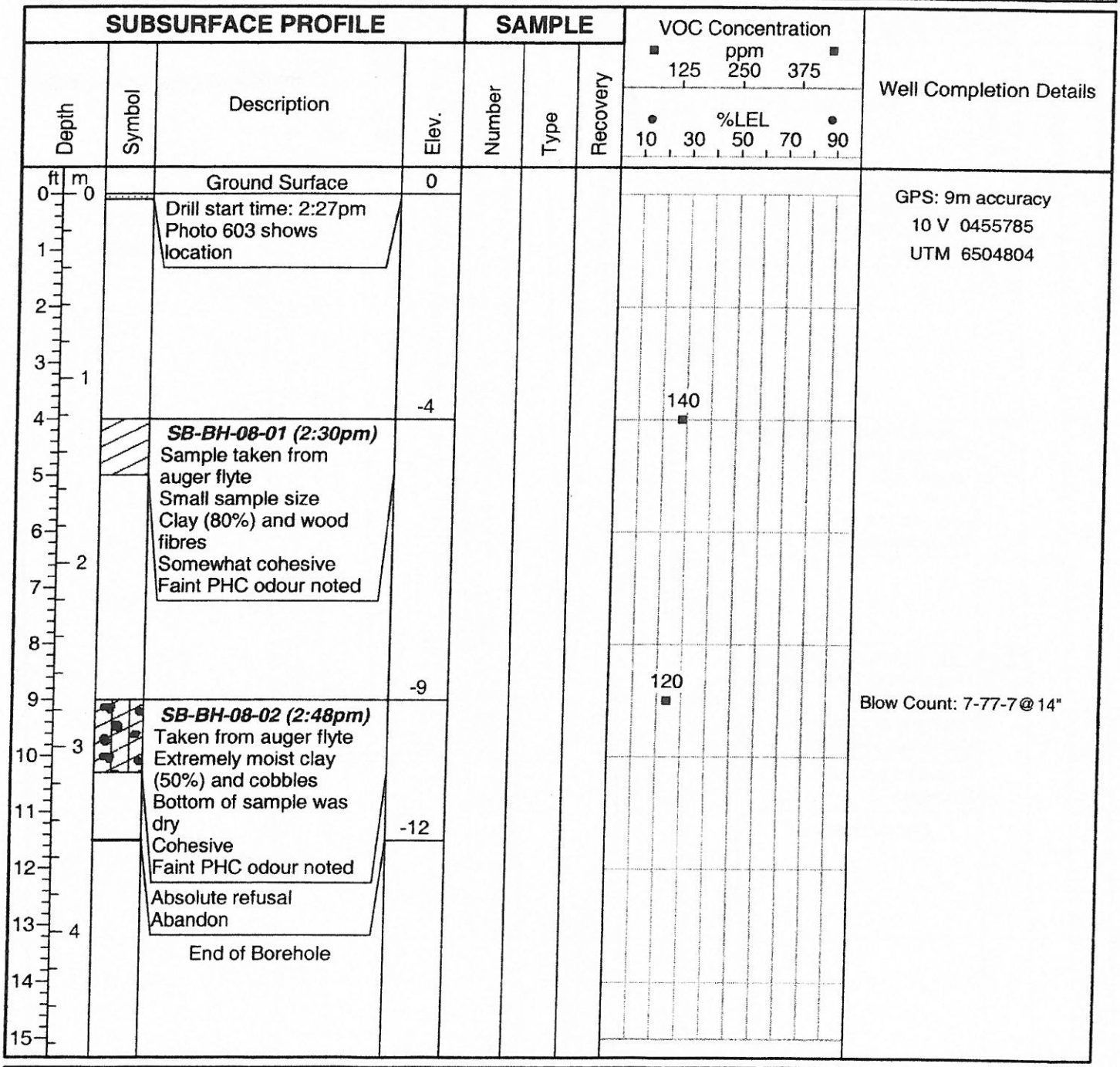
Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-08

Enclosure:

Engineer: B. Overton



Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-09

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery	ppm 125 250 375 / %LEL 10 30 50 70 90	
ft / m		Ground Surface	0					GPS: 9m accuracy
0 / 0		Drill start time: 3:15pm Photo 604 shows location						10 V 0455786 UTM 6504811
1			-4				75	
2 / 1		***SB-BH-09-01 (3:26pm)*** Sample taken from auger flyte Clay Non-cohesive No odour apparent						
3			-8				65	
4 / 2		***SB-BH-09-02 (3:38pm)*** Taken from auger flyte Clay (50%) Somewhat cohesive No odour apparent	-9					
5		Absolute refusal Abandon						
6 / 3		End of Borehole						
7								
8 / 4								
9								
10 / 5								
11								
12 / 6								
13								
14 / 7								
15								

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

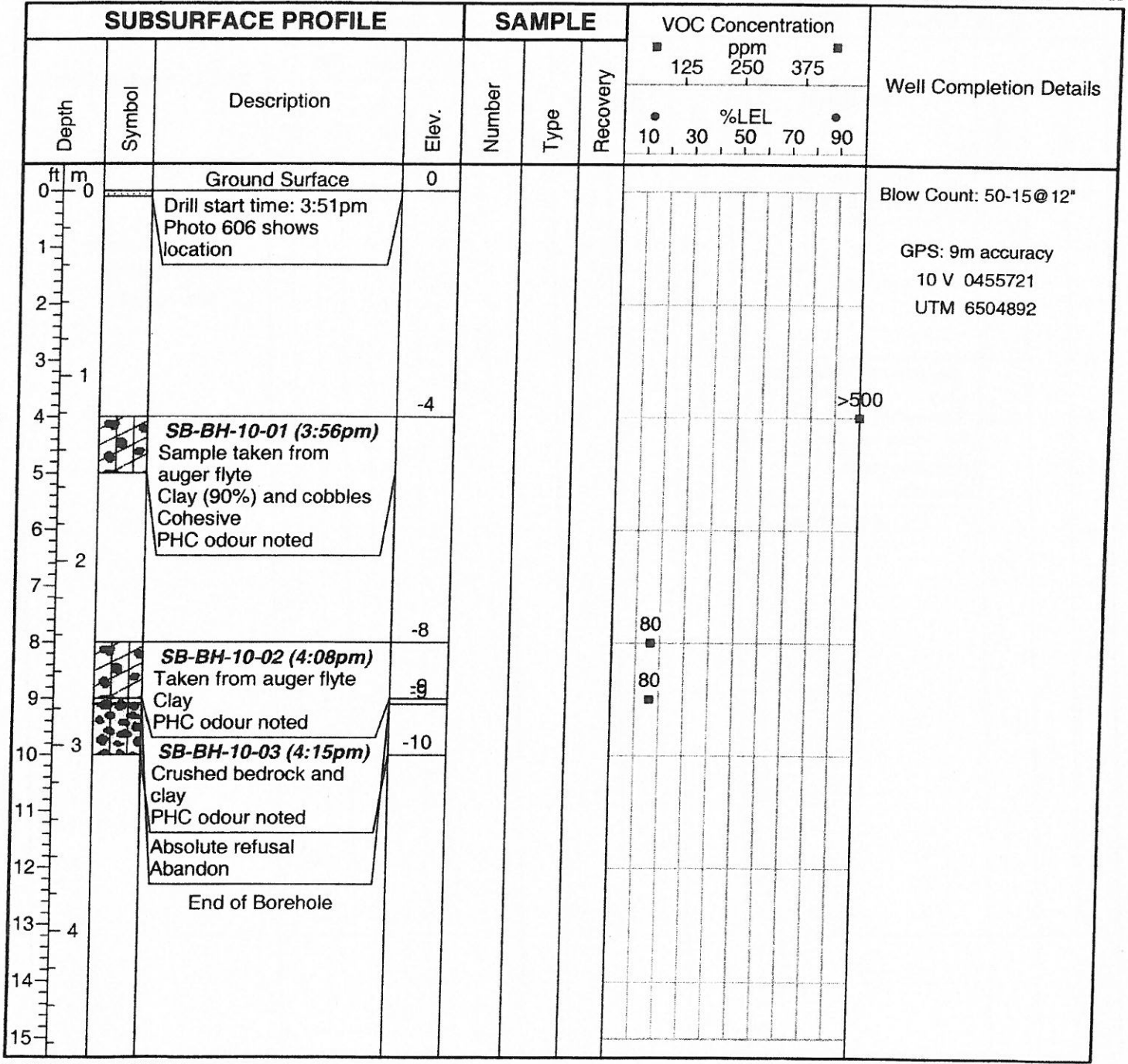
Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-10

Enclosure:

Engineer: B. Overton



Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-11

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery	ppm: 125 250 375; %LEL: 10 30 50 70 90	
ft / m		Ground Surface	0					Blow Count: 50-15@12"
0 / 0		Drill start time: 4:35pm						GPS: 9m accuracy
1								10 V 0455722
2								UTM 6504896
			-3				60	
3 / 1		***SB-BH-11-01 (4:45pm)***						
4		Clay	-4					
		Somewhat cohesive						
		No odour apparent						
5		Absolute refusal						
		Abandon						
6		End of Borehole						
7 / 2								
8								
9								
10 / 3								
11								
12								
13 / 4								
14								
15								

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-12

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	
Depth	Symbol	Description	Elev.	Number	Type	Recovery	ppm 125 250 375 / %LEL 10 30 50 70 90	Well Completion Details
ft / m		Ground Surface	0					GPS: 9m accuracy
0 / 0		Drill start time: 4:56pm						10 V 0455725
1								UTM 6504895
2			-2					
3 / 1		***SB-BH-12-01***	-3				>500	
4		Sample taken from auger flyte						
5		Silt						
6 / 2		Non-cohesive						
7		PHC odour noted						
8		Absolute refusal						
9		Abandon						
10 / 3		End of Borehole						
11								
12								
13 / 4								
14								
15								

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

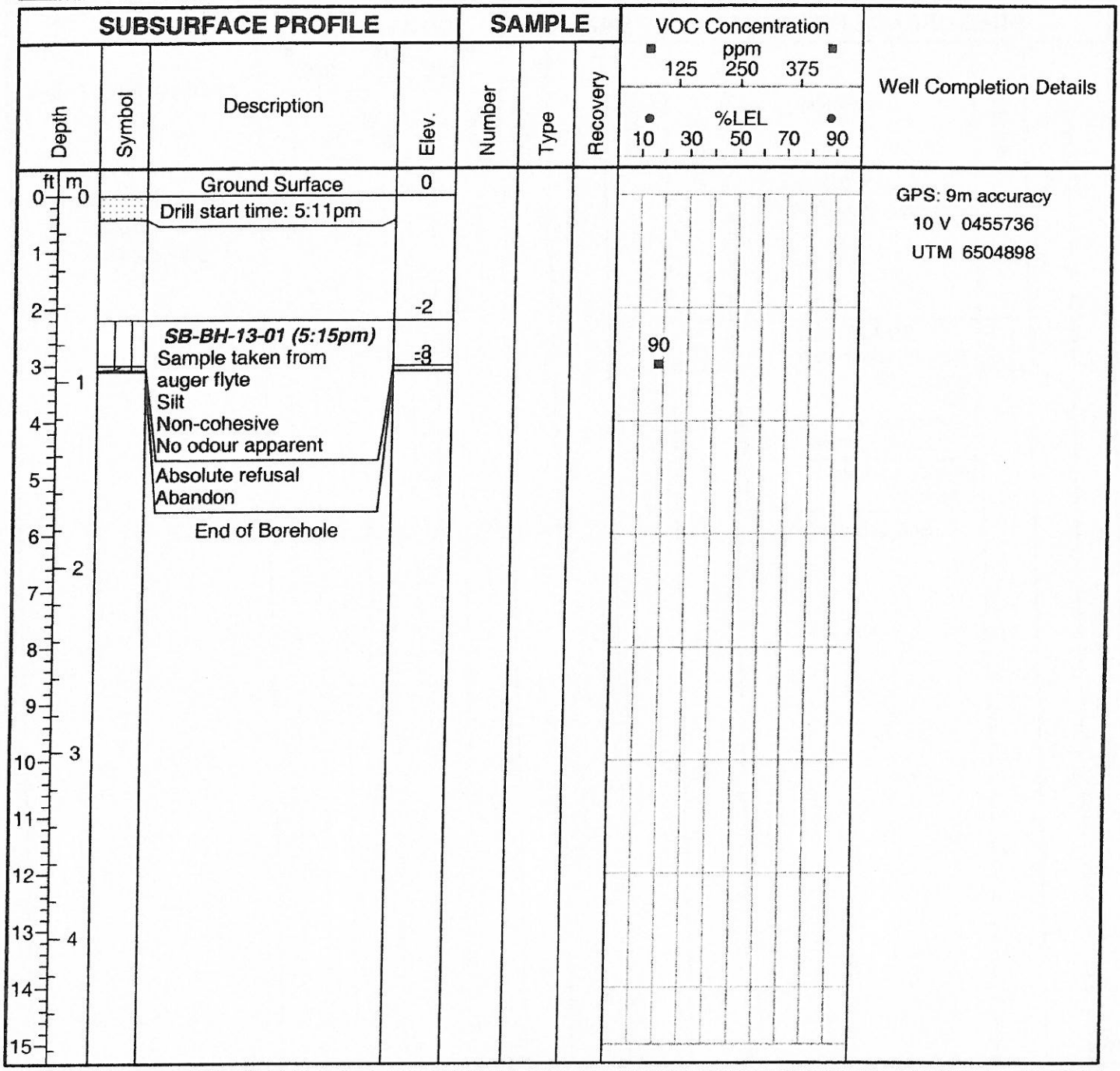
Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-13

Enclosure:

Engineer: B. Overton



Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

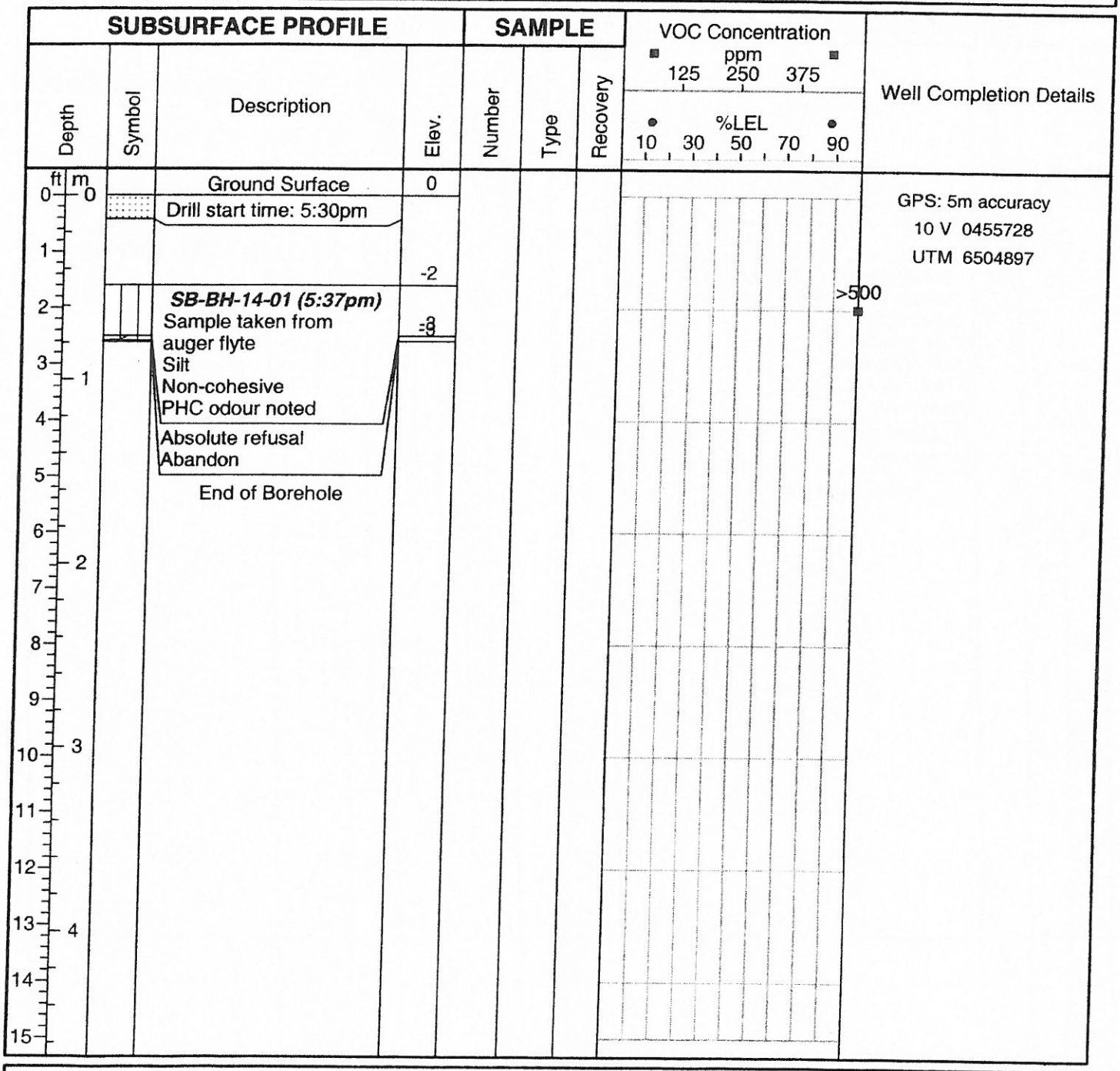
Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-14

Enclosure:

Engineer: B. Overton



Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-15

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm 125 250 375 / %LEL 10 30 50 70 90	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
ft m		Ground Surface	0					GPS: 9m accuracy
0 0		Drill start time: 5:43pm						10 V 0455728
1			-1				>500	UTM 6504902
2		***SB-BH-15-01 (5:50pm)*** Sample taken from auger flyte Fine powder Non-cohesive Odour like varnish or turpentine	-2					
3 1		Absolute refusal Abandon						
4		End of Borehole						
5								
6 2								
7								
8								
9								
10 3								
11								
12								
13 4								
14								
15								

Drill Method: Solid stem

Drill Date: 03-02-02

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-16

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm 125 250 375 / %LEL 10 30 50 70 90	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
ft / m		Ground Surface	0					GPS: 9m accuracy
0 / 0		Drill start time: 10:21am Photo 607 shows location	-1					10 V 0455744
1		***SB-BH-16-01 (10:26am)*** Sample taken from auger flyte Silt Non-cohesive No odour	-2				20	UTM 6504898
2 / 1		Absolute refusal Abandon						
3		End of Borehole						
4								
5								
6 / 2								
7								
8								
9								
10 / 3								
11								
12								
13 / 4								
14								
15								

Drill Method: Solid stem

Drill Date: 03-02-03

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-17

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery	ppm: 125, 250, 375 / %LEL: 10, 30, 50, 70, 90	
ft / m: 0 / 0		Ground Surface	0					GPS: 9m accuracy 10 V 0455748 UTM 6504898
1		Drill start time: 10:40am Photo 608 shows location Strong PHC odour noted	-2					
3 / 1								
			-5					
5		***SB-BH-17-01*** Sample taken from auger flyte Silt Non-cohesive PHC odour noted	-6				95	
7 / 2		Absolute refusal Abandon						
		End of Borehole						
9								
10 / 3								
12								
13 / 4								
14								
15								

Drill Method: Solid stem

Drill Date: 03-02-03

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-18

Enclosure:

Engineer: B. Overton

SUBSURFACE PROFILE				SAMPLE			VOC Concentration ppm (125, 250, 375) / %LEL (10, 30, 50, 70, 90)	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery		
ft / m		Ground Surface	0					GPS: 9m accuracy 10 V 0455771 UTM 6504902
0		Drill start time: 11:04am Photo 611 shows location						
3 / 1			-3					
4		***SB-BH-18-01*** Sample taken from auger flyte Silt Non-cohesive No odour apparent	-4				25 ppm	
6 / 2		Absolute refusal Abandon						
7		End of Borehole						
10 / 3								
13 / 4								
15								

Drill Method: Solid stem

Drill Date: 03-02-03

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

Project No: 408169

Project: Phase III ESA

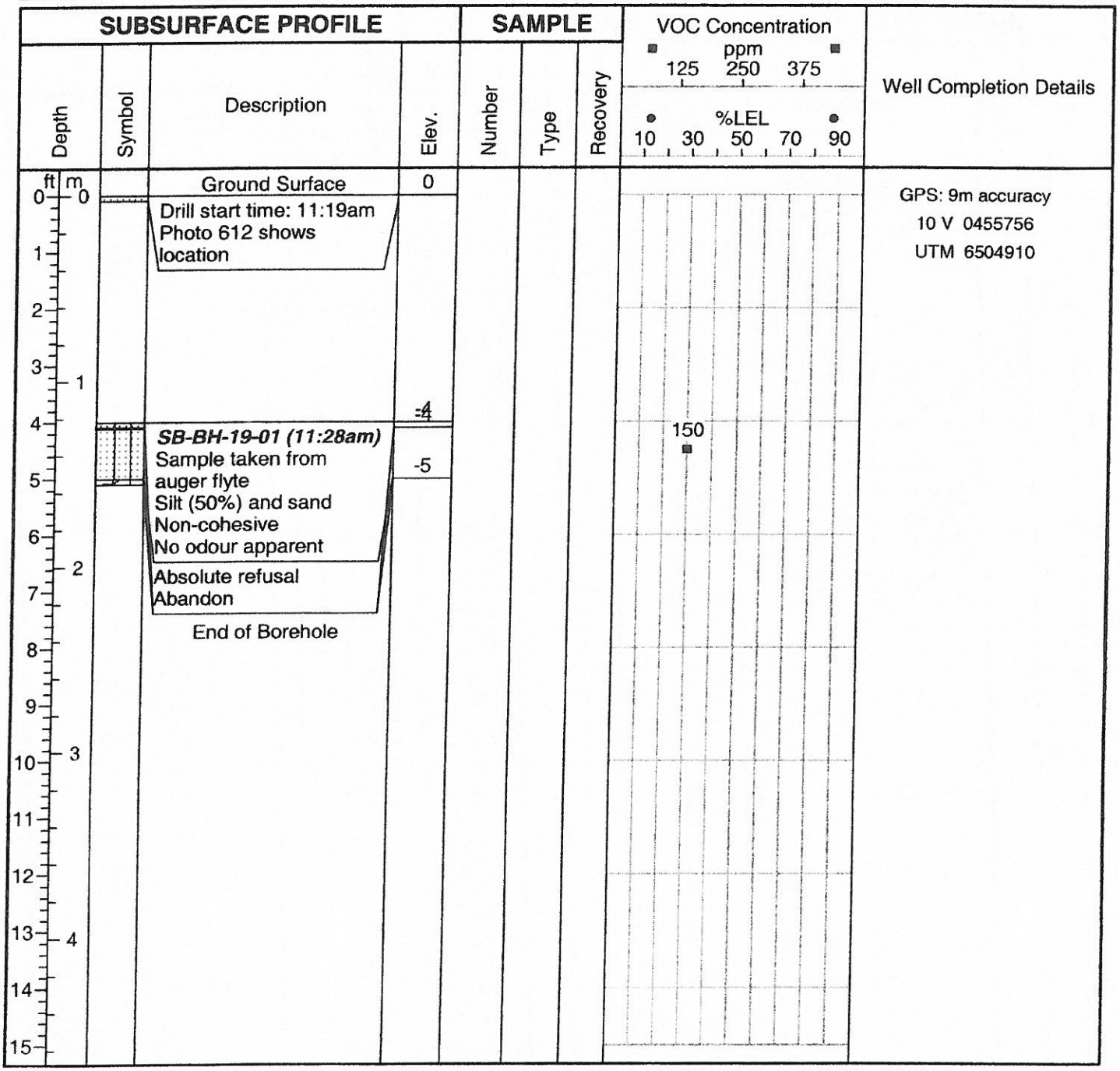
Client: PWGSC Alaska Highway

Location: Steamboat Maintenance Camp

Log of Borehole: SB-BH-19

Enclosure:

Engineer: B. Overton



Drill Method: Solid stem

Drill Date: 03-02-03

Hole Size: 6"

PWGSC Environmental Services
Western Region
1000, 9700 Jasper Avenue
Edmonton, AB T5J 4E2

Datum:

Checked by:

Sheet: 1 of 1

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: BH10-04

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: October 10, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -78°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Fraste Milo DR225 Odex Downhole Hammer	Ground Surface										
		Concrete		0.00								
		Very dense, moist to dry, grey-brown, silty SAND and GRAVEL. - dark grey staining from 0.13m - 0.20m with moderate hydrocarbon-like odour.		0.42	1	AS			□			
1												
		Firm to stiff, dry, grey-brown, silty CLAY, trace sand, trace gravel. - slight to moderate hydrocarbon-like odour.		1.50	2	AS			□			
2												
		Firm, moist, grey-brown, fine sandy SILT, trace gravel. - faint hydrocarbon-like odour.		3.00	3	AS			□			
3												
4					4	AS			□			
5												Bentonite Backfill
6												
		Dense, dry, grey-brown, silty SAND and GRAVEL. - moderate hydrocarbon-like odour.		7.00	5	AS			□			
7												
8												
9												
10		*CONTINUED NEXT PAGE*										

PID ppm: 5, 10, 15, 20 ⊕ / 100, 200, 300, 400 □

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: BH10-04

SHEET 2 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: October 10, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -78°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
10	Fraste Mito DR225 Odex Downhole Hammer	Dense, dry, grey-brown, silty SAND and GRAVEL. - moderate hydrocarbon-like odour. *(continued)*										Bentonite Backfill
11					6	AS						
12		Weathered BEDROCK.		12.00								Cuttings Backfill
13					7	AS						
		End of Monitoring Well.		13.00								
14												
15												
16												
17												
18												
19												
20												

PID ppm: 5, 10, 15, 20 (⊕) / 100, 200, 300, 400 (□)

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: BH10-05

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: October 10, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -75°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Fraste Milo DR225 Odex Downhole Hammer	Ground Surface										
		Concrete		0.00								
		Dense, dry to moist, grey-brown, silty SAND and GRAVEL. - moderate hydrocarbon-like odour. - stained dark grey from 0.08m - 0.13m depth.		0.25	1	AS			□			
1												
2												
3					2	AS			□			
4		Firm, moist, grey-brown, sandy SILT, some gravel. - moderate hydrocarbon-like odour.		4.00								
5					3	AS			□			Bentonite Backfill
6												
7												
8					4	AS			□			
9												
10		*CONTINUED NEXT PAGE*										

PID ppm: 5, 10, 15, 20 ⊕ / 100, 200, 300, 400 □

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

File:Y:\BURNABY\CAD-GIS\BUR-GRAPHICS\PROJECTS\2009\1436\09-1436-5005\DRAFTING\GINT\2010 BH & MW\09-1436-5005.GPJ Output Form:BC_BOREHOLE (AUTO) Template:BC REGION TEMPLATE BETA 3.GDT Library:BC REGION LIBRARY.GLB sreddy 04/07/17

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: BH10-05

SHEET 2 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: October 10, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -75°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
10	Fraste Mito DR225 / Odex Downhole Hammer	Firm, moist, grey-brown, sandy SILT, some gravel. - moderate hydrocarbon-like odour. *(continued)*			5	AS				□				Bentonite Backfill
11														
12														
		End of Monitoring Well.		12.50										
13														
14														
15														
16														
17														
18														
19														
20														

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: BH10-06

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: October 11, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -72°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Fraste Milo DR225 Odex Downhole Hammer	Ground Surface										
		Concrete		0.00								
		Dense, dry to moist, grey-brown, silty SAND and GRAVEL. - strong hydrocarbon-like odour.		0.33	1	AS			□			
3		Moist, grey-brown, fine silty SAND, some gravel, trace clay. - moderate hydrocarbon-like odour.		3.00	2	AS			□			
5					3	AS			□			Bentonite Backfill
9		Dense, moist, light brown, silty SAND, trace gravel. - moderate hydrocarbon-like odour.		9.00								
10		*CONTINUED NEXT PAGE*										

PID ppm: 5, 10, 15, 20 ⊕ / PID ppm: 100, 200, 300, 400 □

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: BH10-06

SHEET 2 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: October 11, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -72°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
10	Fraste Mito DR225 / Odex Downhole Hammer	Dense, moist, light brown, silty SAND, trace gravel. - moderate hydrocarbon-like odour. *(continued)*												
11														
12					4	AS				⊕				
13														Bentonite Backfill
14		Firm, moist, light brown SILT, some clay, trace gravel. - slight hydrocarbon-like odour.		14.00	5	AS			□					
15		Weathered BEDROCK.		15.00										
16														
		End of Monitoring Well.		16.50										
17														
18														
19														
20														

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: BH10-07

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: October 11, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -72°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Fraste Mito DR225 Odex Downhole Hammer	Ground Surface										
		Concrete.		0.00								
		Dense, dry, brown, silty SAND, trace to some gravel. - moderate hydrocarbon-like odour.		0.33	1	AS			□			
1												
					2	AS			□			
2		Very dense, dry, brown, silty SAND, trace to some gravel. - moderate hydrocarbon-like odour.		2.00								
					3	AS				□		
3												
4		Firm, moist, grey-brown SILT, some sand, trace clay, trace gravel. - moderate hydrocarbon-like odour. - grades to somr gravel at 2.59m depth.		4.00								
					4	AS				□		Bentonite Backfill
5												
6												
7												
8												
9												
10		*CONTINUED NEXT PAGE*										

PID ppm: 5, 10, 15, 20 ⊕ / 100, 200, 300, 400 □

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

File:Y:\BURNABY\CAD-GIS\BUR-GRAPHICS\PROJECTS\2009\1436\09-1436-5005\DRAFTING\GINT\2010 BH & MW\09-1436-5005.GPJ Output Form:BC_BOREHOLE (AUTO) Template:BC REGION TEMPLATE BETA 3.GDT Library:BC REGION LIBRARY.GLB sreddy 04/07/17

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: BH10-07

SHEET 2 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: October 11, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -72°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm (⊕) 5 10 15 20 / PID ppm (□) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp W Wl, NP - Non-Plastic 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
10	Fraste Mito DR225 Odex Downhole Hammer	Firm, moist, grey-brown SILT, some sand, trace clay, trace gravel. - moderate hydrocarbon-like odour. - grades to somr gravel at 2.59m depth. *(continued)*										
11												
12												
13		Stiff, moist, light brown to grey SILT. - moderate hydrocarbon-like odour.		12.50	5	AS			⊕			Bentonite Backfill
14												
15		Weathered BEDROCK.		15.00								
16		End of Monitoring Well.		16.00								
17												
18												
19												
20												

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-01 (D)

SHEET 1 OF 5

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 21, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●, rem V. ⊕ U - ○, Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl, NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface										
0	Fraste Mito DR225 Odex Downhole Hammer	Loose to dense, wet, brown ORGANICS with roots.		0.00								
		Compact, wet, brown, silty SAND, some gravel, trace clay. - no odour or staining.		0.50								Concrete
1												
2												
3												
		BEDROCK.		3.75								
4												
5												Bentonite Seal
6												
7												
8												
9												
10		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

File:Y:\BURNABY\CAD-GIS\BUR-GRAPHICS\PROJECTS\2009\1436\09-1436-5005\DRAFTING\GINT\2010 BH & MW\09-1436-5005.GPJ Output Form:BC_BOREHOLE (AUTO) Template:BC REGION TEMPLATE BETA 3.GDT Library:BC REGION LIBRARY.GLB sreddy 04/07/17

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-01 (D)

SHEET 2 OF 5

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 21, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○ / Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
10	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK. *(continued)*										Bentonite Seal
11												
12												
13												
14												
15												
16												
17												
18												
19												
20		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-01 (D)

SHEET 3 OF 5

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 21, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
20		BEDROCK. *(continued)*										
21												
22												
23												
24												
25	Fraste Mito DR225 / Odex Downhole Hammer											Bentonite Seal
26												
27												
28												
29												
30		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-01 (D)

SHEET 4 OF 5

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 21, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ●; rem V. ⊕ U - ○; Pocket Pen - ■) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
30		BEDROCK. *(continued)*												
31														
32														
33														
34														Bentonite Seal
35	Fraste Mito DR225 / Odex Downhole Hammer													
36														
37														
38														
39														Silica Sand
40		*CONTINUED NEXT PAGE*												

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-01 (D)

SHEET 5 OF 5

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 21, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○ Pocket Pen - ■	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl NP - Non-Plastic (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
40	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK. *(continued)*										Slotted PVC Pipe
41												
42												
43												
44												
45												
46												
47												
48												
49												
50		End of Monitoring Well.										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

File:Y:\BURNABY\CAD-GIS\BUR-GRAPHICS\PROJECTS\2009\1436\09-1436-5005\DRAFTING\GINT\2010 BH & MW\09-1436-5005.GPJ Output Form:BC_BOREHOLE (AUTO) Template:BC REGION TEMPLATE BETA 3.GDT Library:BC REGION LIBRARY.GLB sreddy 04/07/17

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-01 (S)

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 20, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Fraste Milo DR225 Odex Downhole Hammer	Ground Surface										
		Loose to dense, wet, brown ORGANICS with roots.		0.00								Concrete
		Compact, wet, brown, silty SAND, some gravel, trace clay. - no odour or staining.		0.50								
1												
2												Bentonite Seal
3					1	SS						
4		BEDROCK. - no odour or staining. - wet at 2.90m depth.		3.75								
5												Silica Sand
6					2	GS						
7												Slotted PVC Pipe
8												
9												
10		*CONTINUED NEXT PAGE*										

PID ppm: 5, 10, 15, 20 / 100, 200, 300, 400

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

File:Y:\BURNABY\CAD-GIS\BUR-GRAPHICS\PROJECTS\2009\1436\09-1436-5005\DRAFTING\GINT\2010 BH & MW\09-1436-5005.GPJ Output Form:BC_BOREHOLE (AUTO) Template:BC REGION TEMPLATE BETA 3.GDT Library:BC REGION LIBRARY.GLB sreddy 04/07/17

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-01 (S)

SHEET 2 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 20, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	PID ppm (⊕) 5 10 15 20 / PID ppm (□) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp W Wl, NP - Non-Plastic 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
10		BEDROCK. - no odour or staining. - wet at 2.90m depth. *(continued)*										Slotted PVC Pipe
		End of Monitoring Well.		10.42								
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-02

SHEET 1 OF 4

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 22, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Fraste Milo DR225 Odex Downhole Hammer	Ground Surface										
		Soft, moist, brown, silty CLAY, trace sand and gravel. - no odour or staining.		0.00								
1		Firm, damp to moist, silty medium SAND, some gravel. - no odour or staining.		1.00	1	SS			⊕			
2												
3												
4												
5												Bentonite Seal
6					2	SS			⊕			
7												
8												
9												
10		*CONTINUED NEXT PAGE*										

PID ppm: 5, 10, 15, 20 (⊕); PID ppm: 100, 200, 300, 400 (□)

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: M.T.
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-02

SHEET 2 OF 4

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 22, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
10	Fraste Mito DR225 Odex Downhole Hammer	Firm, damp to moist, silty medium SAND, some gravel. - no odour or staining. *(continued)*										
11					3	SS						
12												
13		SANDSTONE. (BEDROCK)		13.00								
14												
15												Bentonite Seal
16												
17												
18												
19												
20		*CONTINUED NEXT PAGE*										

PID ppm: 5, 10, 15, 20 (⊕) / 100, 200, 300, 400 (□)

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: M.T.
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-02

SHEET 3 OF 4

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 22, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm (⊕) 5 10 15 20 / PID ppm (□) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp W Wl, NP - Non-Plastic 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
20	Fraste Mito DR225 Odex Downhole Hammer	SANDSTONE. (BEDROCK) *(continued)*										Bentonite Seal
21												
22												
23												
24												
25												Silica Sand
26												
27												
28												Slotted PVC Pipe
29												
30		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: M.T.
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-02

SHEET 4 OF 4

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 22, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	PID ppm (⊕) 5 10 15 20 / PID ppm (□) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp — W — Wl, NP - Non-Plastic 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
30	Fraste Mito DR225 Odex Downhole Hammer	SANDSTONE. (BEDROCK) *(continued)*										
31												
32												
33												Slotted PVC Pipe
34												
35												
36		End of Monitoring Well.		36.00								
37												
38												
39												
40												

DEPTH SCALE
1 : 50

LOGGED: M.T.
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-03

SHEET 1 OF 8

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 23, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm	HYDRAULIC CONDUCTIVITY, k, cm/s / WATER CONTENT PERCENT	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	Fraste Mito DR225 Odex Downhole Hammer	Ground Surface										
		Dense, moist, grey-brown, silty SAND, some organics, some gravel, some organics (twigs, rootlets). - no odour or staining.		0.00	1	SS						
1		Lost core - no recovery.		1.00								
2												
3												
4												
5		Dense, moist, grey, sandy SILT, trace clay, trace gravel. - no odour or staining.		5.00	2	SS						Bentonite Seal
6		Very dense, moist, grey to dark grey, silty SAND and GRAVEL. - no odour or staining.		6.00	3	SS						
7												
8												
9		BEDROCK		9.00								
10		*CONTINUED NEXT PAGE*										

PID ppm: 5, 10, 15, 20 (⊕) / 100, 200, 300, 400 (□)

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6}, 10^{-5}, 10^{-4}, 10^{-3}

WATER CONTENT PERCENT: Wp — W — Wl; NP - Non-Plastic; 10, 20, 30, 40

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-03

SHEET 2 OF 8

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 23, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
10	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK *(continued)*										Bentonite Seal
11												
12												
13												
14												
15												
16												
17												
18												
19												
20		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-03

SHEET 3 OF 8

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 23, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	PID ppm (⊕) 5 10 15 20 / PID ppm (□) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp — W — Wl, NP - Non-Plastic 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
20	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK *(continued)*										
21												
22												
23												
24												
25												Bentonite Seal
26												
27												
28												
29												
30		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

File:Y:\BURNABY\CAD-GIS\BUR-GRAPHICS\PROJECTS\2009\1436\09-1436-5005\DRAFTING\GINT\2010 BH & MW\09-1436-5005.GPJ Output Form:BC_BOREHOLE (AUTO) Template:BC REGION TEMPLATE BETA 3.GDT Library:BC REGION LIBRARY.GLB sreddy 04/07/17

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-03

SHEET 4 OF 8

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 23, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
30	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK *(continued)*										
31												
32												
33												
34												
35												Bentonite Seal
36												
37												
38												
39												
40		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-03

SHEET 5 OF 8

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 23, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; NP - Non-Plastic) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
40	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK *(continued)*										
41												
42												
43												
44												
45												Bentonite Seal
46												
47												
48												
49												
50		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-03

SHEET 6 OF 8

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 23, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	PID ppm (⊕) 5 10 15 20 / PID ppm (□) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp — W — Wl, NP - Non-Plastic, 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
50	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK *(continued)*										
51												
52												
53												
54												
55												Bentonite Seal
56												
57												
58												
59												
60		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

File:Y:\BURNABY\CAD-GIS\BUR-GRAPHICS\PROJECTS\2009\1436\09-1436-5005\DRAFTING\GINT\2010 BH & MW\09-1436-5005.GPJ Output Form:BC_BOREHOLE (AUTO) Template:BC REGION TEMPLATE BETA 3.GDT Library:BC REGION LIBRARY.GLB sreddy 04/07/17

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-03

SHEET 7 OF 8

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 23, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	PID ppm (⊕) 5 10 15 20 / PID ppm (□) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp — W — Wl, NP - Non-Plastic 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
60	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK *(continued)*										Bentonite Seal
61												
62												
63												
64												Silica Sand
65												
66												
67												Slotted PVC Pipe
68												
69												
70		*CONTINUED NEXT PAGE*										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

PROJECT No.: 09-1436-5005

RECORD OF MONITORING WELL: MW10-03

SHEET 8 OF 8

CLIENT: Public Works and Government Services Canada
PROJECT: Groundwater and Soil Vapour Assessment
LOCATION: Steamboat Maintainence Camp, Kilometer 537.5, Alaska Highway

DRILLING DATE: September 23, 2010
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	SAMPLES: RECOVERY %	PID ppm (⊕) 5 10 15 20 / PID ppm (□) 100 200 300 400	HYDRAULIC CONDUCTIVITY, k, cm/s 10^{-6} 10^{-5} 10^{-4} 10^{-3} / WATER CONTENT PERCENT Wp — W — Wl, NP - Non-Plastic 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
70	Fraste Mito DR225 Odex Downhole Hammer	BEDROCK *(continued)*										Slotted PVC Pipe
71												
72												
73												
74												
75												
76												
77												
78												
79												
80		End of Monitoring Well.										

DEPTH SCALE
1 : 50

LOGGED: EvK
CHECKED: JL

File:Y:\BURNABY\CAD-GIS\BUR-GRAPHICS\PROJECTS\2009\1436\09-1436-5005\DRAFTING\GINT\2010 BH & MW\09-1436-5005.GPJ Output Form:BC_BOREHOLE (AUTO) Template:BC REGION TEMPLATE BETA 3.GDT Library:BC REGION LIBRARY.GLB sreddy 04/07/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-01

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504939.65 E: 455732.95

EXCAVATION DATE: September 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10

TEST PIT DIMENSIONS:
8.5 m Length x 1.7 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	GEOTECH SAMPLES: TYPE	GEOTECH SAMPLES: RECOVERY %	PID ppm (5, 10, 15, 20) / PID ppm (100, 200, 300, 400)	CHEMISTRY ANALYSIS: NUMBER	CHEMISTRY ANALYSIS: SCN	CHEMISTRY ANALYSIS: ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1063.17									
	John Deere 250G LC Excavator, Excavator Bucket	FILL - **(SP/GP)** SAND and GRAVEL, trace fines, fine gravel; brown to grey; non-cohesive, dry, compact.		1062.97 / 0.20				⊕	S1	02025-01			
1		FILL - **(SC/GC)** CLAYEY SAND and GRAVEL; brown to dark grey; cohesive, w<PL, firm. - contains angular cobble to boulder-sized fragments of slightly weathered, grey, medium grained, non-porous to faintly porous, strong, SANDSTONE			S1	G		⊕	S2	02025-01			
2				1061.17 / 2.00									
		Slightly weathered, grey, with iron and black staining, medium grained, non-porous to faintly porous, strong, SANDSTONE.						⊕	S4	02025-03			
3													
		- bedrock not exposed until ~ 3.65 m depth at north end of test pit. - becomes grey, very strong at 3.95 m depth		1059.22 / 3.95									
4		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: AB
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-02

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504901.80 E: 455764.76

EXCAVATION DATE: September 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10

TEST PIT DIMENSIONS:
6.9 m Length x 1.3 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1062.07									
0	John Deere 250G LC Excavator, Excavator Bucket	FILL - **(GC)** sandy CLAYEY GRAVEL, fine gravel; brown to grey, with some plastic refuse; cohesive, w<PL, stiff.		0.00 / 1061.32				⊕	S1	02025-04			
1		FILL - **(CL)** sandy SILTY CLAY, some fine gravel; brown, with organics (wood debris); cohesive, w<PL, firm to stiff.		0.85				□	S2	02025-05			
2		FILL - **(SC)** CLAYEY SAND, some gravel; grey; cohesive, w<PL, firm. - contains angular cobble to boulder-sized fragments of slightly weathered, grey, medium grained, non-porous to faintly porous, strong, SANDSTONE		1059.57				⊕	S3	02025-06			
3		Slightly weathered, grey, with iron and black staining, medium grained, non-porous to faintly porous, medium strong to strong, SANDSTONE. - becomes grey, very strong at 2.8 m depth		1059.27 / 2.80									
4		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: AB
CHECKED: JL

PROJECT No.: 1660199 / 1000

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504822.30 E: 455784.92

RECORD OF TEST PIT: TP16-03

EXCAVATION DATE: September 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

SHEET 1 OF 1
DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
7.5 m Length x 1.2 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1062.47									
0	John Deere 250G LC Excavator, Excavator Bucket	FILL - **(GP/GM)** sandy GRAVEL, some non-plastic fines, fine gravel; brown, with organics (rootlets); non-cohesive, moist, compact.		1062.27 / 0.20				⊕	S1/2	02025-07/08			
1		FILL - **(GC)** sandy CLAYEY GRAVEL, fine gravel; brown to grey, with debris (metal cable, sheet metal pipe, wooden planks); cohesive, w<PL, firm to stiff. - some asphalt (wet, with fine crushed gravel) from 0.50 m to 0.60 m depth		1061.77 / 0.70									Seepage
2								⊕	S3	02025-09			
3		FILL - **(CI)** SILTY CLAY, some sand, some gravel; dark grey, with organics (rootlets); cohesive, w>PL, firm. - car engine ~ 0.75 m x 0.30 m at 1.3 m depth observed and removed during excavation; some motor oil observed in surrounding soil		1058.97				⊕	S4	02025-10			
4		- few angular cobble to boulder-sized fragments of slightly weathered, grey, medium grained, non-porous to faintly porous, strong, SANDSTONE below 1.5 m depth - some iron stained sand pockets at 2.5 m depth		3.60				⊕	S5	02025-11			
5		Slightly weathered, grey, with some iron staining, medium grained, non-porous to faintly porous, strong, SANDSTONE. - becomes very strong at 3.6 m depth											
6		End of Test Pit.											
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: AB
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-04

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504793.63 E: 455834.73

EXCAVATION DATE: September 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
3 m Length x 0.8 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (⊕: 5, 10, 15, 20)	PID ppm (□: 100, 200, 300, 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1059.76										
		Grass and organic overburden.		1059.51										
	John Deere 250G LC Excavator Excavator Bucket	**(CL/ML)** CLAYEY SILT, moist with some pieces of fractured silt/sandstone, some gravel, no shear, no odour, loose.		0.25			⊕			S1	01129-01			
1				1058.01			⊕			S2	01129-02			
2		Weathered SILTSTONE.	× × × × × ×	1.75										
				1057.36										
		End of Test Pit.		2.40										
3														
4														
5														
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-05

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504881.18 E: 455752.09

EXCAVATION DATE: September 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10

TEST PIT DIMENSIONS:
3 m Length x 0.8 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1062.81										
	John Deere 250G LC Excavator Excavator Bucket	Grass and organic overburden.		1062.56										
		(CL/ML) CLAYEY SILT, moist with pieces of trace rock (siltstone/sandstone).		0.25 1062.01				⊕		S1	01129-03			
1		Weathered SILTSTONE.	× × × × × ×	0.80 1061.41	S1	RC								
		End of Test Pit.		1.40										
2														
3														
4														
5														
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-06

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504797.04 E: 455838.14

EXCAVATION DATE: September 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10

TEST PIT DIMENSIONS:
3 m Length x 0.8 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0	John Deere 250G LC Excavator Excavator Bucket	Ground Surface		1059.56										
		Grass and organics.		1059.31										
		(CL/ML) CLAYEY SILT, moist with some fractured rock pieces.		0.25				⊕		S1	01129-04/05			
		Weathered sandstone/siltstone.		1058.81										
1				1058.56										
		End of Test Pit.		1.00	S1	RC								
2														
3														
4														
5														
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-07

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504798.26 E: 455842.60

EXCAVATION DATE: September 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10

TEST PIT DIMENSIONS:
3 m Length x 0.8 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0	John Deere 250G LC Excavator Excavator Bucket	Ground Surface		1059.05										
		Grass and organics.		1058.80										
		FILL - **(GP)** Gravel Fill.		1058.55										
		Weathered/fractured siltstone/sandstone.	× × × × × ×	0.50	S1	RC		⊕		S1	01129-06			
				1058.05										
1		End of Test Pit.		1.00										
2														
3														
4														
5														
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-08

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504885.00 E: 455731.00

DATUM: NAD 83 UTM Zone 10

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.

INCLINATION: -90°

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5, 10, 15, 20)	PID ppm (100, 200, 300, 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
		Ground Surface		1063.06										
0	John Deere 250G LC Excavator, Excavator Bucket	**(GP)** GRAVEL with some sand.		0.00						S1	02028-01			
1				1061.56						S2	02028-02			
		(ML) CLAYEY SILT, some gravel; brown; moist.		1.50										
2										S3	02028-03			
3				1059.66						S4	02028-04			
		- BEDROCK at 3.40 m depth..		3.40										
4		End of Test Pit.												
5														
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-09

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504874.00 E: 455709.00

DATUM: NAD 83 UTM Zone 10

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.

INCLINATION: -90°

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
		Ground Surface		1063.18										
0	John Deere 250G LC Excavator, Excavator Bucket	**(GP)** GRAVEL with some sand.		0.00				⊕		S1	02028-05			
1		- garbage observed at 1.0 m depth.		1061.68					512					
2		**(ML)** CLAYEY SILT, some gravel; brown; moist.		1.50					□					
3				1059.78					□					
		- BEDROCK at 3.40 m depth.		3.40										
4		End of Test Pit.												
5														
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-10

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504900.00 E: 455716.00

DATUM: NAD 83 UTM Zone 10

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.

INCLINATION: -90°

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1063.88									
0	John Deere 250G LC Excavator, Excavator Bucket	**(GP)** GRAVEL, with some sand.		0.00									
1		- organics observed at 1.0 m depth											
1		- garbage observed at 1.5 m depth		1062.38									
2		**(ML)** CLAYEY SILT, some gravel; brown; moist.		1.50					S1	02028-06			
3				1060.38									
3		- BEDROCK at 3.5 m depth.		3.50									
4		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-11

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504905.00 E: 455710.00

DATUM: NAD 83 UTM Zone 10

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.

INCLINATION: -90°

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1063.57									
0	John Deere 250G LC Excavator, Excavator Bucket	**(GP)** GRAVEL, with some sand.		0.00									
1		- organics observed at 1.0 m depth		1062.07					S1	02028-07			
1		**(ML)** CLAYEY SILT, some gravel; brown; moist.		1.50									
2		- garbage observed at 1.5 m depth.							S2	02028-08			
3				1060.37					S3	02028-09			
3		- BEDROCK at 3.2 m depth.		3.20									
4		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-12

SHEET 1 OF 1

DATUM: NAD 83 UTM Zone 10

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504874.00 E: 455722.00

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1060.64										
	John Deere 250G LC Excavator Excavator Bucket	**(GP)** GRAVEL, with some sand.		1060.44										
1		**(ML)** CLAYEY SILT, some rock; brown; moist. - seepage and dark hydrocarbon staining at 0.5 m depth		0.20					675.4	S1	02028-10/11			
2				1058.34						S2	02028-12			
		- BEDROCK at 2.3 m depth.		2.30										
3		End of Test Pit.												
4														
5														
6														
7														
8														
9														
10														

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-13

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504880.00 E: 455731.00

DATUM: NAD 83 UTM Zone 10

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.

INCLINATION: -90°

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1062.75									
0	John Deere 250G LC Excavator, Excavator Bucket	**(GP)** GRAVEL with some sand.		0.00				⊕	S1	02029-01			
1								⊕					
1		- hydrocarbon staining and few tree branches at 1.45 m depth		1061.25				□	S2/3	02029-02/03			
2		**(ML)** CLAYEY SILT, some rock.		1.50				□					
2								⊕	S4	02029-04			
3				1059.55				⊕					
3		- BEDROCK at 3.2 m depth.		3.20									
4		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-14

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504877.00 E: 455738.00

DATUM: NAD 83 UTM Zone 10

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.

INCLINATION: -90°

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1062.71									
0	John Deere 250G LC Excavator Excavator Bucket	**(GP)** GRAVEL with some sand.		0.00				⊕	S1	02029-05			
1				1061.21				⊕					
1		**(ML)** CLAYEY SILT, some gravel, suspect organics; brown; moist. - staining observed at 1.5 m depth		1.50				⊕	S2	02029-06			
2								⊕					
2				1059.91				⊕	S3	02029-07			
3		- BEDROCK at 2.8 m depth.		2.80									
3		End of Test Pit.											
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-15

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504985 E: ~455680
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.3 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(ML)** SILT, some gravel, trace roots and wood debris; brown, no staining, no odour; cohesive, moist, stiff.		0.00			⊕		S1	509271-03-01			
1		**(CL)** SILTY CLAY, trace rootlets; red-brown, no staining, no odour; cohesive, w~PL, soft. - grades to grey at 1.5 m depth.		1.30			⊕		S2	509271-03-02			
2		**(ML)** CLAYEY SILT, some gravel; grey, no staining, no odour; cohesive, w>PL, stiff. - weathered sandstone cobble and boulders starting at 2.9 m depth (grey and orange).		2.30			⊕						
3													
4													
5		- BEDROCK at 4.6 m depth. End of Test Pit.		4.60									
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: RM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-16

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504961.81 E: 455672.53

EXCAVATION DATE: November 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6.25 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (⊕: 5, 10, 15, 20) / PID ppm (□: 100, 200, 300, 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1059.56									
0	John Deere 250G LC Excavator, Excavator Bucket	**(ML)** CLAYEY SILT, some weathered bedrock cobbles; grey, no staining, no odour; cohesive, w>PL, very stiff.		0.00									
1							⊕		S1	TP16-16-S1			
2													
3		- grades to light brown at 3.0 m depth.					⊕		S2	TP16-16-S2			
4													
5							⊕		S3	TP16-16-S3			
				1053.96									
6		- BEDROCK at 5.6 m depth. End of Test Pit.		5.60									
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-17

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504955 E: ~455625
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
7 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(ML)** CLAYEY SILT, some organics and tree roots, some cobble, gravel; brown, no staining, no odour; cohesive, moist, soft.		0.00									
1		- organic seam with tree roots at 0.8 m depth.					⊕		S1	TP16-17-S1			
2													
3		**(CL)** SILTY CLAY, some sand, medium to coarse, gravel; brown, no staining, no odour; cohesive, moist, firm.		2.30									
4							⊕		S2	TP16-17-S2			
5		**(ML)** CLAYEY SILT, some sand, trace cobble, fine sand; brown, no staining, no odour; cohesive, moist, firm.		4.20									
6							⊕		S3	TP16-17-S3			
7		**(ML)** CLAYEY SILT, with 40% gravel and cobble; brown, no staining, no odour; cohesive, moist, firm.		5.90									
8		- BEDROCK at 7.0 m depth.		7.00									
9		End of Test Pit.											
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-18

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504968.86 E: 455722.49

EXCAVATION DATE: November 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
7 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (⊕: 5, 10, 15, 20) / PID ppm (□: 100, 200, 300, 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1060.00									
0	John Deere 250G LC Excavator Excavator Bucket	**(ML)** CLAYEY SILT, some organics, trace cobbles; brown, no staining, no odour; cohesive, moist, firm. - concrete and metal debris at 0.7 m depth. - red stained soil seam approx. 0.1 m thick at 1.1 m depth.		0.00									
1								⊕	S1	TP16-18-S1			
2				1057.70									
2		**(ML)** CLAYEY SILT, 40% cobble; brown, no staining, no odour; cohesive, moist, firm. - oil filter found at 2.5 m depth.		2.30				⊕	S2	TP16-18-S2			
3				1056.80									
3		**(ML)** sandy SILT, trace clay, cobble; dark brown, no staining, no odour; cohesive, moist, compact. - BEDROCK at 3.2 m depth.		3.20					S3	TP16-18-S3			
4		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-19

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504957.56 E: 455716.54

EXCAVATION DATE: November 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
7 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1060.00									
0	John Deere 250G LC Excavator, Excavator Bucket	**(ML)** CLAYEY SILT, with organics, some cobble; brown, no staining, no odour; cohesive, moist, soft to firm. - wood garbage spotted at 0.3 m depth.		0.00									
1								⊕	S1	TP16-19-S1			
2				1057.70									
2		**(SM)** SILTY SAND, some gravel, fine sand; brown, no staining, no odour; non-cohesive, moist, loose.		2.30				⊕	S2	TP16-19-S2			
3				1056.20									
3		- BEDROCK at 3.8 m depth.		3.80				⊕	S3	TP16-19-S3			
4		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-20

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504939 E: ~455754
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(SW)** SAND, medium to coarse, some gravel; brown, no staining, no odour; non-cohesive, moist, loose. - garbage and metal debris (car trim pieces) - organic seam at 1.0 m depth.		0.00					S1	TP16-20-S1			
2		**(SP)** SAND, some gravel, some cobble; brown, no staining, no odour; non-cohesive, moist, loose.		2.00					S2	TP16-20-S2			
4		- BEDROCK at 4.2 m depth. End of Test Pit.		4.10					S3	TP16-20-S3			

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-21

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504908 E: ~455807
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(ML)** CLAYEY SILT, some cobble, silty sand, trace clay; brown, no staining, no odour; cohesive, moist, stiff - tree roots at 0.2 m depth.		0.00				⊕	S1	TP16-21-S1			
1		Weathered siltstone/sandstone; no odour, no sheen.	× × × × × × × × × × × × × × × ×	1.40				⊕	S2	TP16-21-S2			
2		- BEDROCK at 2.6 m depth. End of Test Pit.		2.60									
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-22

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504908 E: ~455794
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 6, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
7 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (⊕: 5, 10, 15, 20) / PID ppm (□: 100, 200, 300, 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
	John Deere 250G LC Excavator, Excavator Bucket	ROAD BASE FILL - **(SP/GP)** gravelly SAND, some cobbles; brown, no staining, no odour; non-cohesive, moist, loose.		0.00									
1								⊕	S1	TP16-22-S1			
2		- some light brown soil at 2.0 m depth.							S2	TP16-22-S2			
		(ML) SILT, some clay, trace gravel; brown, no staining, no odour; cohesive, moist, firm.		2.10									
3		**(ML)** SILT, some clay, trace gravel; dark brown, no staining, no odour; cohesive, moist, firm.		3.10									
4		sandy SILT, some cobble (siltstone/standstone); dark brown, no staining, no odour; cohesive, moist, compact.		4.00					S3	TP16-22-S3			
		- BEDROCK at 4.5 m depth.		4.50									
5		End of Test Pit.											
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-23

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504889 E: ~455785
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6.2 m Length x 1.2 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) ⊕ / PID ppm (100 200 300 400) □	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(SM)** SILTY SAND, some gravel; brown, no staining, no odour; non-cohesive, moist, very dense.		0.00				⊕	S1	TP16-23-S1			
1		**(SP)** SAND, fine with cobbles and boulders; grey to brown, no staining, no odour; non-cohesive, moist,compact		1.20				⊕	S2	TP16-23-S2			
2		- BEDROCK at 2.1 m depth.		2.10									
		End of Test Pit.											
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-24

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504877 E: ~455791
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.4 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(SP/GP)** SAND and GRAVEL; brown, no staining, no odour; non cohesive, moist, dense.		0.00					S1	TP16-24-S1			
1		- weathered sandstone cobbles and boulders at 1.0 m depth.							S2	TP16-24-S2			
2		- BEDROCK at 1.8 m depth.		1.80									
		End of Test Pit.											
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-25

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504896.65 E: 455757.03

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10

TEST PIT DIMENSIONS:
5.5 m Length x 1.4 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	GEOTECH SAMPLES: TYPE	GEOTECH SAMPLES: RECOVERY %		CHEMISTRY ANALYSIS: NUMBER	CHEMISTRY ANALYSIS: SCN	CHEMISTRY ANALYSIS: ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1060.00									
0	John Deere 250G LC Excavator Excavator Bucket	**(SM)** SILTY SAND, some gravel, sandstone cobble; brown; moist, very dense.		0.00					S1	TP16-25-S1			
1									S2	TP16-25-S2			
2		- BEDROCK at 3.2 m depth.		1058.20 / 1.80									
2		End of Test Pit.											
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-26

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504808 E: ~455805
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
5.5 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (⊕ 5 10 15 20) / PID ppm (□ 100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
	John Deere 250G LC Excavator Excavator Bucket	**(SP/GP)** SAND and GRAVEL; brown, no staining, no odour; non cohesive, moist, dense.		0.00									
				0.40				⊕	S1	TP16-26-S1			
1		**(CL)** SILTY CLAY, trace gravel; brown, no staining, no odour; cohesive, moist, very stiff.											
2													
		(CH) CLAY, trace gravel, occasional sandstone cobble; dark brown, no stainimg, no odour; cohesive, w~PL, stiff.		2.40				⊕	S2	TP16-26-S2			
3		- BEDROCK at 3.2 m depth.		3.20									
		End of Test Pit.											
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-27

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504829 E: ~455774
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
7 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (⊕: 5, 10, 15, 20) / PID ppm (□: 100, 200, 300, 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
	John Deere 250G LC Excavator, Excavator Bucket	**(SP/GP)** SAND and GRAVEL; brown, no staining, no odour; non- cohesive, moist, compact.		0.00									
1		**(CL)** SILTY CLAY, trace gravel, organics; brown, no staining, no odour; cohesive, w~PL, firm.		0.80			⊕		S1	TP16-27-S1			
2													
3													
4		- sandstone cobble and boulders at 3.5 m depth.					⊕		S2	TP16-27-S2			
		- BEDROCK at 4.1 m depth.		4.10									
		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-28

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504839 E: ~455752
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.3 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator Excavator Bucket	**(SP/GP)** SAND and GRAVEL (ROAD BASE FILL)		0.00									
1		**(ML)** SILTY CLAY, some gravel; brown, no staining, no odour; cohesive, w~PL, firm. - organic lens from 1.2 m to 1.4 m depth.		0.60					S1	TP16-28-S1			
2		**(ML)** CLAY, some sandstone cobble, trace sand; brown, no staining, no odour; cohesive, w<PL, dense.		1.70									
3													
4									S2	TP16-28-S2			
4		- BEDROCK at 4.1 m depth. End of Test Pit.		4.10									
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-29

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504927 E: ~455670
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.6 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (⊕: 5, 10, 15, 20) / PID ppm (□: 100, 200, 300, 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(ML)** CLAYEY SILT, some organics, some cobble; brown, no staining, no odour; cohesive, moist, stiff. - garbage, geotextile and rubber piping observed		0.00									
1								⊕	S1	TP16-29-S1			
2		- black pipe from 1.8 m - 2.0 m depth.						⊕	S2	TP16-29-S2			
3								⊕	S3	TP16-29-S3			
4		End of Test Pit.		3.60									
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-30

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504938 E: ~455640
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
5 m Length x 1.8 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(ML)** CLAYEY SILT, cobbles and gravel, trace rootlets; dark brown; w~PL.		0.00									
1							⊕		S1	TP16-30-S1			
2		- organic seam from 1.6 m to 1.8 m depth.											
2		**(SM)** SILTY SAND, with roots, sandstone cobbles; grey, no staining, no odour; non- cohesive, wet, stiff.		2.10			⊕		S2	TP16-30-S2			
3													
3		**(ML)** CLAYEY SILT, trace sand, gravel; light brown, no staining, no odour; cohesive, moist, stiff.		3.50			⊕		S3	TP16-30-S3			
4		- sandstone cobbles at 3.9 m depth.											
4		- BEDROCK at 4.2 m depth.		4.20									
5		End of Test Pit.											
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: IM/RM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-31

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504791.81 E: 455817.98

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10

TEST PIT DIMENSIONS:
6 m Length x 1.3 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface		1059.56									
0	John Deere 250G LC Excavator, Excavator Bucket	**(SP/GP)** SAND and GRAVEL, with cobble. (ROAD BASE FILL)		0.00 / 1058.96									
1		**(ML)** CLAYEY SILT, trace gravel; light brown, no staining, no odour; cohesive, w~PL, firm.		0.60			⊕		S1	TP16-31-S1			
2				1056.76			⊕		S2	TP16-31-S2			
3		- BEDROCK at 2.8 m depth. End of Test Pit.		2.80									
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: RM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-32

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504814 E: ~455851
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.4 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(SP/GP)** SAND and GRAVEL (ROAD BASE FILL)		0.00					S1	TP16-32-S1			
1		**(SP)** SAND, fine, some sandstone gravel and cobble; brown, red staining, no odour; non-cohesive, moist, very dense.		1.00					S2	TP16-32-S2			
2		- BEDROCK at 1.8 m depth. End of Test Pit.		1.80									
3													
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: RM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-33

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504973 E: ~455689
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.4 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(SP/GP)** SAND and GRAVEL. ROAD BASE FILL		0.00									
1		- organic lens from 0.8 m to 0.9 m depth.		0.90				⊕	S1	TP16-33-S1			
1		**(SM)** SILTY SAND, some gravel; light yellow-brown, no staining, no odour; non-cohesive, moist, dense.		1.10									
2		**(SM)** SILTY SAND, some gravel; grey, no staining, no odour; non-cohesive, moist, dense.						⊕	S2	TP16-33-S2			
3								⊕	S3	TP16-33-S3			
3		- BEDROCK at 3.2 m depth.		3.20									
4		End of Test Pit.											
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: RM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF TEST PIT: TP16-34

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: ~6504933 E: ~455786
Note: Northing and Easting Coordinates have been determined by GPS in the field and are approximate only.

EXCAVATION DATE: November 7, 2016
EXCAVATION CONTRACTOR: Radar Road Transport Ltd.
INCLINATION: -90°

DATUM: NAD 83 UTM Zone 10
TEST PIT DIMENSIONS:
6 m Length x 1.4 m Width

DEPTH SCALE METRES	EXCAVATION METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	RECOVERY %	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	CHEMISTRY ANALYSIS: NUMBER	SCN	ANALYSED	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE, THERMISTOR INSTALLATION OR SEEPAGE OBSERVATION
0		Ground Surface											
0	John Deere 250G LC Excavator, Excavator Bucket	**(CL)** SILTY CLAY, trace sand, organics; brown, no staining, no odour; cohesive, w~PL, soft.		0.00									
1							⊕		S1	TP16-34-S1			
1		**(SM)** SILTY SAND, with sandstone cobble; grey, no staining, no odour; non-cohesive, moist, dense.		1.40									
2							⊕		S2	TP16-34-S2			
2		- increasing sandstone cobbles at 2.0 m depth.					⊕		S3	TP16-34-S3			
2		- BEDROCK at 2.2 m depth.		2.20									
3		End of Test Pit.											
4													
5													
6													
7													
8													
9													
10													

DEPTH SCALE
1 : 76.9

LOGGED: RM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_TESTPIT WITH PHOTO (ENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-01

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504958.06 E: 455678.03

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1065.39														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(SP)** SAND, fine, some silt, angular gravel; brown; moist, dense. - interbedded medium sand seams throughout		0.00				1	100	Sa1	02022-01	X						
1										Sa2	02022-02	X						
2								2	100	Sa3	02022-03							Bentonite Chips
3				1062.44														
		(CH) SILTY CLAY, some angular gravel; brown; moist, w<PL, stiff.		2.95				3	100									
4				1061.07						Sa4	02022-04	X						
		End of Borehole. (Refusal)		4.32														
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-02

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504968.42 E: 455694.10

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0		Ground Surface		1063.99														
	B80 Solid Stem Auger (Casing:152 mm.)	**(SP)** SAND, fine, some angular gravel; brown; moist, dense.		0.00				1	100	Sa1	02022-05	X	⊕					
1										Sa2	02022-06		⊕					
				1062.32														
2		**(ML)** CLAYEY SILT, some angular gravel; brown; w<PL, stiff.		1.68				2	100	Sa3	02022-07	X	⊕					Bentonite Chips
3								3	100	Sa4	02022-08		⊕					
				1060.03														
4		End of Borehole. (Refusal)		3.96														
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-03

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504931.73 E: 455683.64

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0			Ground Surface		1065.10														
	B80	Solid Stem Auger (Casing:152 mm;)	**(MH)** CLAYEY SILT, some angular gravel; dark brown; w~PL, stiff.		0.00				1	100	Sa1	02022-09/10	X	⊕					
					1064.29														
1			**(ML)** SILT, trace sand; grey-brown; wet, very soft.		0.81						Sa2	02022-11	X	⊕					
					1063.88														
			(MH) CLAYEY SILT, trace angular gravel; grey; w<PL, stiff.		1.22														
2			- grades to brown at 2.13 m depth						2	100	Sa3	02022-12		⊕					
3																			Bentonite Chips
					1061.85														
			(ML) SILT, some sand; light brown; w<PL, soft.		3.25				3	100									
4			- trace brick debris at 3.96 m depth								Sa4	02023-01	X	⊕					
					1060.07														
5			**(MH)** CLAYEY SILT; grey; w<PL, soft.		5.03				4	100	Sa5	02023-02		⊕					
					1059.41														
			End of Borehole.		5.69														
6																			
7																			
8																			
9																			
10																			

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-04

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504941.42 E: 455687.99

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0			Ground Surface		1065.16														
0	B80	Solid Stem Auger (Casing:152 mm;)	**(CL)** SILTY CLAY, trace angular gravel; brown; w<PL, stiff.		0.00				1	100	Sa1	02023-03	X	⊕					
1																			
2									2	100	Sa2	02023-04	X	⊕					
3											Sa3	02023-05		⊕					Bentonite Chips
4									3	100	Sa4	02023-06	X	⊕					
5					1059.97				4	100									
5			End of Borehole. (Refusal)		5.18														
6																			
7																			
8																			
9																			
10																			

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

Golder Associates

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 10/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-05

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504921.82 E: 455716.51

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1064.14														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(CL)** SILTY CLAY, trace sand, angular gravel; light brown; moist, stiff.		0.00				1	100	Sa1	02023-07		⊕					
1										Sa2	02023-08	X	⊕					
2								2	100	Sa3	02023-09/10		⊕					Bentonite Chips
3				1060.94				3	100	Sa4	02023-11	X	⊕					
		End of Borehole.		3.20														
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 10/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-06

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0		Ground Surface																
	B80 Solid Stem Auger (Casing:152 mm;)	**(ML)** SILT; light grey; dry, stiff.		0.00						Sa1	02021-01	X	⊕					
1		**(CL)** SILTY CLAY, trace gravel; light brown; w<PL, stiff.		0.61				2	100	Sa2	02021-02		⊕				Bentonite Chips
2		- trace piece of sandstone from 2.13 m to 2.44 m depth						2	100	Sa3	02021-03	X	⊕					
		End of Borehole. (Refusal)		2.44														
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-07

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504881.18 E: 455752.09

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0		Ground Surface		1062.81														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(CL)** SILTY CLAY, trace angular gravel; light brown, interbedded grey silt seems throughout; moist, stiff.		0.00				1	100	Sa1	02021-04	X	⊕					Bentonite Chips
1										Sa2	02021-05		⊕					
2								2	100									
2				1060.24						Sa3	02021-06	X	⊕					
3		End of Borehole. (Refusal)		2.57														
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 10/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-08

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504874.04 E: 455749.23

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0		Ground Surface		1062.91														
0	B80 Solid Stem Auger (Casing:152 mm.)	**(SP/GP)** SAND and GRAVEL, some silt; grey to brown, slight hydrocarbon-like odour, trace plastic debris, brick fragments; moist, dense.		0.00				1	100	Sa1	02021-07	X	⊕					Vapour Probe Teflon Tubing Granular Bentonite 10/20 Silica Implant
1										Sa2	02021-08	⊕						
1				1061.16														
2		**(CL)** SILTY CLAY, some rounded gravel, trace sand; w<PL, stiff.		1.75				2	100	Sa3	02021-09	X ⊕						Bentonite Chips
2				1060.42														
2		End of Borehole. (Refusal)		2.49														
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 10/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-09

SHEET 1 OF 1

DATUM: NAD 83 UTM Zone 10

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504884.81 E: 455770.55

DRILLING DATE: September 6, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1062.24														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(SM)** SILTY SAND, some rounded gravel; brown; moist, compact.		0.00				1	100	Sa1	02021-09	X	⊕					Bentonite Chips
1										Sa2	02021-10	X	⊕					
				1060.72														
		End of Borehole. (Refusal)		1.52														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 10/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-10

SHEET 1 OF 1

DATUM: NAD 83 UTM Zone 10

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504875.00 E: 455778.03

DRILLING DATE: September 8, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1062.47														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(SM)** SILTY SAND, some rounded gravel; brown; moist, dense.		0.00				1	100	Sa1	02026-01	X	⊕					Bentonite Chips
1				1060.97						Sa2	02026-02/03	X	⊕					
		End of Borehole. (Refusal)		1.50														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 10/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-11

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504831.51 E: 455765.85

DRILLING DATE: September 8, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1061.71														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(SW)** SAND, some rounded gravel; brown; moist, compact.		0.00				1	100	Sa1	02026-04	X	⊕					
				1060.75														
1		**(CH)** CLAY; brown; w>PL, stiff.		0.97						Sa2	02026-05		⊕					Bentonite Chips
2		- grades to w~PL at 1.83 m depth						2	100	Sa3	02026-06	X	⊕					
				1059.12														
		End of Borehole. (Refusal)		2.59														
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-12

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504823.93 E: 455795.55

DRILLING DATE: September 8, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1062.63														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(CH)** CLAY, some angular gravel, trace silt; brown; w~PL, very stiff.		0.00				1	100	Sa1	02026-07	X	⊕					
1				1061.41														
		(SP) SAND, fine; light brown; dry, compact.		1.22						Sa2	02026-08		⊕					Bentonite Chips
2								2	100	Sa3	02026-09		⊕					
3										Sa4	02026-10	X	⊕					
				1059.27				3	100									
		End of Borehole. (Refusal)		3.35														
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-13

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504919.33 E: 455690.78

DRILLING DATE: September 8, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1064.49														
0	B80 Solid Stem Auger (Casing:152 mm.)	**(CL)** SILTY CLAY, trace angular gravel; brown, moderate hydrocarbon-like odour; w~PL, stiff.		0.00				1	100	Sa1	01132-01		□					
1										Sa2	01132-02/03	X	□					
2				1062.00				2	100	Sa3	01132-04		⊕					
3		**(ML)** SANDY SILT, some clay; light brown; w>PL, soft. - trace organics from 2.74 m to 2.90 m depth		2.49				3	100									Bentonite Chips
4										Sa4	01132-05		⊕					
5		- strong hydrocarbon-like odour from 4.57 m to 4.93 m depth - hydrocarbon-like odour dissipates at 5.89 m depth		1059.38						Sa5	01132-06	X		□				
		(CH) CLAY; dark grey; w>PL, soft. - some sandstone fragments; odour and PID dissipate at 5.89 m depth		5.11				4	100	Sa6	01132-07		□					
6		End of Borehole. (Refusal)		1058.65 5.84														
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-14

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504910.55 E: 455687.42

DRILLING DATE: September 8, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1064.34												
0	B80 Solid Stem Auger (Casing:152 mm;)	**(SP/GP)** SAND and GRAVEL, some silt; grey, slight hydrocarbon-like odour, trace rootlets; moist, compact.		0.00 / 1063.93						Sa1	01132-08	X				
		(SP) SAND, fine, some silt, trace sandstone fragments; grey, strong hydrocarbon-like odour; moist, dense.		0.41 / 1063.02				1	100	Sa2	01132-09					
1		**(CL)** SILTY SAND, trace angular gravel; light brown, strong hydrocarbon-like odour; w>PL, soft.		1.32												
2								2	100	Sa3	01132-10					
3																Bentonite Chips
								3	100	Sa4	01132-11	X				
4		- grades to stiff at 3.96 m depth														
5								4	100	Sa5	01132-12					
		- grades to grey at 5.59 m depth - sandstone fragments at 5.64 m depth		1058.34												
6		End of Borehole. (Refusal)		5.99												
7																
8																
9																
10																

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 10/5/17

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-15

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504915.35 E: 455681.70

DRILLING DATE: September 8, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG	DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0			Ground Surface		1064.21														
	B80	Solid Stem Auger (Casing:152 mm;)	**(CL)** SILTY CLAY, some sand, rounded gravel; grey; w>PL, firm.		0.00				1	100	Sa1	01133-01	X	⊕					
1											Sa2	01133-02	X	⊕					
			- metal debris at 1.22 m depth																
			- standing water at 1.83 m depth																
2									2	100	Sa3	01133-03		⊕					
					1061.77														
			(CL) SILTY CLAY, trace angular gravel; red-brown; w~PL, stiff.		2.44														
3					1061.00														Bentonite Chips
			(CH) CLAY, some angular gravel; light brown; w<PL, soft.		3.20				3	100									
4																			
5											Sa4	01133-04	X	⊕					
			- grades to grey at 5.18 m depth						4	100									
					1058.26														
6			End of Borehole. (Refusal)		5.94														
7																			
8																			
9																			
10																			

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-16

SHEET 1 OF 1

DATUM: NAD 83 UTM Zone 10

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504939.70 E: 455679.61

DRILLING DATE: September 8, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (⊕) 5 10 15 20	PID ppm (□) 100 200 300 400	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m 20 40 60 80	WATER CONTENT % Wp W Wl 10 20 30 40	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1065.39														
0	B80 Solid Stem Auger (Casing:152 mm.)	**(SP/GP)** SAND and GRAVEL, trace silt; brown; moist, dense.		0.00				1	100	Sa1	01133-05	X ⊕						Vapour Probe Teflon Tubing Granular Bentonite
1		- with wood fibers from 0.91 m to 1.22 m depth		1064.17														10/20 Silica Implant
		(CL) CLAY, trace angular gravel; w~PL, stiff.		1.22						Sa2	01133-06	⊕						
2								2	100	Sa3	01133-07	X ⊕						Bentonite Chips
3								3	100			⊕						
4		End of Borehole. (Refusal)		1061.43 3.96														
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

PROJECT No.: 1660199 / 1000

RECORD OF BOREHOLE: BH16-17

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504893.85 E: 455743.50

DRILLING DATE: September 8, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1062.83														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(CL)** silty CLAY, some rounded gravel; brown; w<PL, stiff.		0.00						Sa1	01133-08	X	⊕					
1								1	100									Bentonite Chips
										Sa2	01133-09	X	⊕					
2				1060.80				2	100	Sa3	01133-10		⊕					
		End of Borehole.		2.03														
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: AV

REV: 0

PROJECT No.: 1660199 / 1000

RECORD OF MONITORING WELL: MW16-01

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504998.79 E: 455633.08

DRILLING DATE: August 31, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0		Ground Surface		1066.65												
	B80 Solid Stem Auger (Casing:152 mm;)	**(SM)** gravelly SILTY SAND, fine, rounded gravel; brown, with organics (roots and rootlets); non-cohesive, wet, loose.		1066.55 0.10												
		(SP) gravelly SAND, fine, rounded gravel; light brown to orange; non-cohesive, wet, compact.		1066.04 0.61				1	100							
1		**(SC)** gravelly CLAYEY SAND, rounded gravel; brown; cohesive, w~PL, firm.														
2		**(Cl)** gravelly sandy SILTY CLAY, sub-rounded gravel; brown mottled with orange; cohesive, w>PL, stiff.		1064.67 1.98				2	100							Concrete Bentonite Chips
3		Note: angular fragments of SILTSTONE, inferred to be bedrock, at 2.9 m depth		1063.30												
		(GC) CLAYEY GRAVEL, some sand, coarse, angular gravel; grey mottled with light brown and orange; cohesive, w~PL, stiff. Note: angular gravel is SILTSTONE, inferred to be bedrock		3.35				3	100							
4																
5	B80 Odex Downhole Hammer (Casing:102 mm;)							4	100							
		Inferred weathered BEDROCK.		1061.47												Coated Bentonite Chips
				1060.86 5.79												
6		Bedrock Encountered. Refer to Record of DRILLHOLE log for continuation of rock description.														
7																
8																
9																
10																

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: AB
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF MONITORING WELL: MW16-02

SHEET 1 OF 3

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504928.54 E: 455762.74

DRILLING DATE: September 1, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1061.55														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(SP)** SAND, some sub-angular gravel, some fines; brown-grey; moist, dense.		0.00				1	100				⊕					Concrete
1		- with wood fibers from 1.07 m to 1.22 m depth		1059.95									⊕					
2		**(ML)** SILT, trace angular gravel; light brown; w<PL, stiff.		1.60				2	100				⊕					Bentonite Chips
3				1058.35				3	100				⊕					
	B80 Odex Downhole Hammer (Casing:102 mm;)	Inferred weathered BEDROCK.		3.20														Coated Bentonite Chips
4		Bedrock Encountered. Refer to Record of DRILLHOLE log for continuation of rock description.		1057.28 4.27														
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF MONITORING WELL: MW16-03

SHEET 1 OF 3

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504956.93 E: 455622.76

DRILLING DATE: September 2, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1066.12												
0	B80 Solid Stem Auger (Casing:152 mm;)	**(SP/GP)** SAND and GRAVEL (Road Base), some silt; grey; moist, dense.		0.00 1065.66									⊕			Concrete
		(MH) CLAYEY SILT, some gravel, trace sand; brown to grey; w~PL, dense.		0.46				1	100							
1													⊕			
				1064.24												
2		**(ML)** SILT, some gravel, trace sand; grey, mottled orange; w<PL, dense.		1.88				2	100				⊕			Bentonite Chips
3								3	100				⊕			
				1062.36												
		Inferred weathered SANDSTONE.		3.76												
4				1061.85												
	B80 Odex Downhole Hammer (Casing:102 mm;)	Bedrock Encountered. Refer to Record of DRILLHOLE log for continuation of rock description.		4.27												
5																
6																
7																
8																
9																
10																

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF MONITORING WELL: MW16-04

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504920.13 E: 455676.68

DRILLING DATE: September 2, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0		Ground Surface		1064.47												
	B80 Solid Stem Auger (Casing:152 mm;)	**(SP/GP)** SAND and GRAVEL (Road Base), some silt; grey; moist, compact.		0.00									⊕			Concrete
				1063.71												Granular Bentonite
1		**(ML)** CLAYEY SILT, trace gravel, sand; light brown, mottled orange; w~PL, dense.		0.76				1	100							10/20 Silica
2								2	100				⊕			
3				1061.32												
		(ML) CLAYEY SILT; light brown; w~PL, soft.		3.15									⊕			Bentonite Chips
				1060.61				3	100							
4		**(ML)** CLAYEY SILT, trace angular gravel; grey; w~PL, stiff.		3.86												
								4	100				⊕			
5				1058.93												
	B80 Odex Downhole Hammer (Casing:102 mm;)	Inferred weathered BEDROCK.		5.54												Coated Bentonite Chips
6																
				1057.46												
7		Bedrock Encountered. Refer to Record of DRILLHOLE log for continuation of rock description.		7.01												
8																
9																
10																

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF MONITORING WELL: MW16-05

SHEET 1 OF 3

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504935.22 E: 455690.48

DRILLING DATE: September 3, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1064.89														
0	B80 Solid Stem Auger (Casing:152 mm.)	**(ML)** SILT, some gravel, trace clay, sand; grey; w<PL, dense.		0.00				1	100				⊕					Concrete
1																		
				1063.16														
2		**(ML)** SILT, trace cobble; light brown; w<PL, soft.		1.73				2	100				⊕					Bentonite Chips
				1062.04														
3		**(MH)** CLAYEY SILT, trace angular gravel; brown, slight hydrocarbon-like odour; moist, w~PL, stiff.		2.84				3	100				□					
				1060.92														
4	B80 Odex Downhole Hammer (Casing:102 mm.)	Inferred weathered BEDROCK.		3.96														Coated Bentonite Chips
5																		
				1059.40														
		Bedrock Encountered. Refer to Record of DRILLHOLE log for continuation of rock description.		5.49														
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF MONITORING WELL: MW16-06

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504916.72 E: 455709.13

DRILLING DATE: September 4, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1064.09														
0	B80 Solid Stem Auger (Casing:152 mm.)	**(SP/GP)** SAND and GRAVEL (Road Base).		0.00 / 1063.89														Concrete
		(ML) CLAYEY SILT, trace sand; light grey; w~PL, soft.		0.20									⊕					
		- grades to firm at 0.56 m depth						1	100									
1		- grades to light brown at 0.88 m depth																
													⊕					
2								2	100				⊕					
													⊕					Bentonite Chips
3		- grades to stiff at 3.05 m depth		1060.74														
	B80 Odex Downhole Hammer (Casing:102 mm.)	**(CL)** SILTY CLAY, trace sand; light brown; w~PL, firm. - dry sand pockets throughout - mottled orange from 3.66 m to 3.81 m depth		3.35 / 1060.13				3	100				⊕					
4		Inferred weathered BEDROCK.		3.96 / 1059.82														
		Bedrock Encountered. Refer to Record of DRILLHOLE log for continuation of rock description.		4.27														
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF MONITORING WELL: MW16-07

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504904.92 E: 455704.28

DRILLING DATE: September 4, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1063.58														
0	B80 Solid Stem Auger (Casing:152 mm;)	**(CL)** SILTY CLAY, some angular gravel, trace sand; dark grey, with cobbles; w~PL, stiff.		0.00				1	100				⊕					Concrete
1																		
2								2	100				⊕					Bentonite Chips
3				1060.18														
		(ML) SILT, some sand, trace angular gravel; brown; w>PL, firm.		3.40				3	100				⊕					
4	B80 Odex Downhole Hammer (Casing:102 mm;)							4	100				⊕					
5		Inferred weathered BEDROCK.		4.98														Coated Bentonite Chips
				1058.09														
		Bedrock Encountered. Refer to Record of DRILLHOLE log for continuation of rock description.		5.49														
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF MONITORING WELL: MW16-08

SHEET 1 OF 2

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504882.12 E: 455733.83

DRILLING DATE: September 5, 2016
DRILLING CONTRACTOR: Geotech Drilling Services Ltd.

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20) / PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1062.95												
0	B80 Solid Stem Auger (Casing:152 mm;)	**(SM)** SILTY SAND, some rounded gravel; grey, strong hydrocarbon-like odour; moist, dense.		0.00				1	100							Concrete
1				1061.86										4653		
	B80 Solid Stem Auger (Casing:152 mm;)	**(ML)** CLAYEY SILT, trace rounded gravel; light grey, strong hydrocarbon-like odour, with organics (roots); w<PL, firm.		1.09										2350		Bentonite Chips
2								2	100					715000		
3	B80 Odex Downhole Hammer (Casing:102 mm;)	- grades to brown at 3.05 m depth - no organics (roots) below 3.20 m depth Inferred weathered BEDROCK.		1059.91 3.05										798		
4		Bedrock Encountered. Refer to Record of DRILLHOLE log for continuation of rock description.		1058.68 4.27												
5																
6																Coated Bentonite Pellets
7																
8																
9																
10																

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF AUGERHOLE: AH16-01

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504859.01 E: 455711.50

DRILLING DATE: November 5, 2016

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0		Ground Surface		1060.00														
	75mm Hand Auger / Hand Augering	**(CL/ML)** silty CLAY, some gravel; brown, no staining, no odour.		0.00						1	AH16-01-S1	⊕						
1				1059.00						2	AH16-01-S2	⊕						
		End of Augerhole.		1.00														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF AUGERHOLE: AH16-02

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504869.28 E: 455714.64

DRILLING DATE: November 5, 2016

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1060.00														
0	75mm Hand Auger / Hand Augering	**(CL/ML)** silty CLAY, some gravel; brown, no staining, no odour; compact.		0.00						1	AH16-02-S1	⊕						
				1059.10						2	AH16-02-S2	⊕						
1		End of Augerhole.		0.90														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF AUGERHOLE: AH16-03

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504865.18 E: 455711.50

DRILLING DATE: November 5, 2016

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface		1060.00														
0	75mm Hand Auger / Hand Augering	**(CL/ML)** Silty CLAY, some gravel; brown, no staining, no odour; compact.		0.00						1	AH16-03-S1		⊕					
				1059.10						2	AH16-03-S2		⊕					
1		End of Augerhole.		0.90														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF AUGERHOLE: AH16-04

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway

DRILLING DATE: November 5, 2016

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface																
0	75mm Hand Auger / Hand Augering	**(CL/ML)** silty CLAY, some sand and gravel; dark brown, no staining, slight hydrocarbon like odour; wet, soft.		0.00						1 2	AH16-04-S1 AH16-04-S2		⊕	⊕				
		End of Augerhole.		0.50														
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

National IM Server:GINT_GAL_NATIONALIM Unique Project ID: Output Form:BC_BOREHOLE (GEOENVIRO) RY:James 16/5/17

PROJECT No.: 1660199 / 1000

RECORD OF AUGERHOLE: AH16-05

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway

DRILLING DATE: November 5, 2016

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface																
0	75mm Hand Auger / Hand Augering	**(CL/ML)** silty CLAY, some sand and gravel; dark brown, no staining, slight hydrocarbon like odour; wet, soft.		0.00						1	AH16-05-S1	⊕						
										2	AH16-05-S2	⊕						
1		End of Augerhole.		0.85														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF AUGERHOLE: AH16-06

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway

DRILLING DATE: November 5, 2016

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface																
0	75mm Hand Auger / Hand Augering	**(CL/ML)** silty CLAY, trace gravel; light brown, no staining, no odour; moist, very stiff.		0.00						1	AH16-06-S1	⊕						
										2	AH16-06-S2	⊕						
										3	AH16-06-S3	⊕						
1		End of Augerhole.		0.95														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

Golder Associates

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

PROJECT No.: 1660199 / 1000

RECORD OF AUGERHOLE: AH16-07

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway

DRILLING DATE: November 5, 2016

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		Ground Surface																
0	75mm Hand Auger / Hand Augering	**(CL/ML)** clayey SILT, some gravel; dark brown to black, no staining, no odour; moist, compact.		0.00						1	AH16-07-S1	⊕						
										2	AH16-07-S2	⊕						
										3	AH16-07-S3	⊕						
1		End of Augerhole.		0.90														
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates

PROJECT No.: 1660199 / 1000

RECORD OF AUGERHOLE: AH16-08

SHEET 1 OF 1

CLIENT: Public Works and Government Services Canada
PROJECT: Steamboat Maintenance Yard
LOCATION: km 537.5 Alaska Highway
N: 6504908.85 E: 455678.87

DRILLING DATE: November 5, 2016

DATUM: NAD 83 UTM Zone 10

DEPTH SCALE METRES	DRILLING RIG / DRILLING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	GEOTECH SAMPLES: NUMBER	TYPE	BLOWS/0.3m	CORE No.	CORE RECOVERY %	CHEMISTRY SAMPLES: NUMBER	SCN	ANALYSED	PID ppm (5 10 15 20)	PID ppm (100 200 300 400)	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	WATER CONTENT % Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
0	75mm Hand Auger / Hand Augering	Ground Surface		1060.00														
		(CL/ML) SAND and GRAVEL, fine gravel; no staining, no odour; moist, loose.		0.00 1059.70						1	AH16-08-S1	⊕						
		End of Augerhole.		0.30														
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

DEPTH SCALE
1 : 50

SOIL CLASSIFICATION SYSTEM: GACS
LOGGED: RM
CHECKED: JL

Golder Associates