DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

PRESENTED TO
City of Nanaimo

NOVEMBER 2015
ISSUED FOR USE
FILE: 704-ENVIND03511-01

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EXECUTIVE SUMMARY

Tetra Tech EBA Inc. (Tetra Tech EBA) was retained by City of Nanaimo (CON) to complete a Detailed Site Investigation (DSI) of a land parcel located at 1 Port Drive in Nanaimo, BC (herein referred to as the "Property").

The objectives of the DSI were to:

- Determine the applicable soil and groundwater standards for the Property including the Contaminated Sites Regulation (CSR) standards for the protection of drinking water;
- Investigate all newly identified Areas of Potential Environmental Concern (APECs) and associated Potential Contaminants of Concern (PCOCs) identified for the Property during the 2014 Stage 1 Preliminary Site Investigation (PSI) conducted by Tetra Tech EBA;
- Further investigate all Areas of Environmental Concern (AECs) for the specific Contaminants of Concern (COCs) not previously delineated in soil, groundwater and sediment; and,
- Fill in data gaps from previous Stage 2 PSI investigations pertaining to soil vapour at each AEC/APEC that had identified vapour PCOCs.

Tetra Tech EBA completed investigations of AECs 1 to 4, AEC 7, Marine AEC 1 and APECs 8 through 13 using both the historical data from SNC's reports and the laboratory analytical data collected during this DSI. The following table summarizes all the results and conclusions of the DSI to date.

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination	Comments
AEC 1 (Formerly AEC1 and AEC 7) Coal Waste and other Fill	Chromium (Cr) >CSR CL/IL at an average thickness of 2 m	None.	None.	Area 1A: Estimated Area **6500 m^2** Estimated Volume **13,000 m^3** Area 1B: Estimated Area **1200 m^2** Estimated Volume **2400 m^3**	▪ Soil impacts related to coal waste in fill soils which would meet CSR under SLRA since Cr in soils is not leachable to levels exceeding CSR AW standard.
AEC 2 Railyard	LEPH and HEPH> CSR CL/IL from 4.8 m to 8.8 m	None.	None.	Estimated Area **1800** m^2 Estimated Volume **5400 m^3**	▪ Only CSR exceedance found in groundwater by SNC in 2007 in Well 00-07. Groundwater in all new wells and resampling of 00-07 meet CSR AW standards. ▪ Soils impacts meet CSR under SLRA if areas remains under 1 m of material or is paved since modelling shows hydrocarbons in soils in groundwater not migrating to primary receptor, the nearby marine harbour.

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination	Comments
AEC 3A (Formerly AEC 3) Former Offsite Sawmills	PCP >CSR CL/IL from surface to 1.5 m	None.	None.	Area 3A Estimated Area **1800 m^2** Estimated Volume **2700 m^3**	▪ Documented soil contamination within AEC 3A and 3B would meet CSR, if managed following existing risk assessment management plan that was approved by BC MOE and the CCofC issued in 2002, which covers both the former offsite CIPA mill and lease area located on the Property. ▪ Documented PCP soil contamination within AEC 3C from former Dorman Sawmill (now WFP) lease area on the Property not covered by existing CIPA CCoC, so would require removal to meet CSR numerical standards if legal instrument ever required for the Property. Arsenic impacted soils within AEC 3C meet CSR under SLRA since not leachable to levels exceeding CSR AW. ▪ Remediation of soil impacts in all of AEC 3 not required immediately or the responsibility of CON since impacts are all related to documented former offsite sawmill operations and also on former lease areas located off the Property.
AEC 3B (Formerly AEC 3) Former Offsite Sawmills	2,4,5 trichlorophenol, 2,3,4,6 tetrachlorophenol, 3,4 dichlorophenol, VPH >CSR CL/IL from surface to 5.9 m	Chlorinated Phenols > CSR AW standards.	None.	Area 3B Estimated Area **1000 m^2** Estimated Volume **5900 m^3**	
AEC 3C (Formerly AEC 4) Former Offsite Sawmills	PCP , Arsenic >CSR CL/IL from surface to 1 m	None.	None.	Area 3C Estimated Area **500 m^2** Estimated Volume **500 m^3**	
Marine AEC 1 – Active Harbour	PAHs > CSR Typical Sediment Standards from surface to maximum depth of 1.5 mbg with average thickness of ~1.0	N/A	N/A	Estimated Area **28,069 m^2** Estimated Volume **28,069 m^3**	▪ DRA required to assess sediment impacts and evaluate remediation options.

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination	Comments
APEC 8 Former Locomotive Engine House	None.	None.	N/A	None confirmed	▪ No impacts found during DSI
APEC 9 Heating Oil UST adjacent to Seaspan office	None.	None.	None.	None Confirmed	▪ No impacts found during DSI. UST should be removed and confirmatory soil samples taken from excavation limits.
AEC 4 (formerly APEC 10) Former Machine Shop at Gadd Marine Site	Cadmium, Zinc >CSR CL/ IL from 0.5 m to 2.7 m	None.	N/A	Estimated Area **600 m²** Estimated Volume **1320 m³**	▪ Presence of metals (Cd, Zn) other than Cr in fill soils indicates likely impacted by past operations at GADD Marine and/or historical machine shop activities. ▪ Would meet CSR using SLRA since Zn and Cd in soils are not leachable to levels exceeding CSR AW Marine if either up to 1 m of clean soil placed above any exposed soils in area or area paved.
APEC 11 Former Heating Oil UST at Island Pallets	None.	None.	None.	None confirmed	▪ No impacts found during DSI
APEC 12 1951 Miscellaneous Industrial Activities	None.	None.	None.	None confirmed	▪ No impacts found during DSI
APEC 13 Former Sawmill	None.	None.	N/A	None confirmed	▪ No impacts found during DSI

Notes:
CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPH - Volatile Petroleum Hydrocarbons;
MOE - Ministry of Environment
CCofC – Conditional Certificate of Compliance
IL – Industrial Land use;
CL – Commercial Land Use;
HEPH - Heavy Extractable Petroleum Hydrocarbons;
UST(s) - Underground Storage Tank(s); and
PCPs PentaChloroPhenols
SLRA – Screening Level Risk Assessment
DRA – Detailed Risk Assessment

TABLE OF CONTENTS

APPENDIX SECTIONS

TABLES

FIGURES

APPENDICES

ACRONYMS & ABBREVIATIONS

AEC	Area of Environmental Concern
APEC	Area of Potential Environmental Concern
AW	CSR standards for the protection of aquatic life for fresh water if not otherwise noted
BTEXS	Benzene, Toluene, Ethylbenzene, Xylene, and Styrene
CALA	Canadian Association Laboratory Accreditation
CL	CSR standards for Commercial Land Use
COCs	Contaminants of Concern
CCOCs	Conditional Certificate of Compliance
CON	City of Nanaimo
CPR	CP Rail
CSAP	Contaminated Sites Approved Professional
CSM	Conceptual Site Model
CSR	British Columbia Contaminated Sites Regulation
DSI	Detailed Site Investigation
DW	CSR standards for the protection of groundwater used for drinking water
EPH	Extractable Petroleum Hydrocarbons
HEPHs	Heavy Extractable Petroleum Hydrocarbons
HDPE	High-density Polyethylene
HWR	Hazardous Waste Regulation
IL	CSR standards for Industrial Land Use
LEL	Lower Explosive Limit
LEPHs	Light Extractable Petroleum Hydrocarbons
MOE	British Columbia Ministry of Environment
mbg	Meters below grade
MTBE	Methyl Tert Butyl Ether
PAHs	Polycyclic Aromatic Hydrocarbons
PCOCs	Potential Contaminants of Concern
POD	Points of Diversion
PSI	Preliminary Site Investigation
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
QMS	Quality Management System
RDL	Reportable Detection Limit
RPD	Relative Percentage Difference
SPLP	Synthetic Precipitation Leaching Procedure
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
VOCs	Volatile Organic Compounds
VPHs	Volatile Petroleum Hydrocarbons

LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of City of Nanaimo and their agents. Tetra Tech EBA Inc. (Tetra Tech EBA) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than City of Nanaimo, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in Tetra Tech EBA's Services Agreement. Tetra Tech EBA's General Conditions are provided in Appendix A of this report.

AS ACKNOWLEDGEMENT

The preparation of this Detailed Site Investigation was carried out with assistance from the Green Municipal Fund, a Fund financed by the Government of Canada and administered by the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) was retained by City of Nanaimo (CON) to complete a Detailed Site Investigation (DSI) of a land parcel located at 1 Port Drive in Nanaimo, BC (herein referred to as the “Property”). Tetra Tech EBA received written authorization from the CON to proceed with the DSI on July 31, 2014.

The scope of the DSI is based on the findings of a Stage 1 PSI that Tetra Tech EBA completed on the Property in October, 2014. It is the goal of CON to subdivide the Property for future land sales and redevelopment. Tetra Tech EBA completed the environmental investigations in support of gaining subdivision permit releases, and if necessary, obtaining a legal instrument such as a Certificate of Compliance from the British Columbia Ministry of Environment (MOE) to facilitate future redevelopment of the Property. Figure 1 provides a Property Location Plan.

1.1 Background

Tetra Tech EBA completed a Stage 1 PSI for the Property in 2014 which assessed the current and historical land uses on the Property and surrounding sites. The Stage 1 PSI reviewed previous historical information and subsurface environmental investigations conducted on the Property between 1998 and 2009. Based on the information reviewed, Tetra Tech EBA identified a total of 12 Areas of Potential Environmental Concern (APECs), of which six were brought forward as known Areas of Environmental Concern (AECs) since previous investigations completed by SNC Lavalin Environment Inc. (SNC) has identified concentrations of regulated parameters that exceeded the Environmental Management Act’s Contaminated Site Regulation (CSR) standards applicable to the Property. One environmental issue remained as an APEC (APEC 11) since soil vapour was not fully assessed near a former underground heating oil tank during any of the previous subsurface investigations. Additionally, another five APECs were identified by Tetra Tech EBA during the 2014 Stage 1 PSI which had not previously been investigated during any previous environmental assessments. The following table summarizes all the AECs and APECs for the Property and associated known or potential contaminants of concern identified during the 2014 Stage 1 PSI.

Areas of Environmental Concern and Areas of Potential Environmental Concern

APEC or AEC	Associated Potential Contaminants of Concern (PCOCs)	Identified Contaminants of Concern (COCs) exceeding the CSR Standards	Additional Investigation Required?
AEC 1 Coal Waste Fill / Middle of Property within Seaspan lease area.	**Soil and Groundwater PCOCs** LEPHs, HEPHs, PAHs, and metals **Soil Vapour PCOCs** Naphthalene	**Soil COCs** ***Chromium > CSR CL/IL*** **Groundwater COCs** None in groundwater	**Yes**. Delineation of chromium in soil, confirm absence of groundwater contamination and assess soil vapour for identified soil vapour PCOCs.
AEC 2 Former Locomotive Fuelling Facilities and Barrel Storage and Swale Beneath Crace Street Viaduct/Portion on Property of SVI lease area.	**Soil and Groundwater PCOCs** BTEX, VPHs, LEPHs, HEPHs, PAHs, and metals. **Soil Vapour PCOCs** BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, methylcyclohexane and naphthalene	**Soil COCs** ***LEPH, HEPH > CSR CL/IL*** **Groundwater COCs** ***LEPH, PAHs > CSR AW***	**Yes**. Delineation of LEPH, HEPH in soil and LEPH and PAHs in groundwater and assess soil vapour for identified soil vapour PCOCs.
AEC 3 Former sawmill / Portion on 25 m wide road dedication within former CIPA lease area included in area of 2004 risk based CCoC and deemed an in-situ Special Waste Facility.	**Soil and Groundwater PCOCs**: BTEX, VPHs, LEPHs, HEPHs, PAHs, chlorinated phenols, and metals **Soil Vapour PCOCs** BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene	**Soil COCs** ***Chlorinated Phenols > CSR CL/IL*** **Groundwater COCs** ***Chlorinated Phenols >CSR AW***.	**Yes.** Further Investigation of chlorinated phenols in soil and groundwater and assess soil vapour for identified soil vapour PCOCs. Delineation is not required under CSR since source of contamination came from offsite; however, need to further investigate for future site redevelopment.

Areas of Environmental Concern and Areas of Potential Environmental Concern

APEC or AEC	Associated Potential Contaminants of Concern (PCOCs)	Identified Contaminants of Concern (COCs) exceeding the CSR Standards	Additional Investigation Required?
AEC 4 Former sawmill / Portion on southern end of 25 m wide road dedication on north end of Western Forest Products lease area.	**Soil and Groundwater PCOCs**: BTEX, VPHs, LEPHs, HEPHs, PAHs, chlorinated phenols, and metals **Soil Vapour PCOCs** BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene	**Soil COCs** ***Chlorinated Phenols and Arsenic > CSR CL/IL*** **Groundwater COCs** None in groundwater	**Yes.** Further investigation of chlorinated phenols in soil, confirm absence of groundwater contamination and assess soil vapour for identified soil vapour PCOCs. Delineation is not required under CSR since source of contamination came from offsite; however, need to further investigate for future site redevelopment.
AEC 7 Imported Fill / Portion on middle of Property within Seaspan lease area.	**Soil and Groundwater PCOCs** LEPHs, HEPHs, PAHs, and metals **Soil Vapour PCOCs** Naphthalene	**Soil COCs** ***Chromium > CSR CL/IL*** **Groundwater COCs** None in groundwater	**Yes**. Delineation of chromium in soil, confirm absence of groundwater contamination and assess soil vapour for identified soil vapour PCOCs.
Marine AEC 1 Water lot on Property / Seaspan Lease Area.	**Sediment PCOCs** PAHs and metals	**Sediment PCOCs** ***PAHs > CSR Typical Sediment***	**Yes**. Delineation of PAHs in sediment.
APEC 8 Former Locomotive Engine House located on Property.	**Soil and Groundwater PCOCs** LEPH, HEPH, PAHs and metals **Soil Vapour PCOCs** Naphthalene	**Not Previously Investigated**	**Yes** These are all new APECs identified by Tetra Tech EBA during the Stage 1 PSI or were not fully investigated during previous subsurface investigations. Additional sampling and testing of soil, groundwater and/or vapour is required to confirm or refute the presence of PCOCs in these APECs.
APEC 9 Heating Oil UST adjacent to Seaspan office.	**Soil and Groundwater PCOCs** VPH, LEPH, HEPH, PAHs **Soil Vapour PCOCs** BTEXS, VPHs, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene	**Not Previously Investigated**	
APEC 10 Former Machine Shop at former Gadd Marine Site.	**Soil and Groundwater PCOCs** LEPH, HEPH, PAHs and metals **Soil Vapour PCOCs** Naphthalene	**Not Previously Investigated**	

Areas of Environmental Concern and Areas of Potential Environmental Concern

APEC or AEC	Associated Potential Contaminants of Concern (PCOCs)	Identified Contaminants of Concern (COCs) exceeding the CSR Standards	Additional Investigation Required?
APEC 11 Former Heating Oil UST at former Island Pallet Solutions.	**Soil and Groundwater PCOCs** VPH, LEPH, HEPH, PAHs **Soil Vapour PCOCs** BTEXS, VPHs, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene	**Soil and Groundwater COCs** None identified **Soil Vapour COCs** **Not Previously Investigated**	**Yes** These are all new APECs identified by Tetra Tech EBA during the Stage 1 PSI or were not fully investigated during previous subsurface investigations. Additional sampling and testing of soil, groundwater and/or vapour is required to confirm or refute the presence of PCOCs in these APECs.
APEC 12 1951 Miscellaneous Industrial Activities/ Seaspan Lease Area.	**Soil and Groundwater PCOCs** BTEX, VPHs, LEPHs, HEPHs, PAHs, glycols and metals **Soil Vapour PCOCs** BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene	**Not Previously Investigated**	
APEC 13 Former Sawmill/Near Former Gadd Lease Area	**Soil and Groundwater PCOCs** Chlorinated phenols and metals. **Soil Vapour PCOCs** None.	**Not Previously Investigated**	

Notes:
CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPHs - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPHs - Volatile Petroleum Hydrocarbons;
VOCs - Volatile Organic Compounds
Red Bolded - > CSR standards applicable to Property
IL – Industrial Land use;
CL – Commercial Land Use;
HEPHs - Heavy Extractable Petroleum Hydrocarbons;
BTEXS - Benzene, Toluene, Ethylbenzene, Xylenes, Styrene;
UST(s) - Underground Storage Tank(s);

In the Stage 1 PSI report, Tetra Tech EBA recommended that a Detailed Site Investigation (DSI) to meet the BC CSR reporting requirements be conducted for the Property in order to determine more accurately the concentrations and extent of the COCs and to investigate the PCOCs associated with the identified APECs. All previous subsurface investigations completed by other parties were considered to constitute the equivalent of a Stage 2 PSI under the CSR.

1.2 Objectives

The primary objectives of the DSI were to:

- Determine the applicable soil and groundwater standards for the Property including the CSR standards for the protection of drinking water;
- Investigate all newly identified APECs and associated PCOCs identified for the Property during the 2014 Stage 1 PSI conducted by Tetra Tech EBA;
- Further investigate all AECs for the specific COCs not previously delineated in soil, groundwater and sediment;
- Fill in data gaps from all previous subsurface investigations pertaining to soil vapour at each AEC/APEC that had identified CSR Schedule 11 vapour PCOCs; and,
- Determine the extent of any identified contamination in soil, soil vapour, and groundwater on the upland portion, and sediment within the water lot portion of the Property.

2.0 SCOPE OF SERVICES

As part of this DSI, Tetra Tech EBA investigated soil, groundwater, sediment, and vapour quality associated with each AEC/APEC identified during the Stage 1 PSI program.

The DSI field works were completed in phases since the majority of the contamination in the fill and native soils, sediments and groundwater were not generally visible or odorous so knowing when environmental media met CSR standards was challenging using observations in the field. Further data from laboratory testing of environmental media samples was required to determine if any exceedances of the applicable BC CSR standards was present. Additionally, further assessment was required in order to establish the applicable CSR standards for the Property. The primary phases of the DSI were as follows:

- Completing a desktop review of all existing hydrogeological information and drinking water well information for this area of Nanaimo to plan the required subsurface hydrogeological investigations to support an application to the MOE for an exemption from the CSR Drinking Water Use (DW) standards for the Property;
- Completing an initial investigation program to: further assess the extent of soil, groundwater and sediment contamination identified during all previous subsurface investigations; collect additional hydrogeological data to support the application to MOE for the exemption from CSR DW for the Property; assess the presence or absence of soil and groundwater contamination at newly identified APECs 8 to 10; and, using the soil and groundwater data collected from previous investigations and during this initial investigation program complete vapour modelling to assess potential areas of vapour contamination on the Property;
- Completing a second investigation program to: determine the extent of soil, groundwater and sediment contamination identified during the initial investigation program; assess the presence or absence of soil and/or groundwater contamination at newly identified APECs 12 and 13; and assess soil vapour at all identified soil vapour APECs, including APEC 11;

- Completing seasonal groundwater and soil vapour monitoring events to assess seasonal variation in groundwater and soil vapour at the Property;
- Preparing required reporting for an application to MOE for a Determination for No Drinking Water Use at the Property; and
- Preparing this DSI report summarizing the findings of all field and laboratory programs completed.

Tetra Tech EBA completed the following specific activities during the phased DSI:

- Designed a drilling and sampling program based on the findings of the Stage 1 PSI and comprehensive review of the previous environmental reports completed for the Property by third parties.
- Prepared a site-specific health and safety plan for all field activities.
- Monitored the drilling of 37 boreholes (14BH01 to 14BH36 and 14BH37) and one testpit (14TP01) on the upland portion of the Property to assess the soil quality associated with each newly identified APEC and to assess the extent of contamination at each identified upland AEC.
- Completed 19 of the boreholes as groundwater monitoring wells to investigate groundwater quality associated with each newly identified APEC; to confirm the absence of groundwater contamination at AEC 1 AEC 4, and AEC 7 where soil contamination was previously identified and to assess the extent of groundwater contamination at AEC 2 and AEC 3.
- Collected soil samples from the borehole and testpit, and recorded soil profiles, and any visual and/or olfactory evidence of contamination observed within each borehole.
- Submitted select soil samples to a certified laboratory for analysis of the PCOCs/COCs associated with the investigated APECs/AECs that were identified during the 2014 Stage 1 Preliminary Site Investigation (PSI).
- Collected groundwater samples from existing monitoring wells MW00-07 and SNC09-03 and each newly installed groundwater monitoring well and submitted the samples to a certified laboratory for analysis of the PCOCs/COCs associated with the investigated APECs/AECs that were identified during the 2014 Stage 1 PSI.
- Submitted select groundwater samples for analysis of total dissolved solids (TDS), chloride, sodium and salinity for the purposes of the application for Determination of no drinking water use for the Property.
- Collected groundwater level measurements in the newly installed monitoring wells and select existing monitoring wells identified on the Property at low and high tide, and completed in situ hydraulic response tests on two monitoring wells.
- Collected surficial sediment samples (14SED01 to 14SED18) from marine portion of the Property to assess the horizontal extent of surficial sediment contamination previously identified and submitted the samples to a certified laboratory for analyses of the PCOCs/COCs associated with marine AEC 1.

- Monitored the drilling of six boreholes (14SED19 to 14SED24) on the marine portion of the Property and collected subsurface sediment samples to assess the vertical extent of surficial sediment contamination previously identified and submitted the samples to a certified laboratory for analyses of the COCs associated with marine AEC 1. During this second phase of sediment sampling, four surficial sediment samples (14SED23A to 14SED23D) were collected in 5 m step outs from sample 14SED04, where "high risk" conditions under CSR Protocols 11 and 12were identified.
- Calculated the potential indoor and outdoor vapour concentrations, based on the existing and new soil and groundwater analytical data, to determine the absence or presence of on-site vapour contamination and assess the need for a vapour investigation.
- Installed eight soil vapour probes (14VP01 to 14VP06 and 15VP07 and 15VP08) to directly sample for soil vapour quality at the AECs/APECs where the calculated potential indoor and outdoor vapour concentrations theoretically exceeded the applicable CSR soil vapour standards.
- Compared the DSI and all previous analytical results to the current provincial standards that are applicable to the Property, as established under the CSR and Hazardous Waste Regulation (HWR) of the Environmental Management Act (EMA) of British Columbia.
- Reviewed all of the existing and new DSI data to prepare a Screening Level Risk Assessment (SLRA) feasibility memo to assess the potential for addressing upland contamination using risk assessment methods under CSR Protocol 13.
- Summarized the findings of the DSI activities in this report. This report was prepared in general accordance with current MOE requirements to support of obtaining a future MOE legal instrument.

3.0 SITE DESCRIPTION

3.1 Location

The Property is located at 1 Port Drive, Nanaimo, BC (Figure 1). The Property is zoned CS3 for mixed commercial service use (providing for transportation terminals, depots, corridors and other required infrastructure) and W2 for waterfront use (providing for active marine uses, such as ship yards, fishing fleet support, float homes, moorage and water-based transportation).

The cartographic co-ordinates for the approximate centre of the Property are:

- Latitude: 49º 09' 50.3" North
- Longitude: 123º 55' 50.7" West

3.2 Current Legal Description

The legal description for the Property is as follows:

- Parcel Identification Number (PID): 029-036-500

- Lot A, Section 1, and Part of the Bed of the Public Harbour of Nanaimo, Nanaimo District Plan EPP27507

The current legal title for the Property and legal lot plan are attached as Appendix B of the Stage 1 PSI report (Tetra Tech EBA, October, 2014). Tetra Tech EBA obtained the legal lot plan from the BC Land Title and Survey Authority.

3.3 Potable Water Supply

Potable drinking water is supplied to occupants of the CON from a reservoir that is located approximately 6 km south of the Property and that is managed by the CON. Water is supplied to the area and Property through a piped water distribution system.

3.4 Current Property Facilities

The Property was created from a subdivision of the whole former Canadian Pacific Railway Wellcox Yard and still contains a portion of an active rail yard plus associated freight transportation and distribution related commercial and industrial operations. The Property currently consists of four leased upland areas and a water lot as described below and shown on Figure 2.

Seaspan Lease Area

The Seaspan site is used for freight distribution and transportation. The site is entirely paved with one building present. The Seaspan office building is one floor and is constructed of concrete cinder blocks. The floors throughout the building, where exposed, appear to be in good condition with minor surficial cracks.

A large docking area is located on the marine portion of this site that is associated with freight transportation via barges. Goods arrive and are distributed by trucks and rail. No fueling or truck maintenance is performed onsite. The vehicle used by personnel to move around the site is an electric golf cart. The dock was historically founded on creosote-treated wood pilings, but has now been almost entirely converted to steel pilings.

Former Gadd Marine Lease Area

The former Gadd Marine site was previously used for marine piling construction activities. This portion of the Property is now mostly cleared with one abandoned building on the upland portion and metal debris observed on the foreshore. The current onsite building was a former marine equipment repair workshop and was constructed with a metal roof and siding on a concrete slab.

SVI Lease Area

The Southern Railway of Vancouver Island (SVI) site is used for rail shipping and is occupied by railway tracks and an administration building. The SVI building is one floor constructed of concrete cinder blocks. No fueling and/or railway car maintenance is reported to be performed on this site. Figure 2 shows the section of railway tracks on the site that connect the Seaspan yard to the SVI site. Latex products for pulp and paper production, fly ash, and propane are offloaded from barges from the Seaspan yard and then loaded onto railcars on the SVI site.

Former Island Pallet Solutions Lease Area

The Island Pallet Solutions operations were de-commissioned and the site building was demolished during the completion of this DSI. This portion of the Property is currently paved.

3.5 Water Bodies, Drinking Water Wells, and Property Drainage

The nearest surface water body is the Nanaimo Harbour, located adjacent of the Property to the northeast. A portion of the Property (water lot) includes the Public Harbour of Nanaimo.

Tetra Tech EBA searched the MOE aquifer and water well database for points of diversion (POD) or water wells near the Property. There were no wells identified within a 500 m radius of the Property. One well was indicated to be within 500 m radius of the Property; however, this well location is referenced incorrectly with an erroneous location. A copy of the water well search results for this area, obtained from the MOE online aquifer and water well database, is included in Appendix F of the Stage 1 PSI report (Tetra Tech EBA, October, 2014).

Surface drainage from the paved portions of the Property drains into the municipal storm sewer system through oil/water separators. In the unpaved areas of the Property, water drains naturally into the underlying soils.

3.6 Topography and Local Drainage

The topography in and around the Property slopes very slightly to the northeast towards the harbour. The topographic layout of the region around the Property is shown on Figure 1.

The Property is built almost entirely on reclaimed land from the filling of the former marine foreshore. There are no freshwater bodies crossing the Property or adjacent to the Property so drainage from the Property would not impact any freshwater bodies. Runoff not captured in the catch basins flows directly into Nanaimo Harbour. Most of the precipitation falling onto the unpaved portion of the Property will seep into the subsurface and infiltrate to the shallow aquifer beneath the site. Groundwater flows within the upper fill layer toward the northeast but is influenced to varying degrees by seawater intrusion and tidal action.

3.7 Surface Geology and Infill History

The Property has a long history of industrial activity, dating from the nineteenth century. The Property was developed by the Vancouver Coal Mining and Land Company in the late 1800s as a coal processing and shipping terminal. At that time, much of the Property was still part of Nanaimo Harbour, and coal waste from mining activities and other fill from unknown sources was placed into the harbour over time to expand and infill the Property.

The Property changed ownership several times during the early 1900s, and continued to be utilized for coal processing and export until 1953, when coal operations were ceased and the Property was sold to CP Rail (CPR). CPR developed the Property for use as a central railway hub for freight on Vancouver Island by constructing a ferry transport service (known as the Wellcox Yard). CPR leased several parcels of Wellcox Yard to sawmills, transportation companies, marine shipping operators, and other commercial/industrial tenants during their ownership of the Property.

As development at the Property continued, the shoreline was modified for industrial purposes by infilling with coal waste, dredged fill from the Nanaimo Harbour, and other fill materials from unknown sources. The entire area, except for two small areas located along the northern boundary and the southwestern corner of the Property, was previously underlain by waters of Nanaimo Harbour in 1891. It is likely that the only original ground on site is located at the southwestern corner alongside Esplanade, and that this native ground also has had fill placed over it to elevate the Property to current grade.

Borehole logs from previous reports confirm that soil conditions at the site consist of variable fills, and generally include discrete layers of and/or intermixed:

- Coal Waste: Typically described as consisting of pieces of coal, shale waste rock, and granular material, with a loose to compact consistency; and
- Sand Fill: Typically described as sand with trace to some silt, poorly graded, fine grained, loose, brown to grey, with occasional shells and organic material.

When native soils were encountered, they were typically described as the underlying marine sediments, including:

- Sand: Typically described as sand with trace to some silt, poorly graded, fine grained, loose, brown to grey, with occasional shells and organic material; and
- Silt: Typically described as silt, moist to wet, soft, brown to black, with some organic inclusions.

3.8 Hydrogeology

Subsurface materials at the Property can be interpreted to form two unconfined hydrostratigraphic units – an upper fill unit, and an underlying native marine silt and sand unit. Depths to groundwater range nominally from 2.4 m to 4.9 m below ground level, depending on seasonal variations and tidal influence.

The general direction of groundwater flow at the Property is toward the northeast in the northern section of the Property and toward the east in the southern portion of the Property. Because the Property consists of reclaimed land, tidal fluctuation influences the shallow groundwater elevation and flow direction in the subsurface materials (described in more detail in the following Section 5).

4.0 INVESTIGATION METHODOLOGY

As mentioned in Section 2.0 Scope of Services, the DSI was completed in phases. The table below summarizes the tasks completed for the fieldwork portion of the DSI and the dates the tasks were completed.

DSI Tasks and Completion Date

Tasks	Completion Dates
Utility Locates for First Round of Drilling	September 12, 2014
Completion of First Round of Drilling (14BH01 to 14BH25)	September 15 to 19, 2014
Development of Newly Installed Groundwater Monitoring Wells	September 16 to 19, 2014
Collection of Surficial Sediment Samples (14SED01 to 12SED18)	September 18, 2014

Tasks	Completion Dates
Monitoring of Newly Installed and Select Existing Wells at Low and High Tide	September 22, 2014
Groundwater Sampling of Newly Installed Wells	September 22 to 26, 2014
Collection of Deeper Sediment Samples and additional surficial samples in one "hot spot" where high risk levels were detected. (14SED19 to 14SED 24)	November 6, 2014
Utility Locate for Second Round of Drilling	November 12, 2014
Completion of Second Round of Drilling (14BH26 to 14BH36 and 14VP01 to 14VP06)	November 12 to 14, 2014
Development of Newly Installed Wells	November 14 to 17, 2014
Leak Detection and Vapour Sampling from Probes (14VP01 to 14VP06)	November 19 to 20, 2014
Groundwater Sampling of Newly Installed and Select Existing Wells	November 20 to 21,2014
Completion of one Testpit near APEC 11 (14TP01) to assess potential soil vapour	December 4, 2014
Installation of Two Vapour Probes (15VP07 and 15VP08) and one borehole (15BH37)	March 26, 2015
Seasonal Groundwater and Soil Vapour Sampling	April 1 to 10, 2015
Seasonal Soil Vapour Sampling for Soil Vapour Probes Installed in 2015	September 11, 2015

The following sub-sections summarizes and discusses the upfront planning works, sampling and analysis program; drilling, monitoring well, vapour probe installation; and data collection methods.

4.1 Health and Safety

Tetra Tech EBA prepared a site-specific health and safety plan that was implemented during all the field investigation events on the Property. In addition, Tetra Tech EBA field staff participated in a tailboard safety meeting with Seaspan's Site Safety Manager prior to the commencement of each field investigation event, to make sure Seaspan's safety procedures were followed.

4.2 Utility Locates

Prior to the commencement of the September 2014, November 2014 and March 2015 drilling programs, Tetra Tech EBA contacted BC One Call and other utility companies to obtain utility information and retained One Call Locators Canada Ltd. to conduct a utility locate at proposed drilling locations.

4.3 DSI Test Locations

Upland Locations

During this DSI, Tetra Tech EBA monitored the drilling of 37 boreholes (14BH01 to 14BH37), the excavation of one testpit (14TP01), the installation of 19 groundwater monitoring wells and the drilling and installation of eight soil vapour probes (14VP01 to 14VP06, 15VP07 and 15VP08). Locations of all the test holes are summarized in more detail in the table below and shown on Figure 2.

DSI Test Locations – Uplands

Stage 1 PSI Findings		DSI	
APECs or AECs	**Issue**	**Test Location**	**Rationale**
AEC 1 Coal Waste and other Fill / Seaspan lease area	Coal Waste Fill soils with Chromium concentrations exceeding the CSR CL/IL standard at SNC BH09-2	14BH01, 14BH/MW02, 14BH03 and 14BH04	20 m grid spacing from BH09-2
		14BH37	Step out from coal waste fill identified at 14BH/MW26
		14VP03 and 14VP04	Assess soil vapour quality near current Property buildings from coal waste fill
AEC 2 Former Locomotive Fuelling Facilities and Barrel Storage and Swale Beneath Crace Street Viaduct/ SVI lease area	Soils with LEPH/HEPH concentrations exceeding the CSR CL/IL standards at SNC BH09-21 and BH00-07 Groundwater with LEPHw and PAHs concentrations exceeding the CSR AW standards at MW00-07	14BH/MW05, 14BH06, 14BH/MW07, 14BH/MW08, and 14BH09	20 m grid spacing from BH09-21 and BH00-07 and vertical delineation at 09-21
		14BH/MW26 and 14BH/MW27	Delineation of soil contamination identified at 14BH06
		14VP01 and 14VP02	Assess soil vapour at highest concentrations near current Property building
AEC 3 Former sawmill / Portion on northern end of 25 m wide road dedication within former CIPA lease area	Soils with chlorinated phenols concentrations exceeding the CSR CL/IL standards at BH09-10 and BH09-22 Groundwater with chlorinated phenols concentrations exceeding the CSR AW standards at SNC 09-10	14BH/MW10, 14BH10a, 14BH/MW11, 14BH/MW12, and 12BH/MW13	20 m grid spacing from BH09-10 and 14BH09-22 and southwest of BH09-10
		14BH34 and 14BH/MW35	Delineation of soil contamination identified at 14BH10a and 14BH/MW11
		14VP06	Assess soil vapour at highest concentrations of volatiles found
AEC 4 Former sawmill / Portion on southern end of 25 m wide road dedication on north end near Western Forest Products lease area	Soils with chlorinated phenols and arsenic concentrations exceeding the CSR CL/IL standards at SNC BH09-23	14BH/MW14, 14BH/MW15, and 14BH/MW16	20 m grid spacing from BH09-23 and southwest of BH09-23
		14BH36	Delineation of soil contamination identified at 14BH/MW14
		14VP05	Assess soil vapour at highest concentrations

DSI Test Locations – Uplands

Stage 1 PSI Findings		DSI	
APECs or AECs	**Issue**	**Test Location**	**Rationale**
AEC 7 Imported Fill / Portion on middle of Property within Seaspan lease area newer existing dock	Fill soils with Chromium concentrations exceeding the CSR CL/IL standard at SNC BH09-19	14BH17, 14BH18, 14BH/MW19 and 14BH20	20 m grid spacing from BH09-19
		14VP03 and 14VP04	Assess soil vapour quality near current Property buildings from imported fill
APEC 8 Former Locomotive Engine House located on Property	Not Previously Investigated	14BH/MW21 and 14BH22	Within footprint location shown on 1951 Fire Insurance Map
APEC 9 Heating Oil UST adjacent to Seaspan office	Not Previously Investigated	14BH/MW23 and 14VP03	Adjacent to current heating oil UST
APEC 10 Former Machine Shop at former Gadd Marine Site	Not Previously Investigated	14BH24, 14BH/MW25	Within footprint location shown on 1951 Fire Insurance Map
		14BH32 and 14BH33	Delineation of soil contamination identified at 14BH25
APEC 11 Former Heating Oil UST at Island Pallet Solutions	Soil Vapour Not Previously Investigated	14TP01, 15VP07	Adjacent to former heating oil UST
APEC 12 1951 Miscellaneous Industrial Activities/ Seaspan Lease Area	Not Previously Investigated	14BH28, 14BH/MW29 and 14BH/MW30	30 m grid spacing in area of these activities shown on 1951 Fire Insurance Map
		15VP08	Assess soil vapour quality based on vapour modelling
APEC 13 Former Sawmill/Near Former Gadd Lease Area	Not Previously Investigated	14BH/MW2, 14BH/MW19, 14BH24,14BH/MW25, 14BH31 and 14BH32	Within or near former sawmill footprint location shown on 1951 and 1957 Fire Insurance Maps

Notes: CSR - Contaminated Sites Regulation; AW – Marine Aquatic Life Water Use; LEPH - Light Extractable Petroleum Hydrocarbons; PAHs - Polycyclic Aromatic Hydrocarbons; IL – Industrial Land use; CL – Commercial Land Use; HEPH - Heavy Extractable Petroleum Hydrocarbons; and, UST(s) - Underground Storage Tank(s)

Marine Lot Locations

During this DSI, Tetra Tech EBA collected 22 surficial sediment samples (14SED01 to 14SED18, and 14SED23A to 14SED23D) and 6 subsurface sediment samples (14SED19 to 14SED23) from the marine portion of the Property. Locations of sediment sample locations are summarized in more detail in the below table and are shown on Figure 3.

DSI Test Locations – Marine Lot

Stage 1 PSI Findings		DSI	
AECs	**Issue**	**Test Location**	**Rationale**
Marine AEC 1	Sediment with PAHs concentrations exceeding the CSR Schedule 9 standards from 2009 SNC report.	14SED01 to 14SED18	Surficial samples at 30 m to 50 m grid spacing
		14SED19 to 14SED24	Deeper samples to assess vertical extent of sediment contamination
		14SED23A to 14SED23D	5 m grid spacing to access extent of upper cap concentration exceedances found at 14SED04

4.4 Borehole Completion and Soil Sampling

Tetra Tech EBA monitored the advancement of 37 boreholes (14BH01 to14BH37) at the Property between September 2014 and March 2015. The locations of the boreholes are shown on the attached Figure 2. Drillwell Enterprises Limited provided a track and truck-mounted auger rig and operators to drill the boreholes completed within this DSI. Prior to drilling, Tetra Tech EBA conducted a site and task specific safety meeting with the drill-rig operators.

During drilling, solid stem augers were advanced then removed in 1.2 m to 1.5 m intervals to allow for soil sampling and logging. After removing the surficial soil rind, soil samples were collected directly from the auger flights at approximately 1 m intervals or wherever changes in soil conditions were observed. Sampling intervals for each borehole are shown on the borehole logs in Appendix B.

Tetra Tech EBA's field representative wore new nitrile sampling gloves during soil sampling to prevent cross-contamination. Each soil sample was collected into a clean, labeled, laboratory-supplied glass jar. Sample jars were completely filled with soil to minimize loss of volatile constituents. All sample jars were stored in ice-chilled coolers then shipped under chain of custody protocol to Maxxam Analytical of Burnaby, BC.

Field headspace measurements of soil vapour were conducted on duplicates of collected soil samples using a portable Gastech model 1238ME hydrocarbon analyzer with methane elimination. Headspace measurements were obtained by filling a plastic bag approximately one-third full of soil and measuring the resulting soil vapour concentration after the soil and air had reached equilibrium. Headspace measurements are depicted on the attached borehole logs.

Auger flights were pressure washed between borehole locations. Boreholes were backfilled with hydrated bentonite (clay) to near surface and capped with concrete at surface. Drill cuttings were temporarily stored onsite in steel drums for future disposal.

4.5 Monitoring Well Installation and Development

Nineteen (19) of the thirty-seven (37) boreholes were completed as groundwater monitoring wells as shown on the attached Figure 2. Well completion details for each monitoring well are shown on the attached borehole logs (Appendix B). A general description of the monitoring well installation is provided below.

Monitoring wells were constructed of 50 mm diameter, threaded schedule 40 polyvinyl chloride (PVC) and included a 1.5 m length of machine slotted screen with a slot width of 0.25 mm (0.010 inch), and a PVC slip cap at the base. Unslotted casing was used for the remainder of the well. The borehole annulus was backfilled with silica sand to an elevation of approximately 0.3 m above the screened interval. Bentonite was placed above the sand-pack and near ground surface in the borehole to provide a hydraulic seal. A compression J-plug was placed over the top of the casing. At ground surface, the PVC pipe was set in a flush-mounted protective casing that was cemented into place.

Following well installation, groundwater monitoring wells were developed as per methods detailed in Appendix C. During development, at least five well volumes were removed or until the well was dry. Well development details are shown in the attached Appendix C.

4.6 Groundwater Monitoring and Sampling

Prior to groundwater sampling, Tetra Tech EBA measured the water level in each well using an electrical water level tape. As well, on September 22, 2014, Tetra Tech EBA conducted groundwater monitoring of select wells at both low and high tide conditions to assess for potential tidal fluctuations at the Property. Measured groundwater levels are shown on Table 1.

To sample groundwater, Tetra Tech EBA employed low-flow sampling techniques using a peristaltic pump. New 6.3 mm diameter high-density polyethylene (HDPE) tubing was inserted into the well and the tubing intake was positioned at the midpoint of the saturated section of the well screen. Water was then pumped from the well using the peristaltic pump and tubing string consisting of the HDPE tubing and a section of new silicone low-density tubing. Groundwater purging continued until field measurements of pH, temperature, and electrical conductivity were within 5 per cent of each other between successive well volumes.

Following purging, Tetra Tech EBA collected groundwater samples directly from the tubing string into clean, labeled, new laboratory-supplied containers. Samples for dissolved metals were field-filtered and preserved with nitric acid. The groundwater samples were placed in ice-chilled coolers for temporary storage and transported to Maxxam using chain-of-custody procedures.

4.7 Hydraulic Conductivity Testing

Tetra Tech EBA conducted in-situ falling/rising head single-well hydraulic response tests on select monitoring wells 14BH/MW13 and 14BH/MW14 to estimate the hydraulic conductivity within the native silt layer underlying the fill soils. Both groundwater monitoring wells were installed in the native silt layer underlying fill soils, with a screen exposed between 4.6 m and 6.1 m bgs. Three tests were completed at each well.

Falling head tests were conducted at 14MH/MW13 by lowering a 0.72 m long slug into the well and monitoring the water level recovery rate with a data logger. Only falling head tests were conducted there since the static water level was above the screen sand pack level. Rising head tests were conducted at 14BH/MW14 by removing a known volume of water and repeating the monitoring procedure. Only rising head tests were conducted there since the static water level was below the screen sand pack level. Solinst dataloggers were used to monitor the groundwater recovery at one-second sampling intervals during the completion of the hydraulic response tests.

4.8 Sediment Sampling

Tetra Tech EBA conducted two sediment sampling events (September 2014 and November 2014). Sediment sampling locations are shown on the attached Figure 3.

In September 2014, Tetra Tech EBA collected 18 surficial sediment samples (14SED01 to 14SED018) using a Ponar grab sampler. After setting the Ponar grab at the surface, it was slowly lowered through the water column to just above the sediments. It was then dropped quickly so that contact triggers the device jaws to be released. The Ponar is lifted back through the water column and any free water is decanted through the top of the grab. The sediment sample is emptied into a clean stainless steel or plastic bucket. This process is repeated until sufficient sample is obtained. The sediment is thoroughly mixed to obtain a homogenous sample. The Ponar and bucket were cleaned with local water between samples.

In November 2014, Tetra Tech EBA collected 6 deeper subsurface sediment samples (14SED19 to 14SED24) using a barge mounted sonic drill rig. Additionally 4 surficial sediment samples (14SED23A to 14SED23D) were collected during this program using a Ponar grab sampler as per the above methodology. Drillwell Enterprises Limited provided a sonic drill rig located on a barge to drill all boreholes completed within the marine Portion of the Property. Prior to drilling, Tetra Tech EBA conducted a site and task specific safety meeting with the drill-rig and barge operators. During drilling, sediment samples were collected in 0.5 m intervals to a maximum depth of 2 m below the top of the sediment layer.

Tetra Tech EBA's field representative wore new nitrile sampling gloves during the collection of each sediment sample to prevent cross-contamination. Each soil sample was collected into a clean, labeled, laboratory-supplied glass jar. Sample jars were completely filled with soil to minimize loss of volatile constituents. All sample jars were stored in ice-chilled coolers then shipped under chain of custody protocol to Maxxam Analytical of Burnaby, BC.

4.9 Vapour Probe Installation

Vapour probes 14VP01 to 14VP06 and 15VP07 and 15VP08 were installed using the auger rig supplied by Drillwell. The vapour probe locations are shown on Figure 2. Vapour probes were installed to depths of 0.5 m to 2.3 m bgs. The completion depth of vapour probes was dependent on depth of identified soil contamination and at least approximately half the depth of the groundwater table to prevent probes from becoming submerged during seasonal fluctuations in groundwater levels. Completion details for each vapour probe are shown on the attached borehole logs and a general description of the probe installation is provided below.

Vapour probes were constructed with a 0.15 m length of 6.3 mm stainless steel screen connected with brass fittings to HDPE tubing. The borehole annulus was backfilled with silica sand to approximately 0.05 m above the stainless steel screen and hydrated granular bentonite was placed above the sand pack to surface to provide a seal. At ground surface, the vapour probe was set in a flush-mounted protective casing that was cemented into place.

4.10 Vapour Probe Leak Testing

A leak test was conducted on each soil vapour probe as part of the sampling program conducted in November 2014 for soil vapour probes 14VP01 to 14VP06 and in April 2015 for soil vapour probes 15VP07 and 15VP08 using industrial-grade helium gas to assess the surface seal effectiveness. Tetra Tech EBA completed three leak detection tests during vapour purging at each sampling location. Leak detection was conducted by testing the probe and sampling apparatus for leaks using industrial quality compressed helium as a tracer gas. The percentage of helium detected during leak detection testing ranged from 0.5% to 2.3%, which are acceptable values for vapour sampling under CSR guidance

4.11 Vapour Modelling

Tetra Tech EBA assessed the presence or absence of the CSR Schedule 11-regulated vapour substances on the Property by estimating vapour concentrations in the breathing zone calculated from soil and groundwater laboratory testing data.

4.12 Soil Vapour Sampling

For soil vapour probes not installed within asphalt, a polyethylene sheet approximately 1.5 m by 1.5 m in size was first laid down at least 24 hours prior to sampling and weighted with sand to create a surface seal to prevent the soil vapour probe from drawing air from the atmosphere above the surface during sampling. During each sampling event, the soil vapour probes were purged by removing one to three casing volumes of stagnant air using an SKC Universal Sample Pump at a rate of 0.2 L/min. Vapour samples were collected at the wellhead under a vacuum using 1.4 L Summa canisters capacity for approximately 10 minutes; the final vacuum was 0 inches of mercury.

On the November 19, 2014 sampling event the weather varied from sunny and clear to cloudy with temperatures ranging from 4^{o} C to 8^{o} C. On April 7 and 8, 2015 sampling events the weather was sunny with temperatures ranging from 8^{o} C to 11^{o} C. On the September 11, 2015 sampling event the weather was sunny with a temperature of 25^{o} C. At least 24 hours had passed since a precipitation event for all sampling events. These climatic conditions are considered suitable for vapour sampling.

A duplicate vapour sample was collected during each sampling event using a splitter (i.e., two Summa canisters connected with a T-splitter) to ensure an equal rate of flow and distribution of the sample into two canisters.

The controllers used during sampling were clean and calibrated by Maxxam before they were used on site. The samples were shipped to Maxxam with appropriate chain of custody documentation for chemical analysis.

4.13 Analytical Testing

Upland Locations

Soil, groundwater, vapour samples were selected for laboratory analysis based on COCs/PCOCs associated with each AEC/APEC. The table below summarizes the analytical testing program completed within each AEC/APEC during this DSI.

DSI Analytical Testing Program – Uplands

<table>
<tr><th>APECs or AECs</th><th>PCOCs or COCs</th><th>Test Location</th><th>Analytical Testing</th></tr>
<tr><td rowspan="3">AEC 1
Coal Waste Fill / Seaspan lease area</td><td rowspan="3">Soil COCs: Chromium
Groundwater COCs: None
Soil Vapour PCOCs: Naphthalene</td><td rowspan="2">14BH01, 14BH/MW02, 14BH03, 14BH04 and 15BH37</td><td>Soil: metals, LEPH/HEPH, PAHs, BTEXS, VPH, MTBE, EPH</td></tr>
<tr><td>Groundwater: metals, LEPH/HEPH, PAHs, Phenols</td></tr>
<tr><td>14VP03 and 14VP04</td><td>Vapour: BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene,
Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene</td></tr>
<tr><td rowspan="3">AEC 2
Former Locomotive Fuelling Facilities and Barrel Storage and Swale Beneath Crace Street Viaduct/ SVI lease area</td><td rowspan="3">Soil COCs: LEPH, HEPH
Groundwater COCs: LEPH, PAHs
Soil Vapour PCOCs: BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene,
methylcyclohexane and naphthalene</td><td rowspan="2">14BH/MW05, 14BH06, 14BH/MW07, 14BH/MW08, 14BH09, 14BH/MW26 and 14BH/MW27</td><td>Soil: metals, LEPH/HEPH, PAHs, BTEXS, VPH, EPH</td></tr>
<tr><td>Groundwater: LEPH/HEPH, PAHs, BTEXS, VPH, MTBE, EPH</td></tr>
<tr><td>14VP01 and 14VP02</td><td>Vapour: BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene,
Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene</td></tr>
<tr><td rowspan="3">AEC 3
Former sawmill / Portion on northern end of 25 m wide road dedication within former CIPA lease area</td><td rowspan="3">Soil COCs: Chlorinated Phenols
Groundwater COCs: Chlorinated Phenols
Soil Vapour PCOCs: BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene,
Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene</td><td rowspan="2">14BH/MW10, 14BH10a, 14BH/MW11, 14BH/MW12, 12BH/MW13, 14BH34 and 14BH/MW35</td><td>Soil: metals, PAHs, BTEX, VPH, limited VOCs, phenols</td></tr>
<tr><td>Groundwater: metals, VOCs, VPH, phenols</td></tr>
<tr><td>14VP06</td><td>Vapour: BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene,
Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene</td></tr>
</table>

APECs or AECs	PCOCs or COCs	Test Location	Analytical Testing
AEC 4 Former sawmill / Portion on southern end of 25 m wide road dedication on north end of Western Forest Products lease area	**Soil COCs:** Chlorinated Phenols, and Arsenic **Groundwater COCs:** none **Soil Vapour PCOCs:** BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene	14BH/MW14, 14BH/MW15, 12BH/MW16, and 14BH36	Soil: metals, PAHs, BTEX, VPH, limited VOCs, phenols
			Groundwater: metals, VOCs, VPH, phenols
		14VP05	Vapour: BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene
AEC 7 Imported Fill / Portion on middle of Property within Seaspan lease area near existing dock	**Soil COCs:** Chromium **Groundwater COCs**: None **Soil Vapour PCOCs**: Naphthalene	14BH17, 14BH18, 14BH/MW19 and 14BH20	Soil: metals, LEPH/HEPH, PAHs, BTEXS, VPH, MTBE, EPH
			Groundwater: metals, LEPH/HEPH, PAHs, Phenols
		14VP03 and 14VP04	Vapour: BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene
APEC 8 Former Locomotive Engine House located on Property.	**Soil and Groundwater PCOCs** LEPH, HEPH, PAHs and metals **Soil Vapour PCOCs** Naphthalene.	14BH/MW21 and 14BH22	Soil: metals, LEPH/HEPH, PAHs, EPH
			Groundwater: metals, LEPH/HEPH, PAHs, VOCs VPH
APEC 9 Heating Oil UST adjacent to Seaspan office	**Soil and Groundwater PCOCs** VPH, LEPH, HEPH, PAHs **Soil Vapour PCOCs** BTEXS, VPH, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.	14BH/MW23 and 14VP03	Soil: metals, LEPH/HEPH, BTEXS, VPH, MTBE, EPH
			Groundwater: metals, LEPH/HEPH, PAHs, VPH, VOCs
			Vapour: BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene

APECs or AECs	PCOCs or COCs	Test Location	Analytical Testing
APEC 10 Former Machine Shop at former Gadd Marine Site	**Soil and Groundwater PCOCs** LEPH, HEPH, PAHs and metals **Soil Vapour PCOCs** Naphthalene.	14BH24, 14BH/MW25, 14BH32 and 14BH33	Soil: metals, LEPH/HEPH, PAHs, Phenols
			Groundwater: metals, LEPH/HEPH, PAHs
APEC 11 Former Heating Oil UST at Island Pallet Solutions	**Soil and Groundwater PCOCs** VPH, LEPH, HEPH, PAHs **Soil Vapour PCOCs** BTEXS, VPH, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.	14TP01	Soil: BTEX, VPH, naphthalene, sum of total PAHs, 1,2,4-trichlorolbenzene, 1,3,5-trimethylbenzene, decane
		15VP07	Vapour: BTEXS, VPH, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene
APEC 12 1951 Miscellaneous Industrial Activities/ Seaspan Lease Area	**Soil and Groundwater PCOCs** BTEX, VPH, LEPHs, HEPHs, PAHs, glycols and metals **Soil Vapour PCOCs** BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene	14BH28, 14BH/MW29 and 14BH30	Soil: metals, LEPH/HEPH, PAHs, limited VOCs, BTEX, VPH, EPH, glycols
		14MW29	Groundwater: metals, LEPH/HEPH, PAHs
		15VP08	Vapour: BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene
APEC 13 Former Sawmill/Near Former Gadd Lease Area	**Soil and Groundwater PCOCs** Chlorinated phenols and metals. **Soil Vapour PCOCs** None.	14BH/MW2, 14BH17, 14BH/MW19, 14BH24, 14BH/MW25, 14BH31 and 14BH32	Soil: metals, non-chlorinated and chlorinated phenols
		14BH/MW2, 14BH/MW19	Groundwater: metals and non-chlorinated and chlorinated phenols

Notes: CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPHs - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPHs - Volatile Petroleum Hydrocarbons;
VOCs - Volatile Organic Compounds
IL – Industrial Land use;
CL – Commercial Land Use;
HEPHs - Heavy Extractable Petroleum Hydrocarbons;
BTEXS - Benzene, Toluene, Ethylbenzene, Xylenes, Styrene;
UST(s) - Underground Storage Tank(s);

Marine Locations

Sediment samples were selected for laboratory analysis based on PCOCs associated with the marine AEC. The table below shows analyzed parameters within Marine AEC 1 during this DSI.

DSI Analytical Program – Marine

AECs	PCOCs/COCs	Test Location	Analytical Testing
Marine AEC 1	**Sediment PCOCs**: PAHs and metals **Sediment COCs**: PAHs in sediment	14SED01 to 14SED18	Metals and PAHs
		14SED19 to 14SED24	PAHs
		14SED23A to 14SED23D	PAHs

4.14 Survey

City of Nanaimo survey staff completed horizontal and vertical survey of select existing monitoring and all test locations completed during this DSI on the upland area of the Property.

Tetra Tech EBA used the survey data to establish the groundwater elevations in the wells, and to determine the horizontal direction of groundwater flow and the horizontal hydraulic gradient driving the groundwater flow.

4.15 Quality Assurance / Quality Control

During the DSI, Tetra Tech EBA implemented a Quality Assurance/Quality Control (QA/QC) program to ensure the integrity of the sampling methodology and analytical testing. The QA/QC program adhered to Tetra Tech EBA's in-house Quality Management System (QMS), which was designed to generate representative samples, minimize the potential for cross contamination between sampling locations and samples, and reduce the potential for systematic bias.

The QA/QC program included the following tasks:

- Logging subsurface conditions and sampling of environmental media;
- Recording the results of field activities in the field concurrently with the activities;
- Use of clean, new sampling gloves at each sampling location;
- Placing samples into new, labeled laboratory-supplied containers;
- Transporting temperature-sensitive samples to the laboratory in chilled coolers using chain-of-custody procedures;
- Using a Canadian Association for Laboratory Accreditation (CALA) accredited laboratory that is qualified to analyze the samples using BC MOE-approved procedures;

- Requiring that one person who did not compile the tables appearing in this report review the tables and compare the tabulated analytical results with the original information appearing on the laboratory certificates to verify the accuracy of the information in the tables; and
- Conducting a review of this report by a qualified senior Tetra Tech EBA professional to ensure that the report meets Tetra Tech EBA technical and reporting requirements.

To assess for analytical accuracy, the BC MOE recommends that one of every ten samples be analyzed in duplicate. Of the 147 soil samples 13 soil samples were duplicated; of the 40 groundwater samples, 6 groundwater samples were duplicated; of the 28 sediment samples, 3 sediment sample were duplicated, of the 15 vapour samples, 3 soil vapour sample duplicated. All duplicates were analyzed for the associated COCs or PCOCs during the DSI.

Duplicate pairs submitted for laboratory testing during the DSI were as follows:

- Soil sample 14BH01-1 (duplicate designated Dup 2) – analyzed for metals;
- Soil sample 14BH06-3 (duplicate designated Dup 6) - analyzed for EPH;
- Soil sample 14BH08-4 (duplicate designated Dup 3) - analyzed for EPH, LEPH, HEPH, metals and PAHs;
- Soil sample 14BH09-5 (duplicate designated Dup 5) - analyzed for VH, BTEXS, EPH, LEPH, HEPH, VPH, PAHs and VOCs;
- Soil sample 14BH27-4 (duplicate designated Dup A) - analyzed for EPH;
- Soil sample 14BH12-2 (duplicate designated Dup 8) - analyzed for phenols;
- Soil sample 14BH16-1 (duplicate designated Dup 10) - analyzed for metals and phenols;
- Soil sample 14BH91-3 (duplicate designated Dup 1) - analyzed for metals, EPH, LEPH, HEPH and PAHs;
- Soil sample 14BH23-3 (duplicate designated Dup 13) - analyzed for metals and EPH;
- Soil sample 14BH33-2 (duplicate designated Dup D) - analyzed for cadmium and zinc;
- Soil sample 14BH19-3 (duplicate designated Dup 1) - analyzed for phenols;
- Soil sample 14BH31-1 (duplicate designated Dup C) - analyzed for metals and phenols;
- Groundwater sample 14MW02 (duplicate designated DUP1) – analyzed for hardness, sodium, metals and PAHs;
- Groundwater sample 14MW05 (duplicate designated DUP2) – analyzed for PAHs, EPH, LEPH and HEPH;
- Groundwater sample 14MW27 (duplicate designated DUP4) – analyzed for EPH;
- Groundwater sample 14MW10 (duplicate designated DUP3) – analyzed for pentachlorophenol;

- Groundwater sample 14MW10 (duplicate designated DUP5) – analyzed for BTEXS, MTBE, VPH and chlorinated phenols;
- Groundwater sample 14MW25 (duplicate designated DUP6) – analyzed for PAHs, EPH, LEPH, HEPH and metals;
- Sediment sample 14SED01 (duplicate designated 14SED-DUP1) – analyzed for metals and PAHs;
- Sediment sample 14SED14 (duplicate designated 14SED-DUP2) – analyzed for metals and PAHs;
- Sediment sample 14SED023@1.8 (duplicate designated DUP1) – analyzed for PAHs;
- Vapour sample 14SVP06 (duplicate designated DUP01) – analyzed for $VPH_{C6\text{-}C13}$, select VOCs, and BTEX;
- Vapour sample 14VP01 (duplicate designated 15VP DUP1) – analyzed for $VPH_{C6\text{-}C13}$, select VOCs, and BTEX; and,
- Vapour sample 15VP07 (duplicate designated 15VP DUP2) – analyzed for $VPH_{C6\text{-}C13}$, select VOCs, and BTEX.

Tetra Tech EBA formed duplicate soil, groundwater and sediment samples by alternately placing approximately 10% of the sample volume into the original sample container and then placing the same amount into the duplicate sample container. Tetra Tech EBA continued placing additional aliquots of approximately 10% of the sample volume into each container until both containers were filled. A vapour duplicate was collected using a Y-splitter and two Summa canisters connected to the vapour probe which allowed the duplicate samples to be collected concurrently.

5.0 SUBSURFACE OBSERVATIONS

5.1 Site Geology

The Property is primarily underlain by coal waste and imported fill overlying native marine sediments with only some small areas that were original ground. The types of fill encountered and their thickness varies in different areas of the Property. For the purposes of this summary, the Property has been divided into three main areas: the Seaspan Yard, located in the northern portion; the Southern Vancouver Island Rail Yard, located in the southern portion; and the Port Drive right-of-way, which is the “panhandle” portion of the Property. Based on a review of thirty-six boreholes that Tetra Tech EBA drilled at the property in September 2014 and November 2014, we summarize the fill types as follows:

- Fill type 1: Sand, either homogenous, or sandy silt, with some gravel and no coal waste.
- Fill type 2: Mixed coal waste - silt, sand and gravel with occasional construction debris, brown and black (< 50% coal).
- Fill type 3: Coal waste, silt, sand and small gravel, black (50% to 100% coal).
- Fill type 4: Mixed gravel, silt and sand (no coal to traces of coal).

Nineteen boreholes were drilled within the Seaspan portion of the Property. Combined fill thickness in this area ranged from 2.2 m to 6.5 m with an average thickness of 4.3 m. Fill type 1 was found in 16 of the boreholes with an average thickness of 1 m. Fill type 2 was found in 15 of the boreholes with an average thickness of 1.9 m. Fill type 3 was found in 15 of the boreholes with an average thickness of 1.4 m. Fill type 4 was found in five of the boreholes with an average thickness of 2.9 m.

Seven boreholes were drilled in the Southern Vancouver Island Rail Yard portion of the Property. Combined fill thickness in this area ranged from 4.6 m to 8.5 m with an average thickness of 5.8 m. Fill type 1 was found in all seven boreholes with an average thickness of 1 m. Fill type 2 was found in all seven boreholes with an average thickness of 3.2 m. Fill type 3 was found in four of the boreholes with an average thickness of 2.5 m. Fill type 4 was found in one borehole with a thickness of 0.9 m.

Ten boreholes were drilled in the Port Drive right-of-way portion of the property. Combined fill thickness in this area ranged from 3.1 m to 5.2 m with an average thickness of 4.3 m. Fill type 1 was found in nine of the boreholes with an average thickness of 3.2 m. Fill type 2 was found in four of the boreholes with an average thickness of 2.1 m. Fill type 3 was found in one borehole with a thickness of 0.3 m. Fill type 4 was not found in this area.

Combined fill thickness ranged from 2.2 m to 8.5 m thick across the Property, and was thickest on average in the southern portion of the property. Cross Sections showing the subsurface geology of the Property are included as Figures 10 to 14.

5.2 Hydrogeology

During the Tetra Tech EBA investigations a total of 19 wells were installed at select borehole locations. Table 1 summarizes the groundwater elevation data obtained during the DSI.

For purposes of characterizing the site hydrogeology, the four fill types described above are collectively assigned to an unconfined fill hydrostratigraphic unit. The underlying native marine silt and sand materials are assigned to an unconfined marine sediment hydrostratigraphic unit. These are taken to be the principal subsurface materials affecting the occurrence and flow of shallow groundwater beneath the site. Bedrock was not encountered in any of the boreholes and is assumed to be at a substantial depth below the marine sediments.

As mentioned above, the general direction of groundwater flow at the Property is inferred to be toward the northeast in the northern section of the Property and toward the east in the southern portion of the Property. Because the Property consists of reclaimed land, tidal fluctuation influences the shallow groundwater flow in the unconfined aquifer within the fill materials.

5.2.1 Groundwater Depths, Flow Directions and Tidal Influence

Groundwater is present within fill soils that were found throughout the entire Property. Based on the depths to groundwater measurements and surveyed well casing elevations, groundwater elevations were determined for each well. The data from the groundwater monitoring events is included in Table 1. At low tide on September 22, 2014, the depth to groundwater ranged from about 2.4 m to 4.9 m below grade, with an average depth of about 3.9 m below grade.

Tidal influence at the Property area is documented in a previous environmental site investigation conducted by SNC Lavalin of Vancouver, BC (SNC Lavalin, June 2009). SNC Lavalin conducted a 69-hour tidal monitoring event in three groundwater monitoring wells at varying distances from the coastline (35 m, 50 m and 110 m). Their well closest to the sea (MW09-19) is located in the northern portion of the Property. SNC reported that during tidal variation, groundwater levels fluctuated up to 1 m in the well located 35 m from the sea, less than 0.5 m in the well located 50 m from the sea, and < 0.2 m in the well located 110 m from the sea. There was also a lag time response that ranged from one to five hours from high and low tide events.

Tetra Tech EBA selected seven MWs to corroborate the occurrence of a tidally-induced reversal in groundwater flow directions in northern portions of the Property (14BH/MW02, 05, 07, 08, 19, 21 and 25). Tetra Tech EBA measured groundwater levels during low tide on September 22, 2014 and returned to the Property just prior to high tide to measure water levels in these same wells. The tidal fluctuation on that day was 2.4 m. At low tide, the depth to groundwater ranged from about 2.4 m to 4.9 m below grade, with an average depth of about 3.95 m below grade. At high tide, the depth to groundwater ranged from about 2.3 m to 4.9 m below grade, with an average depth of about 3.9 m below grade. As expected, these observations showed the greatest change in piezometric contours in the wells closest to the harbour.

Our observations show that the direction of groundwater flow on the Property at high tide was reversed when compared to the direction of flow at low tide. The direction of groundwater flow on September 22, 2014 is attached on Figures 4 (low tide) and 5 (high tide).

5.2.2 Hydraulic Conductivity Analysis

The table below summarizes the results of the hydraulic response (slug) tests for installed monitoring wells from the September 2014 field program. Hydraulic conductivities (K) for the marine sediments hydrostratigraphic unit based on slug test results from wells 14BH/MW13 and 14BH/MW14 ranged from 1.9×10^{-5} to 1.5×10^{-4} m/s, with a geometric mean of 3.7×10^{-5} m/s. These are reasonable values for silt and sand with some gravel and would be considered to constitute K values that represent a potential drinking water aquifer under MOE Technical Guidance #6.

Summary of Hydraulic Response (Slug) Tests for Tetra Tech EBA 2014 Monitoring Wells

2014 Well Name	Falling Head K Values (m/s)		Rising Head K Values (m/s)		Dominant Soil at Screen	Notes
	Bouwer & Rice	***Hvorslev***	***Bouwer & Rice***	***Hvorslev***		
14BH/MW13						
Test 1	2.1E-05	3.1E-05	-	-	SILT, some sand, some gravel	Static water level was just above the screen pack. Falling head test conducted.
Test 2	2.0E-05	2.9E-05	-	-		
Test 3	1.9E-05	2.7E-05	-	-		
Max K	3.1E-05		-			
Min K	1.9E-05		-			
Geomean K	2.4E-05		-			
14BH/MW14						
Test 1	-	-	2.8E-05	4.2E-05	SILT, sandy, some gravel	Static water level was just below the screen pack. Rising head test conducted.
Test 2	-	-	3.7E-05	5.7E-05		
Test 3	-	-	1.0E-04	1.5E-04		
Max K	-		1.5E-04			
Min K	-		2.8E-05			
Geomean K	-		5.8E-05			
Geomean K: 14BH/MW13 and 14BH/MW14			3.7E-05			

Average K values for the two wells only differed by a factor of 2.4 which suggests that the marine sediments have a fairly uniform hydraulic conductivity at this site.

5.2.3 Horizontal Groundwater Velocities

Using the low-tide hydraulic gradient, groundwater flow velocities within the fill at the Property are calculated as follows:

$$V = KI/n$$

Where V = average linear groundwater velocity in m/s

K = geometric mean calculated hydraulic conductivity in m/s

I = calculated horizontal hydraulic gradient at low tide in m/m

n = effective porosity (unitless)

The horizontal hydraulic gradient was steepest near the harbour (~0.004 m/m) and less inland (~0.002 m/m). Using the lower gradient, the groundwater velocity within the fill (northern portion of the Property) =

= (3.7E-05 m/s * 0.0020 m/m) / 0.35

= 6.7 m/year.

Using the higher gradient, the groundwater velocity would be 13.4 m/year.

5.2.4 Groundwater Recharge and Discharge Areas

Based on regional geomorphological setting, the Property is interpreted to lie within an overall discharge zone of a regional groundwater flow system (discharging into the Nanaimo Harbour).

Regional groundwater recharge is interpreted to predominantly occur directly from precipitation and then direct seepage on the unpaved portions of the Property and from upland areas west of the Property.

Recharge to the local groundwater flow system (at the scale of the Property) likely occurs at topographically higher areas of the Property (to the west along Esplanade and Front Streets, with local groundwater flowing toward topographically lower areas to the east.

5.3 Drinking Water Determination

Based on the calculated K values alone as, outlined in Section 5.2.2, the groundwater aquifer below the Property could be considered a potable drinking water source under Technical Guidance 6 of the CSR. If CSR drinking water (DW) standards had to be applied to the Property, the contamination in soil and groundwater identified by SNC in 2009 and during this DSI would have increased significantly. Therefore, during the DSI, Tetra Tech EBA prepared and submitted an application to the BC MOE for a Determination of “No Drinking Water Use” at the Property primarily due to the Property being situated entirely on land reclaimed from the sea consisting of poor quality industrial fill materials. The letter and e-mail submitted to MOE and the Final Determination received on December 15, 2014 approving an exemption from the CSR drinking water (DW) standards are included in Appendix E.

6.0 ASSESSMENT STANDARDS

The DSI laboratory results have been compared to the numerical standards stipulated in the BC CSR (B.C. Reg. 375/96, including amendments up to January 31, 2014). Applicable standards from the CSR are detailed in the following subsections.

6.1 CSR Soil Assessment Standards

Generic standards for the assessment and remediation of soils are detailed in BC CSR Schedules 4 and 10. Generic standards depend solely on land use. Based on the proposed and current use of the Property, CSR Schedules 4 and 10 standards for Commercial (CL) and Industrial (IL) Land Use were used for comparison to the laboratory results.

During the DSI, Tetra Tech EBA submitted soil samples for EPH analysis. EPH concentrations in soil are not regulated by the CSR; however, the related parameters of LEPH and HEPH are regulated. EPH is related to LEPH and HEPH as follows:

- LEPH = light EPH (C10 – C19) minus select PAHs; and
- HEPH = heavy EPH (C19 – C32) minus select PAHs.

Matrix standards for the assessment and remediation of soils are detailed in Schedule 5 of the CSR. Matrix standards are risk-based standards that depend on land use and a number of site-specific factors. Two site-specific factors from Schedule 5 apply to all land uses: intake of contaminated soil and toxicity to soil invertebrates and plants. The following subsections detail the assessment to determine if standards protective of drinking water, aquatic life and irrigation and livestock water apply to the Property.

Site-Specific Standards Protective of Drinking Water

As discussed in Section 5.3, a Determination of no drinking water use was obtained from the BC MOE for the Property, therefore, Schedule 5 standards protective of drinking water (DW) have not been applied to the Property.

Site-Specific Standards Protective of Aquatic Life

Technical Guidance 6 indicates that BC CSR standards protective of aquatic life apply to a site if a surface water body containing aquatic life is located within 500 m. The Nanaimo Harbour is located immediately adjacent to the Property, therefore, CSR Schedule 5 standards protective of groundwater flow to surface water used by marine aquatic life (AW) have been applied to the Property.

Site-Specific Standards Protective of Irrigation and Livestock Water Use

Technical Guidance 6 indicates that BC CSR standards protective of irrigation and livestock watering apply to a site if irrigation or livestock water wells or surface water intakes are located within 500 m of a site. A search of the BC MOE online aquifer and water well database did not identify water wells or surface water intakes for irrigational or livestock watering within a 500 m radius of the Property; therefore Tetra Tech EBA does not consider standards protective of irrigation and livestock water to be applicable to the Property, at this time.

All applicable BC CSR standards applied to soils on the Property are included in Tables 2 through 5.

6.2 CSR Groundwater Assessment Standards

As described previously in Section 6.1, Tetra Tech EBA's assessment of groundwater use and surface water receptors in the area indicate that CSR groundwater standards for the protection of marine aquatic life (AW) currently apply to groundwater at the Property.

The CSR standards applied to groundwater in the Property are summarized in Tables 6 through 8.

6.3 CSR Sediment Assessment Standards

CSR sediment standards are listed in Schedule 9 of the CSR and are developed for the protection of aquatic life. In this case, the adjacent surface water body and the suspected receiving water body were both marine water at an active harbour, the less stringent sediment quality criteria for typical sediments were considered applicable to the Property. The more stringent sediment quality criteria for sensitive sediments were included for comparison purposes only.

The CSR Schedule 9 standards are for the protection of ecological health only.

The CSR sediment standards are summarized on Table 9.

6.4 CSR Soil Vapour Assessment Standards

Generic numerical vapour standards for the protection of human health are detailed in Schedule 11 of the BC CSR. The CSR vapour standards are dependent on current and proposed land use. The CSR Schedule 11 generic CL/IL standards currently apply to vapour at the Property. Based on current land uses.

All applicable CSR Schedule 11 soil vapour standards are included in Table 10.

7.0 DSI ANALYTICAL RESULTS

Tetra Tech EBA planned the DSI based on the findings of the previous SNC investigation completed for the Property in 2009 (SNC, 2009), a comprehensive review of all historical information from our Stage 1 PSI and other subsurface information available. We believe SNC's investigation overall was conducted to acceptable industry standards and consider the data are reliable for the purpose of our investigation. Thus, we have used the data collected by SNC during their previous investigations to increase the density of investigation locations.

The soil data collected during the 2009 SNC investigation and this DSI is presented in the attached Tables 2 to 5 and summarized on Figures 6A, 6B and 6C. The groundwater data from the 2009 SNC investigation and this DSI is presented in Tables 6 to 8 and summarized on Figure 7. The sediment data from the 2009 SNC investigation and this DSI is presented in Table 9 and summarized on Figure 8.

Soil vapour was modelled from measured soil and groundwater data. The modelled results are presented in Appendix F. Based on the modelling results, soil vapour sampling from installed probes was conducted on the Property. Vapour data collected during this DSI is presented on the attached Table 10 and summarized on Figure 9.

The data collected and all results are presented and discussed by each AEC/APEC in the following sub-sections. Laboratory certificates for all sample anlysis completed are included in Appendix G.

7.1 SNC AEC 1 and AEC 7: Coal Waste and other Imported Fill

Based on the previous investigations conducted by SNC, the following soil contamination was identified at SNC AEC 1 and AEC 7 related to fill either from the former coal loading operations or imported to the Property for the purpose of infilling.

SNC AEC 1 and AEC 7: Soil Contamination

Test Location	Soil Exceedance(s)
AEC 1 - BH09-2	Chromium (140 ug/g) > CSR CL/IL of 60 ug/g and background of 90 ug/g at a depth of 0.8 to 0.9 m bgs
AEC 7 - MW09-19	Chromium (93 ug/g) > CSR CL/IL of 60 ug/g and background of 90 ug/g at a depth of 2.4 to 2.6 m bgs

Groundwater samples collected by SNC from MW09-19 in 2009 within SNC AEC 7 did not contain concentrations of any PCOCs exceeding the CSR AW standards. Soil vapour was not assessed at SNC AEC 1 or SNC AEC 7. The chromium contaminated soils on the Property is likely widespread and associated with the historical infilling activities with coal waste primarily.

7.1.1 SNC AEC 1 and AEC 7 DSI Investigation Locations and Analytical Results

The investigation locations conducted to assess soil quality within SNC AEC 1 and SNC AEC 7 at 20 m step outs from identified historical chromium exceedances plus groundwater and vapour analytical results for the assessment of the coal waste/imported fill within these two AECs, are summarized in the following table.

SNC AEC 1 and AEC 7: Summary of DSI Analytical Results

<table>
<tr><th>Testhole/ AEC</th><th>Sample ID (Depth (m))</th><th>Test Location within AEC</th><th>Parameter(s) Investigated</th><th>Analytical Results</th></tr>
<tr><td colspan="5">SOIL</td></tr>
<tr><td rowspan="4">14BH01/ AEC 1</td><td>14BH01-1 (DUP 2) (0.5-0.9)</td><td rowspan="4">20 m step out to the NE of SNC 09-2</td><td>Metals</td><td>Chromium > CSR CL/IL, remaining parameters < CSR CL/IL</td></tr>
<tr><td>14BH01-2 (1.55-1.7)</td><td>Metals, LEPH, HEPH, PAHs</td><td>All parameter concentrations < CSR CL/IL</td></tr>
<tr><td>14BH01-3 (2.44-2.59)</td><td>Metals</td><td>All parameter concentrations < CSR CL/IL</td></tr>
<tr><td>14BH01-5 (5.33-5.49)</td><td>BTEXS, VPH, MTBE</td><td>All parameter concentrations < CSR CL/IL</td></tr>
<tr><td rowspan="4">14BH02/ AEC 1</td><td>14BH02-1 (0.65-0.75)</td><td rowspan="4">20 m step out to the SE of SNC 09-2</td><td>Metals</td><td>Chromium > CSR CL/IL, remaining parameters < CSR CL/IL</td></tr>
<tr><td>14BH02-2 (1.15-1.27)</td><td>Metals, PAHs,</td><td>Chromium > CSR CL/IL, remaining parameters < CSR CL/IL</td></tr>
<tr><td>14BH02-3 (2.15-2.3)</td><td>Metals, LEPH, HEPH, PAHs</td><td>All parameter concentrations < CSR CL/IL</td></tr>
<tr><td>14BH02-4 (2.5-2.67)</td><td>Metals</td><td>All parameter concentrations < CSR CL/IL</td></tr>
</table>

Testhole/ AEC	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
14BH03/ AEC 1	14BH03-1 (0.55-0.7)	20 m step out to the SW of SNC 09-2	Metals	All parameter concentrations < CSR CL/IL
	14BH03-2 (1.35-1.45)		Metals, PAHs	All parameter concentrations < CSR CL/IL
	14BH03-4 (3.50-3.65)		EPH	All parameter concentrations < CSR CL/IL
14BH04/ AEC 1	14BH04-2 (0.95-1.05)	20 m step out to the NW of SNC 09-2	Metals, EPH	Chromium > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH04-3 (2.29-2.44)		Metals, PAHs	All parameter concentrations < CSR CL/IL
	14BH04-4 (3.53-3.70)		Metals	All parameter concentrations < CSR CL/IL
14BH17/ AEC 7	14BH17-2 (1.05-1.2)	20 m step out to the NW of SNC 09-19	Metals, PAHs	All parameter concentrations < CSR CL/IL
	14BH17-3 (2.34-2.49)		Metals, PAHs	All parameter concentrations < CSR CL/IL
14BH18/ AEC 7	14BH18-1 (0.6-0.7)	20 m step out to the NE of SNC 09-19	Copper	All parameter concentrations < CSR CL/IL
	14BH18-2 (1.68-1.8)		Metals	All parameter concentrations < CSR CL/IL
	14BH18-3 (2.57-2.74)		Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
14BH19/ AEC 7	14BH19-1 (0.66-0.78)	20 m step out to the SE of SNC 09-19	Metals	All parameter concentrations < CSR CL/IL
	14BH19-3 (DUP1) (1.9-2.05)		Metals, LEPH, HEPH, PAHs	Chromium > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH19-4 (3.96-4.11)		Chromium	All parameter concentrations < CSR CL/IL

Testhole/ AEC	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
14BH20/ AEC 7	14BH20-1 (0.62-0.75)	20 m step out to the SW of SNC 09-19	Metals	Chromium > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH20-2 (1.8-1.98)		Metals, LEPH, HEPH, PAHs	Chromium > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH20-3 (2.82-3.0)		Metals	All parameter concentrations < CSR CL/IL
	14BH20-4 (3.86-4.04)		Metals	Chromium > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH20-5 (5.33-5.49)		Chromium	All parameter concentrations < CSR CL/IL
15BH37/ AEC 2	15BH37 (5.1)	Step out from 14BH/MW26	Chromium	All parameter concentrations < CSR CL/IL
GROUNDWATER				
14MW02/ AEC 1	24-Sept-14 (DUP1), 1-Apr-15	20 m step out to the SE of SNC 09-2	Metals, LEPH, HEPH, PAHs	All parameter concentrations <CSR AW
14MW19/ AEC 7	24-Sept-14, 1-Apr-15	20 m step out to the SE of SNC 09-19	Metals, LEPH, HEPH, PAHs	All parameter concentrations <CSR AW

VAPOUR				
14VP03/ AEC 1	19-Nov-14, 7-Apr-15	Near Seaspan Property building	BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene	All parameters < CSR Schedule 11 vapour standards after attenuation factors are applied
14VP04/ AEC 1	19-Nov-14, 8-Apr-15	Near Property Building at Former Gadd Marine	Naphthalene	Naphthalene < CSR Schedule 11 vapour standards before and after attenuation factors are applied

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
<CSR AW -Less than the CSR groundwater standards for the protection of marine aquatic life.
>CSR AW -Greater than the CSR groundwater standards for the protection of marine aquatic life.
<CSR Schedule 11 – Less than the CSR Schedule 11 vapour standards for CL/IL use
>CSR Schedule 11 – Greater than the CSR Schedule 11 vapour standards for CL/IL

CSR - Contaminated Sites Regulation;
LEPHs - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPHs - Volatile Petroleum Hydrocarbons;
IL – Industrial Land use;
CL – Commercial Land Use;
HEPHs - Heavy Extractable Petroleum Hydrocarbons;
BTEXS - Benzene, Toluene, Ethylbenzene, Xylenes, Styrene;

In summary, chromium soil contamination was confirmed within both SNC AEC 1 and SNC AEC 7 primarily in the fill that contained coal waste within the middle portion of the Property. All other testing parameters analyzed in soil met the CSR CL/IL standards.

All analyzed groundwater samples contained concentrations of PCOCs associated with coal waste fill and other imported fill below the applicable CSR AW standards. Therefore, no groundwater contamination was identified within SNC AEC 1 and SNC AEC 7 during both the Fall 2014 and Spring 2015 sampling events.

Based on vapour modelling results calculated from the soil and groundwater analytical results obtained from the past SNC Investigation and from the first phase of drilling during this DSI, a potential for soil vapour contamination above CSR CL/IL standards for indoor air was identified within both SNC AEC 1 and 7. Therefore, vapour probes were installed adjacent to the two current buildings in this area of the Property to assess soil vapour and therefore assess potential indoor air concentrations. The vapour samples collected from 14VP03 and 14VP04 indicated soil vapour before default attenuation factors were applied exceed the CSR CL/IL standards at 14VP03. However, calculated indoor air and outdoor air concentrations, using default attenuation factors from MOE Technical Guidance 4, meet the applicable CSR CL/IL indoor and outdoor soil vapour standards from Schedule 11.

Therefore, no soil vapour contamination was identified within SNC AEC 1 and SNC AEC 7, based on the current development of the Property during both the Fall 2014 and Spring 2015 sampling events.

7.1.2 Assessment of Chromium Concentrations Throughout the Property

As indicated in Section 5.1, the majority of the Property area consists of coal waste and imported fill overlying native marine sediments. Tetra Tech EBA advanced 37 boreholes at various locations throughout the Property during this DSI. Fill was encountered in all 37 boreholes, therefore, samples collected from the fill and native soils immediately beneath the fill were submitted for PCOCs analysis to assess the quality of the fill soils throughout the Property and to investigate the extent of soil chromium contamination on the Property. Tetra Tech EBA also reviewed and used the soil analytical results obtained during the SNC environmental investigations to add to the sample density. A summary of chromium concentrations identified in soils throughout the Property are shown in Table 11.

The chromium contamination in soils exceeding the CSR standard within AEC 1 and AEC 7 was found to be related to fill soils containing coal waste. Fill with coal waste extends through the majority of the Property with the exception of the southern portion of the proposed road right of way. Of the 54 boreholes sampled for chromium in AEC, approximately 22% (or approximately 12 boreholes) had a chromium concentration exceeding the Protocol 4 background standard of 90 µg/g.

The highest recorded concentration of chromium (140 µg/g) was noted at SNC Borehole BH09-2 at a depth of 0.8 to 0.9 mbgs. This is located in the Seaspan lease area near the marine docking area where historical coal loading was completed. The sample containing the highest concentration of chromium during this DSI (14BH04-2 at 138 ug/g) was submitted for toxicity characteristic leaching procedure (TCLP) to determine if the chromium was leachable and/or could be classified as a hazardous waste. The results of the TCLP testing on this sample are reported in Table 5. The TCLP test results indicated the chromium leachate concentration was below the HWR standard. In addition, eight samples containing the highest chromium concentrations from across the Property, exceeding the Protocol 4 background values were also submitted for synthetic precipitation leaching procedure (SPLP) to determine if chromium identified in the coal waste fill soils would leach at concentrations greater than the applicable CSR AW standard. The results of the SPLP testing are reported in Table 5. The SPLP test results indicated that all leachate concentrations for chromium were below the specific CSR AW standard.

7.1.3 Extent of Soil Contamination AEC 1 and AEC 7

The contamination identified at former SNC AEC 1 and AEC 7 in fill soils were considered to be from the same source and therefore were combined into one AEC (AEC1) by Tetra Tech EBA. The locations of all exceedances of chromium in soils is shown on Figure 6a and estimated horizontal extent of the contamination in the fill soils is shown on Figure 15. The DSI confirmed that the chromium contamination exceeding the CSR CL/IL standard is primarily concentrated within the coal waste fill found within AEC1 near the middle of the Property (labelled AEC1A on Figure 15). Some minor chromium exceedance were identified outside of AEC1 within AEC2 that likely is related to coal waste being present in the fill in this location. We have therefore included the chromium exceedances found in AEC2 in this report section for the calculation of chromium contaminated soil volumes on the Property and labelled this area as AEC1B on Figure 15.

The vertical extent of the chromium contamination appear to be dependent on the thickness of the coal waste fill across the Property. This is shown by an examination of the cross sections of AEC 1 shown on Figures 10 and 11. Generally the soil chromium contamination appears to be limited to the top 2.5 m depth below grade with only a few isolated exceptions showing deeper fill depths. We estimated that the average depth of chromium contamination in coal waste fill soil using all the data obtained is approximately from surface to 2.0 m below grade.

Over all the extent of the chromium contamination in soils on the Property is summarized in the following table.

Chromium Contamination in Soils Summary

AEC Number & Location (See Figure 15)	***Contaminants of Concern***	***Estimated* Horizontal Extent (m^2)**	***Average* Vertical Extent (m)**	***Estimated* In Situ Volume (m^3)**
Middle of Property near Marine Docking Area – AEC1A	Chromium in soil	6,500	2	13,000
Rail Yard – AEC1B	Chromium in soil	1,200	2	2,400
Chromium Totals – AEC 1		**7,700**	**2**	**15,400**

7.2 SNC AEC 2: Rail Yard

Based on the previous investigations conducted by SNC, the following soil and groundwater contamination was identified within AEC 2 primarily related to rail yard activities conducted on Property and on the adjacent site to the south.

AEC 2: Previous Environmental Investigation Results

Test Locations	Soil Exceedance(s)	Groundwater Exceedance(s)	Potential Vapour Issues
09-21	EPH_{c10-19} and EPH_{c19-32} > CSR CL/IL of 2,000 ug/g at a depth of 4.9 to 5.0 mbgs (21,300 and 6,690 ug/g).	None	No vapour exceedances were identified during SNC's previous environmental investigations.
00-07	EPH_{c10-19} > CSR CL/IL of 200 ug/g at a depth of 5.0 to 6.0 mbgs (3,500 ug/g).	LEPH > CSR AW of 500 ug/L (1,800 ug/L)	No vapour exceedances were identified during SNC's previous environmental investigations.

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
<CSR AW -Less than the CSR groundwater standards for the protection of marine aquatic life.
>CSR AW -Greater than the CSR groundwater standards for the protection of marine aquatic life.

CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPHs - Light Extractable Petroleum Hydrocarbons;
IL – Industrial Land use;
CL – Commercial Land Use;
EPHs - Extractable Petroleum Hydrocarbons;

7.2.1 AEC 2 DSI Investigation Locations and Analytical Results

The DSI locations conducted to further assess AEC 2 at approximately 20 m step outs from identified historical hydrocarbon exceedances found in soil and groundwater by SNC and others are summarized in the following table.

AEC 2: Summary of DSI Analytical Results

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
SOIL				
14BH05	14BH05-2 (1.67-1.83)	20 m step out to the east of SNC 09-21	Metals	All parameter concentrations < CSR CL/IL
	14BH05-3 (2.36-2.54)		LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH05-5 (5.18-5.33)		LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH05-6 (5.64-6.1)		LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH05-7 (6.93-7.21)		EPH	All parameter concentrations < CSR CL/IL
14BH06	14BH06-2 (2.12-2.22)	20 m step out to the west of 00-07	Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH06-3 (Dup 6) (3.91-4.11)		EPH	All parameter concentrations < CSR CL/IL
	14BH06-4 (4.88-5.03)		LEPH, HEPH, PAHs	LEPH > CSR CL/IL HEPH and PAHs < CSR CL/IL
	14BH06-5 (5.59-5.79)		LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH06-6 (6.68-6.78)		LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
14BH07	14BH07-1 (1.22-1.35)	20 m step out to the north of 00-07	Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH07-3 (3.81-3.96)		Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH07-4 (4.88-5.03)		LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH07-5 (5.56-5.72)		EPH	All parameter concentrations < CSR CL/IL
14BH08	14BH08-2 (2.1-2.25)	20 m step out to the east of 00-07	Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH08-3 (3.91-4.06)		EPH	All parameter concentrations < CSR CL/IL
	14BH08-4 (Dup 3) (4.57-4.88)		Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH08-5 (5.33-5.49)		EPH	All parameter concentrations < CSR CL/IL
14BH09	14BH09-2 (2.13-2.29)	Adjacent to SNC 09-21	Metals, PAHs	All parameter concentrations < CSR CL/IL
	14BH09-3 (4.04-4.17)		Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH09-4 (4.77-4.90)		BTEX/VPH, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH09-5 (Dup 5) (5.18-5.44)		BTEX/VPH, Chromium, LEPH, HEPH, PAHs	LEPH > CSR CL/IL Chromium, HEPH and PAHs < CSR CL/IL
	14BH09-6 (6.86-7.01)		Metals, LEPH, HEPH, PAHs	*Chromium > CSR CL/IL, LEPH, HEPH and PAHs, remaining metals < CSR CL/IL
	14BH09-7 (8.31-8.46)		EPH	EPH_{c19-32} > CSR CL/IL EPH_{c10-32} < CSR CL/IL,
	14BH09-8 (8.76-8.92)		EPH, Chromium	All parameter concentrations < CSR CL/IL

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
14BH26	14BH26-4 (4.27-4.42)	20 m step out to the west of 14BH06	EPH	All parameter concentrations < CSR CL/IL
	14BH26-5 (5.1-5.25)		EPH	All parameter concentrations < CSR CL/IL
	14BH26-7 (6.88-7.01)		Chromium	*Chromium > CSR CL/IL
14BH27	14BH27-4 (Dup A) (3.76-4.0)	20 m step out to the north of 14BH06	EPH	All parameter concentrations < CSR CL/IL
	14BH27-5 (5.05-5.23)		EPH	All parameter concentrations < CSR CL/IL
	14BH27-6 (5.72-5.84)		EPH	All parameter concentrations < CSR CL/IL
GROUNDWATER				
14MW05	24-Sept-14 (Dup 2), 8-Apr-15	20 m step out to the east of SNC 09-21	LEPH, HEPH, PAHs	All parameter concentrations <CSR AW
14MW07	24-Sept-14, 9-Apr-15	20 m step out to the north of 00-07	LEPH, HEPH, PAHs	All parameter concentrations <CSR AW
14MW08	24-Sept-14, 9-Apr-15	20 m step out to the east of 00-07	LEPH, HEPH, PAHs	All parameter concentrations <CSR AW
14MW26	20-Nov-14, 9-Apr-15	20 m step out to the west of 14BH06	LEPH, HEPH, PAHs	All parameter concentrations <CSR AW
14MW27	20-Nov-14 (Dup 4), 9-Apr-15	20 m step out to the north of 14BH06	LEPH, HEPH, PAHs	All parameter concentrations <CSR AW
00-07	20-Nov-14, 8-Apr-15	Middle of AEC	LEPH, HEPH, PAHs, BTEXS. VPH	All parameter concentrations <CSR AW

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
VAPOUR				
14VP01	19-Nov-14, 8-Apr-15 (15VP DUP1)	Adjacent to BH09-21	BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene	All parameters < CSR Schedule 11 vapour standards after attenuation factors are applied
14VP02	19-Nov-14, 8-Apr-15	Adjacent to 00-07 and near property building		All parameters < CSR Schedule 11 vapour standards after attenuation factors are applied

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
<CSR AW -Less than the CSR groundwater standards for the protection of marine aquatic life.
>CSR AW -Greater than the CSR groundwater standards for the protection of marine aquatic life.
<CSR Schedule 11 – Less than the CSR Schedule 11 vapour standards for CL/IL use after attenuation factors applied
>CSR Schedule 11 – Greater than the CSR Schedule 11 vapour standards for CL/IL use after attenuation factors applied
* Chromium exceedance included in AEC1 as AEC1B

CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPHs - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPHs - Volatile Petroleum Hydrocarbons;
IL – Industrial Land use;
CL – Commercial Land Use;
HEPHs - Heavy Extractable Petroleum Hydrocarbons;
BTEXS - Benzene, Toluene, Ethylbenzene, Xylenes, Styrene;
MTBE - Methyl Tert Butyl Ether

In summary, initial step outs (14BH05, 14BH07, and 14 BH08) to the east and north contained concentrations of identified COCs in soils less than the CSR CL/IL standards. The DSI borehole (14BH06) drilled to the west of existing borehole 00-07 and to the north of SNC 09-21 contained a LEPH concentration in soil greater than CL/IL standards at a depth of 4.88 m to 5.03 m bgs. 14BH09 was then completed to assess the vertical extent of the hydrocarbon contamination. Soil analytical results from 14BH09 indicated hydrocarbon contamination extended to a depth of approximately 8.8 m bgs. During the next phase of drilling, boreholes 14BH26 and 14BH27 were completed at 20 m step outs from 14BH06 with soils in both found to contain hydrocarbon concentrations less than the CSR CL/IL standards. Chromium contamination was identified in soils from 14BH09 at a depth 6.9 m to 7.0 m bgs and at 14BH26 at a depth of 6.9 m to 7.0 m bgs. All the chromium exceedances found in soils in AEC2 were considered part of AEC1 (AEC1B), as discussed previously in Section 7.1.3.

When initially sampled by SNC in 2005 and 2009, the reported groundwater LEPH and PAHs concentrations in MW00-07 exceeded the CSR marine AW standards. Tetra Tech EBA this re-sampled monitoring well MW00-07 on November 21, 2014, and the reported concentrations of LEPH and PAHS were found to be below the applicable CSR marine AW standards. In addition, all other monitoring wells installed at AEC 2 and sampled during this DSI also contained LEPH, HEPH and PAHs in groundwater less than the CSR marine AW standards. Therefore, no groundwater contamination was identified within AEC 2 during either the Fall 2014 or Spring 2015 sampling events.

Based on vapour modelling results from the soil and groundwater analytical results obtained from the past SNC Investigation and from the first phase of drilling during this DSI, a potential for soil vapour contamination for indoor air was identified near the SVI building. Therefore, vapour probes were installed in the area of the highest identified hydrocarbon concentrations near SNC09-21 and 14BH09 (14VP01) and adjacent to the current SVI building in this area (14VP02) to assess soil vapour and therefore calculate indoor air concentrations. The vapour samples collected from 14VP01 and 14VP02 indicated that soil vapour, before default attenuation factors were applied, exceeded the CSR CL/IL standards at both 14VP01 and 14VP02. However, calculated indoor air and outdoor air concentrations, using the default attenuation factors from MOE Technical Guidance 4, were found to meet the applicable CSR CL/IL soil vapour standards. Therefore, no soil vapour contamination was identified at this AEC based on the current layout of the Property building during both the Fall 2014 and Spring 2015 sampling events.

7.2.2 AEC 2 Extent of Contamination

The locations of all the exceedance in soils within AEC2 is shown on Figure 6b and the estimated horizontal extent of the contamination is displayed on Figure 16. The extent of LEPH and HEPH contamination in soil within AEC2 is fully delineated both horizontally and vertically. Vertical delineation at AEC 2 is shown on the cross sections included on Figures 12 and 13. The hydrocarbon contamination in soil within AEC2 appears to extend from depths ranging from 4.8 m to 8.8 m bgs.

Over all the extent of the hydrocarbon contamination in soils within AEC 2 on the Property is summarized in the following table.

AEC 2 Hydrocarbon Contamination Summary

AEC Number & Location (See Figure 16)	Contaminants of Concern	*Estimated* Horizontal Extent (m^2)	Estimated Vertical Extent (m)	*Estimated* In Situ Volume (m^3)
AEC2 Former Locomotive Fuelling Facilities and Barrel Storage and Swale Beneath Crace Street Viaduct/ SVI lease area	LEPH/HEPH in soil	1800	4.8 to 8.8 m bgs	5400

7.3 AEC 3 and AEC 4: Offsite Impacts from Former Sawmills

Based on the previous investigations conducted by SNC, the following soil and groundwater contamination was identified at AEC 3 and AEC 4 from the former sawmills located near the proposed road right-of-way on the Property.

AEC 3 and AEC 4: Previous Environmental Investigation Results

Test Locations	Soil Exceedance(s)	Groundwater Exceedance(s)
AEC 3 - 09-22	Pentachlorophenol > CSR of 0.15 ug/g at a depth of 0.3 to 0.5 mbgs (0.47 ug/g).	None
AEC 3 - 09-10	Pentachlorophenol > CSR CL/IL of 0.15 ug/g at a depth of 0.3 to 0.5 and 1.2 to 1.4 mbgs (0.2 and 1.2 ug/g).	2,4,5-Trichlorophenol, 2,3,4,6-Tetrachlorophenol and pentachlorophenol > CSR AW
AEC 4 - 09-23	Arsenic > CSR CL/IL of 25 ug/g and 150 ug/g at a depth 0.8 to 0.9 mbgs (27 ug/g and 206 ug/g). Pentachlorophenol > CSR CL/IL of 0.15 ug/g at a depth of 0.3 to 0.5 mbgs (0.77 ug/g).	None

7.3.1 AEC 3 and AEC 4 DSI Investigation Locations and Analytical Results

The investigation locations conducted to assess AEC 3 and AEC 4 at 20 m step outs from identified historical chlorinated phenols and metals exceedances and soil, groundwater and vapour analytical results for the assessment of chlorinated phenols and metals contamination at the Property are summarized in the following table.

AEC 3 and 4: Summary of DSI Analytical Results

Testhole/ AEC	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
SOIL				
14BH10/ AEC 3	14BH10-1 (0.71-0.84)	20 m step out to the south of SNC09-10	Phenols	Pentachlorophenol > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH10-2 (1.12-1.35)		Metals, BTEX/VPH, Phenols, leachable metals	VPH, Pentachlorophenol, 2,3,4,6-tetrachlorophenol and 2,4,5-trichlorophenol > CSR CL/IL, remaining parameters < CSR CL/IL

Testhole/ AEC	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
14BH10/ AEC 3	14BH10-3 (2.18-2.44)		BTEX/VPH, Phenols	VPH, Pentachlorophenol, 2,3,4,6-tetrachlorophenol > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH10-4 (3.78-3.9)		Phenols	Pentachlorophenol > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH10-5 (4.98-5.13)		Phenols	Pentachlorophenol, 2,3,4,6-tetrachlorophenol, 3,4-dichlorophenol > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH10-6 (6-6.1 m)		Phenols	All parameter concentrations < CSR CL/IL
14BH11/ AEC3	14BH11-2 (0.77-0.95)	20 m step out to the north of SNC09-10	Phenols	All parameter concentrations < CSR CL/IL
	14BH11-4 (3.56-3.71)		Metals, leachable pentachlorophenol	Pentachlorophenol > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH11-6 (5.3-5.49)		Phenols	All parameter concentrations < CSR CL/IL
14BH12/ AEC3	14BH12-1 (0.56-0.71)	West of SNC09-10 at Property line	Metals	All parameter concentrations < CSR CL/IL
	14BH12-2 (DUP 8) (1.17-1.30)		Phenols	All parameter concentrations < CSR CL/IL
	14BH12-4 (3.91-4.04)		Phenols	All parameter concentrations < CSR CL/IL

Testhole/ AEC	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
14BH13/ AEC3	14BH13-1 (0.5-0.6)	20 m step out to the north of SNC09-22	Phenols	All parameter concentrations < CSR CL/IL
	14BH13-2 (1.0-1.2)		Metals, PAHs	All parameter concentrations < CSR CL/IL
	14BH13-4 (3.56-3.61)		Phenols	All parameter concentrations < CSR CL/IL
14BH34/ AEC3	14BH34-01 (0.4-0.55)	5 m step out to the north of 14BH11	Limited VOCs, Phenols	All parameter concentrations < CSR CL/IL
	14BH34-02 (1.15-1.28)		BTEX/VPH, Naphthalene	All parameter concentrations < CSR CL/IL
	14BH34-04 (3.4 to 3.5)		Phenols	All parameter concentrations < CSR CL/IL
14BH35/ AEC3	14BH35-02 (1.32-1.45)	20 m step out to the south of 14BH10	Limited VOCs, Phenols	All parameter concentrations < CSR CL/IL
	14BH35-03 (2.18-2.36)		BTEX/VPH, Naphthalene, Phenols	All parameter concentrations < CSR CL/IL
	14BH35-06 (4.72-4.87)		Phenols	All parameter concentrations < CSR CL/IL
14BH14/ AEC4	14BH14-1 (0.3-0.43)	20 m step out to the north of SNC09-23	Metals, Phenols	Pentachlorophenol > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH14-2 (0.83-0.96)		Arsenic, Phenols	All parameter concentrations < CSR CL/IL
	14BH14-3 (2.13-2.25)		Phenols	All parameter concentrations < CSR CL/IL
14BH15/ AEC4	14BH15-1 (0.62-0.76)	20 m step out to the south of SNC09-23	Phenols	All parameter concentrations < CSR CL/IL
	14BH15-2 (2.5-2.64)		Metals, PAHs, Phenols	All parameter concentrations < CSR CL/IL
	14BH15-4 (4.27-4.42)		Phenols	All parameter concentrations < CSR CL/IL

Testhole/ AEC	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
14BH16/ AEC4	14BH16-1 (DUP 10) (0.74-0.9)	West of SNC09-16 at Property line	Metals, PAHs, Phenols	All parameter concentrations < CSR CL/IL
	14BH16-2 (1.98-2.13)		Phenols	All parameter concentrations < CSR CL/IL
	14BH16-4 (4.04-4.14)		Phenols	All parameter concentrations < CSR CL/IL
14BH36/ AEC4	14BH36-1 (0.38-0.5)	20 m step out to the north of 14BH14	Phenols	All parameter concentrations < CSR CL/IL
14VP05/ AEC4	14VP05-1 (0.35-0.45)		Arsenic, Phenols, leachable arsenic	All parameter concentrations < CSR CL/IL
	14VP05-2 (0.85-0.95)		Arsenic, Phenols	All parameter concentrations < CSR CL/IL
GROUNDWATER				
14MW10/ AEC3	25-Sept-14 (Dup 3)	20 m step out to the south of SNC09-10	Phenols	All parameter concentrations <CSR AW
	20-Nov-14		VPH, VOCs	All parameter concentrations <CSR AW
	6-Apr-15 (Dup 6)		Phenols, VPH, VOCs	Chlorinated Phenols > CSR AW
14MW11/ AEC3	24-Sept-14, 8-Apr-15	20 m step out to the north of SNC09-10	Metals, Phenols	All parameter concentrations <CSR AW
14MW12/ AEC3	24-Sept-14, 8-Apr-15	West of SNC09-10 at Property line	Metals, Phenols	All parameter concentrations <CSR AW
14MW13/ AEC3	24-Sept-14, 8-Apr-15	20 m step out to the north of SNC09-22	Metals, Phenols	All parameter concentrations <CSR AW
14MW35/ AEC3	20-Nov-14, 1-Apr-15	20 m step out to the south of 14BH10	VPH, VOCs, Phenols	All parameter concentrations <CSR AW
14MW14/ AEC4	25-Sept-14, 8-Apr-15	20 m step out to the north of SNC09-23	Metals, Phenols	All parameter concentrations <CSR AW
14MW15/ AEC4	25-Sept-14, 6-Apr-15	20 m step out to the south of SNC09-23	Phenols	All parameter concentrations <CSR AW
14MW16/ AEC4	25-Sept-14, 1-Apr-15	West of SNC09-16 at Property line	Metals, Phenols	All parameter concentrations <CSR AW

Testhole/ AEC	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
VAPOUR				
14VP05/ AEC4	19-Nov-14	Adjacent to SNC09-23	BTEX, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene	All parameters < CSR Schedule 11 vapour standards after attenuation factors are applied
14VP06/ AEC3	19-Nov-14, 8-Apr-15	Adjacent to 14BH10		All parameters < CSR Schedule 11 vapour standards after attenuation factors are applied

- <CSR CL- Less than the CSR soil standards for CL/IL uses.
- >CSR CL- Greater than the CSR soil standards for CL/IL uses.

<CSR AW -Less than the CSR groundwater standards for the protection of marine aquatic life.

>CSR AW -Greater than the CSR groundwater standards for the protection of marine aquatic life.

<CSR Schedule 11 – Less than the CSR Schedule 11 vapour standards for IL use before attenuation factors applied

>CSR Schedule 11 – Greater than the CSR Schedule 11 vapour standards for IL use before and after attenuation factors applied

CSR - Contaminated Sites Regulation;
CSR AW - standards for the protection of aquatic life for fresh water
VPHs - Volatile Petroleum Hydrocarbons;
VOCs - Volatile Organic Compounds

IL – Industrial Land use;
CL – Commercial Land Use;
BTEX - Benzene, Toluene, Ethylbenzene, Xylenes

In summary, initial step out boreholes (14BH10, 14BH11, and 14BH14) contained concentrations of chlorinated phenols in soils greater than the CSR CL/IL standards. During the drilling of 14BH10 what appeared to be a pit was encountered which may have formerly been used for dumping of used wood treatment chemicals which contained the highest concentrations of chlorinated phenols in soils to depths over 5.0 m bgs, and also VPH in soils exceeding the CSR CL/IL standards. The presence of VPH in this area indicates that gasoline may have been mixed with the wood preservatives and disposed of in this pit or depression. The boreholes to the north of 09-22 (14BH13), to the south of 09-23 (14BH15), to the west of SNC09-10 (14BH12) and to the west of SNC09-23 (14BH16) contained COCs at soil concentrations less than CL/IL standards. No metal contamination such as the arsenic found in soils from SNC 09-23 borehole was identified during this DSI within either AEC 3 or AEC 4. During the second phase of drilling, boreholes 14BH34 to 14BH36 were completed at 2 m to 20 m step outs from 14BH10, 14BH11 and 14BH14. 14VP05 was drilled to assess arsenic exceedances formerly reported at SNC09-23. Soil samples from boreholes 14BH34 to 14BH36 and 14VP06 contained chlorinated phenols, metals and all hydrocarbon concentrations less than the CSR CL/IL standards. We note the sample collected from

14VP05 for the purpose of reassessing the historical arsenic exceedance at SNC09-23 at a depth of 0.8 m to 0.9 m bgs of 27 ug/g, which only slightly exceeded the CSR CL/IL standard of 25 ug/g, contained a similar arsenic concentration at 22.9 ug/g but less than the CSR CL/IL standard of 25 ug/g.

The soil sample containing the highest concentration of chlorinated phenols during this DSI (14BH10-2 at a depth of 1.1 m to 1.3 m bgs) was submitted for TCLP testing to determine if the chlorinated phenols were leachable and would be classified as a hazardous waste. The results of the TCLP testing are reported in Table 5. The TCLP test results indicated the leachate concentrations were below the HWR standards. In addition, the sample collected from 14VP05 for the purpose of reassessing the historical arsenic exceedance at SNC09-23 was submitted for SPLP testing to assess if the arsenic exceedance found in 2009 by SNC would leach at concentration greater than the applicable CSR AW standards. The SPLP test results indicated the leachate concentration in this soil sample was below the CSR AW standard. The results of the SPLP testing are reported in Table 5.

When initially sampled by SNC in 2009, the reported groundwater chlorinated phenols concentrations in MW09-10 exceeded the CSR marine AW standards. Tetra Tech EBA could not re-sample monitoring well MW09-10 since the monitoring well had been destroyed. However, during this DSI, eight monitoring wells were installed within AEC 3 and AEC 4. Groundwater samples collected from all the newly installed monitoring wells in September and November 2014 within AEC 3 and AEC 4 contained chlorinated phenols, VOCs, VPH and metals less than the CSR AW standards. To confirm seasonal variability in groundwater, all eight monitoring wells were resampled in April 2015 and chlorinated phenols exceeding the CSR AW standards were identified at one location, 14MW10. All other monitoring wells sampled in April 2015 contained concentrations of parameters analysed less than the CSR AW standards. Therefore, groundwater contamination was identified at AEC 3 during this DSI during the Spring 2015 sampling event.

Based on vapour modelling results from the soil and groundwater analytical data obtained from the past SNC Investigation and from the first phase of drilling during this DSI, a potential for soil vapour contamination was identified within AEC3. Vapour probes were installed in the area of the highest identified VPH concentration found during this DSI near 14BH10 (14VP06) at AEC 3 and adjacent to SNC09-23 (14VP05) to assess soil vapour quality at AEC 4. The vapour sample collected from 14VP05 indicated soil vapour concentrations before default attenuation factors less than the CSR CL/IL standards at 14VP05. The vapour samples collected from 14VP06 indicated soil vapour before default attenuation factors were applied exceed the CSR CL/IL standards at 14VP06. However, calculated indoor air and outdoor air concentrations, using default attenuation factors from MOE Technical Guidance 4, in the vapour samples from 14VP06 were below the applicable CSR CL/IL soil vapour standards. Therefore, no soil vapour contamination was identified within AEC3 or AEC4 based on the current land use within AEC3, during both the Fall 2014 and Spring 2015 sampling events.

7.3.2 AEC 3 and AEC 4 Extent of Contamination

The contamination identified at former SNC AEC 3 and AEC 4 were considered to be from common sources (i.e., offsite former sawmills and onsite lease areas) and had similar impacts from chlorinated phenols, therefore these two AECs were combined as Tetra Tech AEC 3. The location of all the soil exceedance within AEC 3 are shown on Figures 6a and 6c. The estimated horizontal extent of the contamination is shown on Figures 15 and 17 and has been grouped into three areas: AECs (AEC3A, AEC3B and AEC3C) to represent areas with exceedances and those within AEC 3 that do not exceed the BC CSR. Vertical delineation at AEC 3 is shown on Figure 14.

Over all the extent of the chlorinated phenols, VPH and arsenic contamination within AEC 3 (AEC3A, AEC3B and AEC3C) is summarized in the following table.

AEC 3 Chlorinated Phenols, VPH and Arsenic Contamination Summary

AEC Number & Location (See Figures 15 and 17)	***Contaminants of Concern***	***Estimated* Horizontal Extent (m^2)**	***Estimated* Vertical Extent (m)**	***Estimated* In Situ Volume (m^3)**
AEC3A North on the Road Right of Way	Chlorinated Phenols	1800	0 to 1.5	2700
AEC3B Middle of the Road Right of Way	Chlorinated Phenols and VPH	1000	0 – 5.9	5900
AEC3C South on the Road Right of Way	Chlorinated Phenols and Arsenic	500	0 - 1	500
Totals – AEC 3				9100

7.4 Marine AEC 1

7.4.1 SNC Marine AEC 1: Active Harbour

Based on the previous investigations conducted by SNC, the following sediment contamination was identified at Marine AEC 1 due primarily to creosote piles and historical marine shipping activities.

AEC 1: Soil Contamination

Test Location	Soil Exceedance(s)
09-43 to 09-48	PAHs > CSR Typical Sediment Standards

7.4.2 Marine AEC 1 DSI Investigation Locations and Analytical Results

22 surficial sediment samples and 6 subsurface sediment samples were collected to assess Marine AEC 1 during the DSI. The investigation locations and sediment analytical results for the assessment of the marine portion of the Property are summarized in the following table.

Sample Location/Depth*	Date	Parameter(s) Investigated	Analytical Results
SEDIMENT			
14SED01 and DUP 1	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED02	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED03	18-Sept-14	PAHs	Limited PAHs > **CSR Typical Schedule 9**
14SED04	18-Sept-14	PAHs and metals	Metals <CSR Typical Schedule 9, Limited PAHs > **CSR Typical Schedule 9, Phenanthrene > greater than Protocol 11 UCCs**
14SED05	18-Sept-14	PAHs	Limited PAHs > **CSR Typical Schedule 9**
14SED06	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED07	18-Sept-14	PAHs	Limited PAHs > **CSR Typical Schedule 9**
14SED08	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED09	18-Sept-14	PAHs	Limited PAHs > **CSR Typical Schedule 9**
14SED10	18-Sept-14	PAHs	Limited PAHs > **CSR Typical Schedule 9**
14SED11	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED12	18-Sept-14	PAHs	Limited PAHs > **CSR Typical Schedule 9**
14SED13	18-Sept-14	PAHs	Limited PAHs > **CSR Typical Schedule 9**
14SED14 and Dup 2	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED15	18-Sept-14	PAHs	Limited PAHs > **CSR Typical Schedule 9**
14SED16	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED17	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED18	18-Sept-14	PAHs and metals	Limited PAHs > **CSR Typical Schedule 9,** Metals <CSR Typical Schedule 9.
14SED19 @ 1.1	06-Nov-14	PAHs	PAHs <CSR Typical Schedule 9.
14SED20 @ 1.1	06-Nov-14	PAHs	PAHs <CSR Typical Schedule 9.
14SED21 @ 1.5	06-Nov-14	PAHs	PAHs <CSR Typical Schedule 9.
14SED22 @ 1.5	06-Nov-14	PAHs	PAHs <CSR Typical Schedule 9.
14SED23 @ 1.8 and DUP1	06-Nov-14	PAHs	PAHs <CSR Typical Schedule 9.
14SED23-A	06-Nov-14	PAHs	Limited PAHs > **CSR Typical Schedule 9 and, 2-methylnaphthalene > greater than Protocol 11 UCCs**

Sample Location/Depth*	Date	Parameter(s) Investigated	Analytical Results
14SED23-B	06-Nov-14	PAHs	Limited PAHs > **CSR Typical Schedule 9 and, 2-methylnaphthalene > greater than Protocol 11 UCCs**
14SED23-C	06-Nov-14	PAHs	Limited PAHs > **CSR Typical Schedule 9 and, 2-methylnaphthalene > greater than Protocol 11 UCCs**
14SED23-D	06-Nov-14	PAHs	Limited PAHs > **CSR Typical Schedule 9 and, 2-methylnaphthalene > greater than Protocol 11 UCCs**
14SED24 @ 1.3	06-Nov-14	PAHs	PAHs <CSR Typical Schedule 9.

<CSR Typical Schedule 9- Less than the CSR typical sediment standards
>CSR Typical Schedule 9- Greater than the CSR typical sediment standards
Bolded – Greater than Protocol 11 Upper Cap Concentrations (UCCs)
* No depth listed = surficial sediment sample

In summary, PAHs surficial sediment contamination was identified throughout the entire marine water lot portion of the Property. Subsurface sediment samples indicate that PAH sediment contamination extends to depths ranging from 1.1 m to 1.8 m bgs. Concentrations of select PAHs concentrations at 14SED04 and 14SED23A through 23D exceeded the Upper Cap Concentrations listed in CSR Protocol 11 for the purposes of assessing whether a Property is high risk. Based on the Upper Cap Concentrations extending over an area greater than 50 m^2, the sediment PAH contamination within the marine portion of the Property would be considered “high risk” by the BC MOE.

7.4.3 Marine AEC 1 Extent of Contamination

The horizontal extent of the sediment contamination within the Property boundaries is shown on Figure 8. The PAHs sediment contamination has been delineated vertically with contamination extending from 0 m to 1.1 m to 1.8 m bgs with an average thickness of 1.5 m.

Overall the extent of the PAHs sediment contamination is summarized in the following table.

Marine AEC 1 PAHs Contamination Summary

Area Number & Location (See Figure 8)	*Estimated* Horizontal Extent (m^2)	*Estimated* Vertical Extent (m)	*Estimated* In Situ Volume (m^3)
Marine AEC 1	28,069	Average thickness 1 m bgs	28,069

7.5 APEC 8: Former Locomotive Engine House

This was an additional APEC identified by Tetra Tech EBA, October 2014 during the historical Stage 1 PSI. The Stage 1 PSI identified the following PCOCs for APEC 8:

Soil and Groundwater: LEPH/ HEPH, PAH, and metals.

Soil Vapour: None.

The laboratory analytical results for soil and groundwater testing within APEC 8 are summarized in the following table:

APEC 8: Summary of DSI Analytical Results

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
SOIL				
14BH21	14BH21-2 (1.25-1.5)	NE portion of former area of Locomotive Engine House	Metals, EPH	All parameter concentrations < CSR CL/IL
	14BH21-3 (2.13-2.29)		Metals, PAHs	All parameter concentrations < CSR CL/IL
	14BH21-4 (3.75-3.91)		EPH	All parameter concentrations < CSR CL/IL
14BH22	14BH22-2 (1.25-1.4)	SW portion of former area of Locomotive Engine House	EPH	All parameter concentrations < CSR CL/IL
	14BH22-3 (2.08-2.24)		Metals, LEPH. HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH22-4 (4.88-5.28)		Metals	All parameter concentrations < CSR CL/IL
Testhole	**Date**	**Test Location within AEC**	**Parameter(s) Investigated**	**Analytical Results**
Groundwater				
14MW21	25-Sept-14, 9-Apr-2015	Former footprint of Locomotive Engine House	Metals, LEPH/HEPH, PAHs, VPH, VOCs	All parameter concentrations <CSR AW

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
<CSR AW -Less than the CSR groundwater standards for the protection of marine aquatic life.
>CSR AW -Greater than the CSR groundwater standards for the protection of marine aquatic life.

CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPH - Volatile Petroleum Hydrocarbons;
IL – Industrial Land use;
CL – Commercial Land Use;
HEPH - Heavy Extractable Petroleum Hydrocarbons;
VOCs - Volatile Organic Compounds

In summary, all soil samples collected and analyzed from boreholes 14BH21 and 14BH22 advanced during the DSI contained LEPH, HEPH, PAHs and metals concentrations less than the CSR CL/IL standards. The groundwater samples collected from 14MW21 in September 2014 and April 2015 contained concentrations of analysed parameters less than the CSR AW standards. No soil vapour PCOCs were identified for this APEC and no soil and groundwater contamination was identified at this APEC during this DSI.

7.6 APEC 9: Heating Oil UST Adjacent to Seaspan Office

This was an additional APEC identified by Tetra Tech EBA during the October, 2014 Stage 1 PSI. The Stage 1 PSI identified the following PCOCs for APEC 9:

Soil and Groundwater: VPH, LEPH/HEPH, PAHs, and metals.

Soil Vapour: BTEXS, VPH, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.

The laboratory analytical results for soil, soil vapour and groundwater testing within APEC 9 are summarized in the following table:

APEC 9: Summary of DSI Analytical Results

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
SOIL				
14BH23	14BH23-2 (2.44-2.74)	Immediately NE of the heating oil UST	Metals, EPH	All parameter concentrations < CSR CL/IL
	14BH24-3 (DUP 13) (3.78-3.96)		Metals, BTEXS, VPH, LEPH, HEPH, PAHs, MTBE	All parameter concentrations < CSR CL/IL

Testhole	Date	Test Location within AEC	Parameter(s) Investigated	Analytical Results
Groundwater				
14MW23	25-Sept-14, 7-Apr-15	Immediately NE of the heating oil UST	Metals, LEPH/HEPH, PAHs, VPH, VOCs	All parameter concentrations <CSR AW
Vapour				
14VP03	19-Nov-14, 7-Apr-15	Immediately NE of the heating oil UST	BTEXS, VPHs, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.	All parameters < CSR Schedule 11 vapour standards after attenuation factors are applied

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
<CSR AW -Less than the CSR groundwater standards for the protection of marine aquatic life.
>CSR AW -Greater than the CSR groundwater standards for the protection of marine aquatic life.
<CSR Schedule 11 – Less than the CSR Schedule 11 vapour standards for CL/IL use after attenuation factors applied
>CSR Schedule 11 – Greater than the CSR Schedule 11 vapour standards for CL/IL use after attenuation factors applied

CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPH - Volatile Petroleum Hydrocarbons;
MTBE - Methyl Tert Butyl Ether
IL – Industrial Land use;
CL – Commercial Land Use;
EPH – Extractable Petroleum Hydrocarbons;
HEPH - Heavy Extractable Petroleum Hydrocarbons;
VOCs - Volatile Organic Compounds;
BTEXS - Benzene, Toluene, Ethylbenzene, Xylene, and Styrer

In summary, all soil samples collected and analyzed from borehole 14BH23 advanced during the DSI contained LEPH, HEPH, PAHs, VPH, BTEXS, MTBE and metals concentrations less than the CSR CL/IL standards. The groundwater samples collected from 14MW23 in September 2014 and April 2015 contained LEPH, HEPH, PAHs, metals, VPH and select VOCs concentrations less than the CSR AW standards.

Based on vapour modelling results from the soil and groundwater analytical results obtained from the first phase of drilling during this DSI, a potential for soil vapour contamination above the CSR standards for indoor air was identified. Therefore, a vapour probe was installed in the area of the highest identified volatile concentrations near 14BH23 (14VP03) during the second phase of DSI drilling. The vapour samples collected from 14VP03 indicated soil vapour before default attenuation factors were applied exceeded the CSR CL/IL standards at 14VP03.

However, calculated indoor air and outdoor air concentrations, using default attenuation factors from BC MOE Technical Guidance 4, in this sample met the applicable CSR CL/IL soil vapour standards during the Fall 2014 and Spring 2015 sampling events. Therefore, no soil vapour contamination was identified at this AEC based on the current development of the Property during the Fall 2014 and Spring 2015 sampling events.

7.7 APEC 10: Former Machine Shop at Gadd Marine Site

This was an additional APEC identified by Tetra Tech EBA during the historical October, 2014 Stage 1 PSI. The Stage 1 PSI identified the following PCOCs for APEC 10:

Soil and Groundwater: LEPH/HEPH, PAHs, and metals.

Soil Vapour: None.

The laboratory analytical results for APEC 10 are summarized in the following table:

APEC 10: Summary of DSI Analytical Results

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
SOIL				
14BH24	14BH24-1 (0.63-0.75)	North side of Former Footprint of Machine Shop	Metals, EPH	All parameter concentrations < CSR CL/IL
	14BH24-2 (1.2-1.25)		Cadmium and zinc, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
	14BH24-3 (2.13-2.29)		Cadmium and zinc	All parameter concentrations < CSR CL/IL
14BH25	14BH25-1 (1.05-1.25)	North side of Former Footprint of Machine Shop	Cadmium and zinc	Cadmium and zinc > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH25-2 (DUP 11) (1.85-2.1)		Metals, PAHs, leachable cadmium and zinc	Cadmium and zinc > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH25-3 (2.72-2.84)		Cadmium and zinc, EPH, leachable chromium	All parameter concentrations < CSR CL/IL
	14BH25-4 (3.73-3.85)		Metals	*Chromium > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH25-5 75 to 5.9 m		Chromium	*Chromium > CSR CL/IL
14BH32	14BH32-1 (0.5-0.67)	10 m step out to the west of 14BH25	Cadmium, zinc	All parameter concentrations < CSR CL/IL
	14BH32-2 (1.25-1.4)		Cadmium, and zinc	All parameter concentrations < CSR CL/IL
	14BH32-3 (2.5-2.67)		Cadmium, zinc	All parameter concentrations

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
				< CSR CL/IL
	14BH32-5 (4.24-4.42)		Cadmium	All parameter concentrations < CSR CL/IL
14BH33	14BH33-2 (DUPD) (1.1-1.24)	20 m step out to the south of 14BH25	Cadmium, zinc	All parameter concentrations < CSR CL/IL
	14BH33-3 (2.4-2.55)		Cadmium, zinc	All parameter concentrations < CSR CL/IL
	14BH33-5 (4.27-4.42)		Chromium	*Chromium > CSR CL/IL
	14BH33-6 (5.74-6.02)		Chromium	All parameter concentrations < CSR CL/IL
GROUNDWATER				
14MW25	24-Sept-14, 1-Apr-15 (Dup 6)	North side of Former Footprint of Machine Shop	Metals, LEPH, HEPH, PAHs	All parameter concentrations **<CSR AW**

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
<CSR AW – Less than the CSR groundwater standards for the protection of marine aquatic life.
>CSR AW – Greater than the CSR groundwater standards for the protection of marine aquatic life.
* Chromium exceedances included within AEC1A.

CSR - Contaminated Sites Regulation;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
IL – Industrial Land use;
CL – Commercial Land Use;
EPH – Extractable Petroleum Hydrocarbons;
HEPH - Heavy Extractable Petroleum Hydrocarbons;

In summary, one borehole (14BH25) drilled euring the initial phase of the DSI within the footprint of the former machine shop contained cadmium and zinc soil contamination in soils at depths from less than 1 m to 2.7 m bgs. None of the soil samples collected during this DSI contained concentrations of LEPH, HEPH and PAHs greater than the CSR CL/IL standards. During the second phase of DSI drilling, boreholes 14BH32 and 14BH33 were completed at 20 m step outs from 14BH25 and soils in both contained cadmium and zinc concentrations less than the CSR CL/Il standards. Chromium contamination in soils was identified at this AEC at 14BH25 at depths ranging 3.7 m bgs to greater than 5.9 m bgs. Drilling at depth at 14BH25 was difficult due to the sloppy wet soils and therefore an accurate interpretation of soil type and depth of the samples with chromium exceedances, could not be completed. These chromium exceedances found in APEC 10 are included as part of AEC 1 and discussed previously in Section 7.1.3.

The soil sample collected from 14BH25 at a depth of 1.85 m bgs to 2.1 m bgs was submitted for SPLP testing to assess if the cadmium and zinc exceedances would leach at concentrations greater than the applicable CSR AW standards. The SPLP test results indicated the leachate concentration in this soil sample was below the CSR AW standard. The results of the SPLP testing are reported in Table 5.

The groundwater soil samples collected from 14MW25 in September 2014 and April 2015 contained LEPH, HEPH, PAHs, and metals at concentrations less than the CSR AW standards. No soil vapour PCOCs were identified for this APEC. Therefore, no groundwater contamination was identified at this APEC during this DSI during the Fall 2014 and Spring 2015 monitoring events and soil vapour not considered a potential issued.

7.7.1 APEC 10 Extent of Contamination

The zinc and cadmium contamination identified within APEC 10 was carried over and identified as TT EBA AEC 4 – Former Machine Shop. The estimated horizontal extent of the contamination is shown on Figure 15. The extent of zinc and cadmium contamination on the Property is fully delineated both horizontally and vertically. Vertical delineation at AEC 4 is shown on the cross sections of APEC 10 on Figure 11. The zinc and cadmium contamination appears to extend from approximately 0.5 m bgs to 2.7 m bgs.

Over all the extent of the metal contamination is summarized in the following table.

AEC 4 (formerly APEC 10) Zinc and Cadmium Contamination Summary

AEC Number & Location (see Figure 15)	*Estimated* Horizontal Extent (m^2)	*Estimated* Vertical Extent (m)	*Estimated* In Situ Volume (m^3)
AEC 4 Former Machine Shop at Gadd Marine Site	600	0.5 m to 2.7 m bgs	1320

7.8 APEC 11: Former Heating Oil UST at Island Pallets

APEC 11 was previously investigated for soil and groundwater quality only during SNC's previous investigation (SNC, 2009). The SNC sampling and testing results indicated PCOCs in soil and groundwater met the CSR CL/IL soil standards and the CSR AW standards. APEC 11 was, however, not investigated for soil vapour quality in 2009. The Stage 1 PSI, therefore, identified the following soil vapour PCOCs for APEC 11:

Soil Vapour: BTEXS, VPHs, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene.

The laboratory analytical results for soils, calculated soil vapour values and soil vapour for APEC 11 are summarized in the following table:

APEC 11: Summary of DSI Analytical Results

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
SOIL				
14TP01	14TP01-1 (1.0)	Approximate area of former heating oil UST	BTEX, VPH, naphthalene, 1,2,4-trichlorobenzene, 1,3,5-trimethylbenzene, n-decane	All parameter concentrations < CSR CL/IL
	14TP01-2 (1.2)			All parameter concentrations < CSR CL/IL
SOIL VAPOUR				
14TP01	14TP01-1 (1.0)	Approximate area of former heating oil UST	BTEX, VPH, naphthalene, 1,2,4-trichlorobenzene, 1,3,5-trimethylbenzene, n-decane	Modelled indoor air concentrations of VPH and benzene > CSR Schedule 11 after attenuation factors applied
	14TP01-2 (1.2)			Non detectable concentrations of all parameters
15VP07	7-Apr-15 and 11-Sept-15	Approximate area of former heating oil UST	BTEX, VPH, naphthalene, 1,2,4-trichlorobenzene, 1,3,5-trimethylbenzene, n-decane	All parameter concentrations < CSR CL/IL

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
<CSR Schedule 11 – Less than the CSR Schedule 11 vapour standards for CL/IL use after attenuation factors applied
>CSR Schedule 11 – Greater than the CSR Schedule 11 vapour standards for CL/IL use after attenuation factors applied
CSR - Contaminated Sites Regulation;
VPH - Volatile Petroleum Hydrocarbons;
BTEX - Benzene, Toluene, Ethylbenzene, Xylene
IL – Industrial Land use;
CL – Commercial Land Use;

For soil vapour modelling, soil concentrations of all VOCs from soil samples collected from 14TP01 were used. The groundwater sample collected by SNC in 2009 was non-detectable for groundwater PCOCs and therefore no potential for soil vapour PCOCs were identified from groundwater. With the exception of VPHv and benzene concentrations for indoor air standards only, all other concentrations of soil vapour were below the applicable standard based on soil data from 14TP01. Attenuation of the modelled values used are shown in Appendix F. Since modelling values are a conservative way of assessing soil vapour concentrations often actual samples of soil vapour tend to show much lower concentrations, often less than the applicable standards. As such, vapour probe 15VP07 was installed to diverting sample soil vapour at APEC 11 near 14TP01.

The soil vapour samples collected from 15VP07 in April and September 2015 contained analysed parameters less than the CSR CL/IL standards before and after attenuation factors. Therefore, no soil vapour contamination was identified at this AEC based on the current development of the Property during the Spring 2015 and Summer 2015 sampling events.

7.9 APEC 12: 1951 Miscellaneous Industrial Activities

This was an additional APEC identified by Tetra Tech EBA during the historical October, 2014 Stage 1 PSI based on information from older fire insurance plans. Showing some small scale former industrial operations located on the northwest portion of the Property. The Stage 1 PSI identified the following PCOCs for APEC 12:

Soil and Groundwater: BTEXS, VPH, LEPH/HEPH, PAHs, and metals.

Soil Vapour: BTEXS, VPHs, MTBE, n-decane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloroethane, 1,3-butadiene, hexane, Isopropylbenzene, Methylcyclohexane, 1,1,1,2-tetrachloroethane and naphthalene.

The laboratory analytical results for soils, groundwater and soil vapour for APEC 12 are summarized in the following table:

APEC 12: Summary of DSI Analytical Results

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
SOIL				
14BH28	14BH28-2 (0.8-0.95)	Within Former Near Car Repair Shop	Metals, 1.2.4-Trimethylbenzen, 1,2-dibromoethane, 1,2-dichloroethane, 1,2,5-trimethylbenzene, 1,3-butadiene, decane, hexane, isopropylbenzene, methylcyclohexane, MTBE	All parameter concentrations < CSR CL/IL
	14BH28-4 (3.88-4.0)		Metals, BTEX, EPH, Glycols	*Chromium > CSR CL/IL, remaining parameters < CSR CL/IL
14BH29	14BH29-1 (0.4-0.5)	Near Former Machine Shop	Metals, PAHs	All parameter concentrations < CSR CL/IL
	14BH29-3 (2.35-2.49)		Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL
14BH30	14BH30-2 (1.98-2.13)	Near Former Welding Shop	Metals, LEPH, HEPH, PAHs	All parameter concentrations < CSR CL/IL

GROUNDWATER				
14MW29	21-Nov-14, 7-Apr-15	Middle of APEC	Metals, LEPH, HEPH, PAHs	All parameter concentrations **<CSR AW**
SNC09-03	7-Apr-15	Within Former Car Repair Shop	Metals, LEPH, HEPH, PAHs, BTEXS, VPH, glycols	All parameter concentrations **<CSR AW**
SOIL VAPOUR				
14BH28	14BH28-2 (0.8-0.95)	Within Former Car Repair Shop	1.2.4-Trimethylbenzen, 1,2-dibromoethane, 1,2-dichloroethane, 1,2,5-trimethylbenzene, 1,3-butadiene, decane, hexane, isopropylbenzene, methylcyclohexane, MTBE	Modelled indoor and outdoor air concentrations of hydrocarbon volatiles > CSR Schedule 11 after attenuation factors applied
15VP08	7-Apr-15 and 11-Sept-15	Within Former Car Repair Shop	1.2.4-Trimethylbenzen, 1,2-dibromoethane, 1,2-dichloroethane, 1,2,5-trimethylbenzene, 1,3-butadiene, decane, hexane, isopropylbenzene, methylcyclohexane, MTBE	All parameter concentrations < CSR CL/IL

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
<CSR AW -Less than the CSR groundwater standards for the protection of marine aquatic life.
>CSR AW -Greater than the CSR groundwater standards for the protection of marine aquatic life.
<CSR Schedule 11 – Less than the CSR Schedule 11 vapour standards for CL/IL use after attenuation factors applied.
>CSR Schedule 11 – Greater than the CSR Schedule 11 vapour standards for CL/IL use after attenuation factors applied.
* Chromium exceedance included with AEC 1A.
CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPH - Volatile Petroleum Hydrocarbons;
MTBE - Methyl Tert Butyl Ether
IL – Industrial Land use;
CL – Commercial Land Use;
HEPH - Heavy Extractable Petroleum Hydrocarbons;
BTEXS - Benzene, Toluene, Ethylbenzene, Xylene, and Styren;

In summary, all soil samples collected and analyzed from boreholes 14BH28, 14BH29, 14BH30 advanced during the DSI contained LEPH, HEPH, PAHs, VPH, BTEXS, MTBE, select VOCs, and majority of metals concentrations less than the CSR CL/IL standards. Chromium contamination in soils was identified in this APEC at one borehole location (14BH28) at a depth of 3.88 m to 4 m bgs, and associated with coal waste fill. This chromium exceedance was considered part of AEC 1, as discussed previously in Section 7.1.3. Therefore no soil contamination was identified related to the PCOCs identified for this APEC during this DSI.

The groundwater sample collected from 14MW29 in September 2014 contained LEPH, HEPH, PAHs, and metals, concentrations less than the CSR AW standards. SNC09-3 is located in close proximity to the former car repair shop area. The results of the groundwater sample collected from SNC09-3 in 2009 indicated BTEXS, VPH, MTBE, LEPH, HEPH and PAHs concentrations less than the laboratory detection limits. Therefore, no groundwater contamination was identified at this APEC during this DSI.

For soil vapour modelling, soil concentrations of VOCs from the sample collected from 14BH28, within the former car repair shop area, were used. The groundwater sample collected by SNC in 2009 was non-detectable for groundwater PCOCs and therefore no soil vapour PCOCs were identified from groundwater. Modelling results using soil data only indicated the potential for hydrocarbon concentrations at APEC 12 to exceed indoor and outdoor air standards. Attenuation of the modelled values used are shown in Appendix F. Since modelling values are a conservative way of assessing soil vapour concentrations often actual samples of soil vapour tend to show much lower concentrations, often less than the applicable standards. As such actual sampling of soil vapour was required to fully assess vapours for APEC 12. Therefore, vapour probe 15VP08 was installed near 14BH28. The vapour samples collected from 15VP08 indicated soil vapour before default attenuation factors were applied exceed the CSR CL/IL standards. However, calculated indoor air and outdoor air concentrations, using default attenuation factors from MOE Technical Guidance 4, in the vapour sample from 15VP08 were below the applicable CSR CL/IL soil vapour standards. Therefore, no soil vapour contamination was identified within APEC12 based on the current land use on the Property, during both the Spring 2015 and Summer 2015 sampling events.

7.10 APEC 13: Former Onsite Sawmill

This was an additional APEC identified by Tetra Tech EBA during the historical October, 2014 Stage 1 PSI. The Stage 1 PSI identified the following PCOCs for APEC 13:

Soil and Groundwater: chlorinated phenols and metals.

Soil Vapour: None.

The laboratory analytical results for APEC 13 are summarized in the following table:

APEC 13: Summary of DSI Analytical Results

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
SOIL				
14BH2	14BH2-2 (1.15-1.27 m)	Within Footprint of Former Sawmill	Metals, PAHs and Phenols	All parameter concentrations < CSR CL/IL

Testhole	Sample ID (Depth (m))	Test Location within AEC	Parameter(s) Investigated	Analytical Results
14BH17	14BH17-3 (2.34-2.49)	North side of Former Sawmill	Phenols	All parameter concentrations < CSR CL/IL
14BH19	14BH19-3 (DUP1) (1.9-2.05)	Within Footprint of Former Sawmill	Phenols	All parameter concentrations < CSR CL/IL
14BH24	14BH24-1 (0.63-0.75)	South side of Former Sawmill	Metals, EPH	All parameter concentrations < CSR CL/IL
	14BH24-3 (2.13-2.29)		Phenols	All parameter concentrations < CSR CL/IL
14BH25	14BH25-1 (1.05-1.25)	South side of Former Sawmill	Phenols	All parameter concentrations < CSR CL/IL
14BH31	14BH31-1 (DUPC) (0.5-0.7)	South side of Former Sawmill	Metals, Phenols,	*Chromium > CSR CL/IL, remaining parameters < CSR CL/IL
	14BH31-4 (3.35-3.51)		Metals	All parameter concentrations < CSR CL/IL
14BH32	14BH32-2 (1.25-1.4)	South side of Former Sawmill	Cadmium, Zinc, Phenols	All parameter concentrations < CSR CL/IL
GROUNDWATER				
14MW02	24-Sept-14 (DUP1), 1-Apr-15	Near Former Sawmill	Metals, LEPH, HEPH, PAHs, chlorinated phenols	All parameter concentrations <CSR AW
14MW19	24-Sept-14, 1-Apr-15	Near Former Sawmill	Metals, LEPH, HEPH, PAHs, chlorinated phenols	All parameter concentrations <CSR AW

<CSR CL- Less than the CSR soil standards for CL/IL uses.
>CSR CL- Greater than the CSR soil standards for CL/IL uses.
* Chromium exceedances included with AEC 1A.

CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
IL – Industrial Land use;
CL – Commercial Land Use;
EPH – Extractable Petroleum Hydrocarbons;
HEPH - Heavy Extractable Petroleum Hydrocarbons;

In summary, all soil samples collected and analyzed from boreholes 14BH17, 14BH19, 14BH24, 14BH25 and 14BH31 advanced during the DSI contained chlorinated phenols and majority of metals concentrations less than the CSR CL/IL standards. Chromium contamination was identified within a soil sample from this APEC at 14BH31 at a depth of 0.5-0.7 m bgs which contained coal waste fill. The chromium exceedance in this one soil sample is considered part of AEC 1 and is discussed previously in Section 7.1.3. The groundwater samples collected from 14MW02 and 14MW19 in September 2014 and April 2015 contained LEPH, HEPH, PAHs, metals, and chlorinated phenols concentrations less than the CSR AW standards. No soil vapour PCOCs were identified for this APEC. Therefore, no soil and groundwater contamination was identified at this APEC during this DSI during the Fall 2014 and Spring 2015 sampling events and soil vapour not considered to be a potential issue.

8.0 QUALITY ASSURANCE / QUALITY CONTROL PROGRAM

During the Stage 2 PSI and DSI, Tetra Tech EBA implemented a QA/QC program to assess the integrity of the sampling methodology and analytical testing. Tetra Tech EBA calculated and assessed Relative Percentage Difference (RPDs) for parameters when both the sample and the duplicate were greater than five times the laboratory RDL. When evaluating the RPDs for the duplicate samples, Tetra Tech EBA adopted a RPD screening thresholds between 30% and 75% as recommended by MOE Field Sampling Manual.

The results of RPD calculations for soil, groundwater, sediment and soil vapour samples collected during the DSI are provided in Table 12 (soil), Table 13 (groundwater), Table 14 (sediment) and Table 15 (soil vapour) and are summarized below.

Soil

As shown in Tables 11, 13 pairs of duplicate soil samples were compared. The calculated RDP values were within the screening threshold values with the exceptions discussed below:

- 14BH08-4 had a calculated RPD value of 59% for copper (the threshold is 45% for metals in soil);
- 14BH09-5 had a calculated RPD value of 106% for benzene, 115% for toluene, 100% for ethylbenzene, and 98% for xylene (the threshold is 60% for organics in soil);
- 14BH12-2 had a calculated RPD value of 64% for 2,4,5-trichlorophenol (the threshold is 60% for organics in soil);
- 14BH19-3 had a calculated RPD value of 87% for Benz(a)anthracene (the threshold is 75% for organics in soil); and,
- 14BH31-1 had a calculated RPD value of 98% for tin (the threshold is 60% for high variability metals in soil such as tin).

The majority of the RPD’s were within the acceptable range. Since the majority of the samples are fill samples including mixed coal waste, variability in concentrations are expected.

Groundwater

As shown in Table 12, 4 pairs of duplicate groundwater samples were compared. The calculated RDP values were all within the screening threshold values.

Sediment

As shown in Table 13, 3 pairs of duplicate sediment samples were compared. The calculated RDP values were within the screening threshold values with the exceptions discussed below:

- 14SED01 had a calculated RPD value of 113% for lead (the threshold is 60% for high variability metals in soil, such as lead) and 57% for uranium (the threshold is 45% for metals in soil). Metals are highly variable in sediments. Since the majority of RPD's were within the acceptable threshold, the data is considered acceptable.

Soil Vapour

As shown in Table 15, 1 pair of duplicate soil vapour samples were compared. The calculated RDP values were all within the screening threshold values.

Standard laboratory QA/QC procedures were performed and the results for the analyzed inter-laboratory and laboratory duplicates were within laboratory accepted limits for all parameters analyzed in the samples. In addition, during the field investigations, Tetra Tech EBA personnel followed appropriate QA/QC protocols. Based on the results of the QA/QC program, the soil, groundwater, and surface water analytical results were considered to accurately represent the conditions of the Property.

The laboratory QA/QC program did not reveal bias or high imprecision of analytical testing. Copies of Laboratory Analytical Reports are attached in Appendix G.

9.0 SLRA FEASIBILITY

Tetra Tech EBA Inc. (Tetra Tech EBA) conducted a feasibility study for the potential use of the BC MOE Protocol 13 (P13) for Contaminated Sites Screening Level Risk Assessment (SLRA) (August 2008) on the Property to address the identified contamination within the specific AECs on the Property. The feasibility memo is attached as Appendix H with the primary conclusions summarized below.

This SLRA feasibility was based on current existing site conditions, which include commercial and industrial land use within some areas paved and based on the depths of contamination present. A full SLRA to address any CSR exceedances can only be completed once the conceptual development plan is developed for the Property. We note that the SLRA technical memorandum is not intended to be used as a final report adequate for a Certificate of Compliance application, but rather an assessment of whether or not the use of SLRA would be feasible and acceptable for a future Certificate of Compliance or release application for the Property.

The results of pathway screening from the BC MOE Protocol 13 questionnaire for the COCs (chromium, cadmium, zinc, arsenic, LEPH (and EPH_{C10-19}), EPH_{C19-32}, VPH, and chlorinated phenols) found in soil at identified Tetra Tech AEC 1, AEC 2, AEC 3 and AEC 4 and chlorinated phenols in groundwater at Tetra Tech AEC 3 above the applicable CSR standards for the Property, are summarized in the table below:

Summary of SLRA Feasibility Findings

Tetra Tech EBA AEC	SLRA Findings for Existing Conditions		Comments
	Contaminants of Concern	Exposure Pathways for Identified Contaminants of Concern	
AEC 1	Chromium (Cr) in soil	• Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since Cr in soils is not leachable to levels exceeding CSR AW standard.	None
AEC 2	LEPH (and EPH_{C10-19}), and EPH_{C19-32} in soil	• Exposure to contaminated soils or dust and terrestrial biota to contaminated soils – Pathways deemed incomplete since contamination greater than 1 m below ground surface. • Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since modelling shows hydrocarbons in soils in groundwater not migrating to primary receptor, the nearby marine harbor.	Would meet SLRA if contamination remains under 1 m of material or is paved.
AEC 3A	PCPs in soil	• Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed due to unknown offsite maximum concentration and unknown plume size.	Potential groundwater and soil leachate impacts cannot be fully addressed under SLRA but area has an existing risk assessment/ management plan approved by BC MOE for former CIPA site which includes this area of Property.
AEC 3B	Chlorinated phenols and VPH in soil and/or groundwater	• Exposure to contaminated soils or dust and terrestrial biota to contaminated soils – Pathway complete for current conditions since contamination potentially less than 1 m below ground surface and area not paved. • Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed due to unknown offsite maximum concentration and unknown plume size.	Would meet pathways for human and terrestrial biota exposure to contaminated soils if either up to 1 m of clean soil placed above any exposed soils in area or area paved. Potential groundwater and soil leachate impacts cannot be fully addressed under SLRA but area has existing risk assessment/ management plan approved by BC MOE for former CIPA site which includes this area of Property.

Tetra Tech EBA AEC	SLRA Findings for Existing Conditions		Comments
	Contaminants of Concern	Exposure Pathways for Identified Contaminants of Concern	
AEC 3C	PCPs and Arsenic (As) in soil	• Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete for Arsenic since As in soils is not leachable to levels exceeding CSR AW standard. • Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed for PCPs due to unknown offsite maximum concentration and unknown plume size.	Potential groundwater and soil leachate impacts from PCP soil leachate cannot be fully addressed using SLRA so if legal instrument ever needed for Property in future, PCP contaminated soils would have to be removed until met CSR numerical standards or a detailed risk assessment completed since not part of existing risk assessment/ management plan approved by BC MOE for former CIPA site.
AEC 4	Zinc (Zn) and cadmium (Cd) in soil	• Exposure of terrestrial biota to contaminated soils – Pathway deemed complete for Zinc under current site conditions since contamination less than 1 m below ground surface and area not paved. • Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since Zn and Cd in soils is not leachable to levels exceeding CSR AW standard.	Would meet pathway for terrestrial biota exposure to contaminated soils if either up to 1 m of clean soil placed above any exposed soils in area or area paved.

CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
IL – Industrial Land use;
CL – Commercial Land Use;
EPH – Extractable Petroleum Hydrocarbons;
BC MOE – BC Ministry of Environmental

We note that SLRA cannot be used to address chlorinated phenols and VPH contamination identified at AEC 3 and PAH contaminated sediments within Marine AEC 1.

10.0 DSI SUMMARY AND CONCLUSIONS

Tetra Tech EBA completed investigations of AECs 1 to 4, AEC 7, Marine AEC 1 and APECs 8 through 13 using both the historical data from SNC's reports and the laboratory analytical data collected during this DSI. The following table summarizes all the results and conclusions of the DSI to date.

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination	Comments
AEC 1 (Formerly AEC 1 and 7) Coal Waste and other Fill	Chromium (Cr) >CSR CL/IL at an average thickness of 2 m	None.	None.	Area 1A: Estimated Area **6500 m^2** Estimated Volume **13,000 m^3** Area 1B: Estimated Area **1200 m^2** Estimated Volume **2400 m^3**	▪ Soil impacts related to coal waste in fill soils which would meet CSR under SLRA since Cr in soils is not leachable to levels exceeding CSR AW standard.
AEC 2 Railyard	LEPH and HEPH> CSR CL/IL from 4.8 m to 8.8 m	None.	None.	Estimated Area **1800** m^2 Estimated Volume **5400 m^3**	▪ Only CSR exceedance found in groundwater by SNC in 2007 in Well 00-07. Groundwater in all new wells and resampling of 00-07 meet CSR AW standards. ▪ Soils impacts meet CSR under SLRA if areas remains under 1 m of material or is paved.since modelling shows hydrocarbons in soils in groundwater not migrating to primary receptor, the nearby marine harbour.

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination	Comments
AEC 3A (Formerly AEC 3) Former Offsite Sawmills	PCP >CSR CL/IL from surface to 1.5 m	None.	None.	Area 3A Estimated Area **1800 m^2** Estimated Volume **2700 m^3**	▪ Documented soil contamination within AEC 3A and 3B would meet CSR, if managed following existing risk assessment management plan that was approved by BC MOE and the CCofC issued in 2002, which covers both the former offsite CIPA mill and lease area located on the Property. ▪ Documented PCP soil contamination within AEC 3C from former Dorman Sawmill (now WFP) lease area on the Property not covered by existing CIPA CCoC, so would require removal to meet CSR numerical standards if legal instrument ever required for the Property. Arsenic impacted soils within AEC 3C meet CSR under SLRA since not leachable to levels exceeding CSR AW. ▪ Remediation of soil impacts in all of AEC 3 not required immediately or the responsibility of CON since impacts are all related to documented former offsite sawmill operations and also on former lease areas located off the Property.
AEC 3B (Formerly AEC 3) Former Offsite Sawmills	2,4,5 trichlorophenol, 2,3,4,6 tetrachlorophenol , 3,4 dichlorophenol, VPH >CSR CL/IL from surface to 5.9 m	Chlorinated Phenols > CSR AW standards.	None.	Area 3B Estimated Area **1000 m^2** Estimated Volume **5900 m^3**	
AEC 3C (Formerly AEC 4) Former Offsite Sawmills	PCP , Arsenic >CSR CL/IL from surface to 1 m	None.	None.	Area 3C Estimated Area **500 m^2** Estimated Volume **500 m^3**	
Marine AEC 1 – Active Harbour	PAHs > CSR Typical Sediment Standards from surface to maximum depth of 1.5 mbg with average thickness of ~1.0	N/A	N/A	Estimated Area **28,069 m^2** Estimated Volume **28,069 m^3**	▪ DRA required to assess sediment impacts and evaluate remediation options.

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination	Comments
APEC 8 Former Locomotive Engine House	None.	None.	N/A	None confirmed	▪ No impacts found during DSI
APEC 9 Heating Oil UST adjacent to Seaspan office	None.	None.	None.	None Confirmed	▪ No impacts found during DSI. UST should be removed and confirmatory soil samples taken from excavation limits.
AEC 4 (formerly APEC 10) Former Machine Shop at Gadd Marine Site	Cadmium, Zinc >CSR CL/ IL from 0.5 to 2.7 m	None.	N/A	Estimated Area **600 m^2** Estimated Volume **1320 m^3**	▪ Presence of metals (Cd, Zn) other than Cr in fill soils indicates likely impacted by past operations at GADD Marine and/or historical machine shop activities. ▪ Would meet CSR using SLRA since Zn and Cd in soils are not leachable to levels exceeding CSR AW Marine if either up to 1 m of clean soil placed above any exposed soils in area or area paved.
APEC 11 Former Heating Oil UST at Island Pallets	None.	None.	None.	None confirmed	▪ No impacts found during DSI
APEC 12 1951 Miscellaneous Industrial Activities	None.	None.	None.	None confirmed	▪ No impacts found during DSI

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination	Comments
APEC 13 Former Sawmill	None.	None.	N/A	None confirmed	▪ No impacts found during DSI

Notes:
CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPH - Volatile Petroleum Hydrocarbons;
MOE - Ministry of Environment
CCofC – Conditional Certificate of Compliance
IL – Industrial Land use;
CL – Commercial Land Use;
HEPH - Heavy Extractable Petroleum Hydrocarbons;
UST(s) - Underground Storage Tank(s); and
PCPs PentaChloroPhenols
SLRA – Screening Level Risk Assessment
DRA – Detailed Risk Assessment

11.0 AUTHOR QUALIFICATIONS

This report was prepared by personnel with professional experience in investigations of this nature and who specifically conducted the investigations at this Property.

Martin Jarman, P.Geo., CSAP – Senior Review

Mr. Jarman is a Senior Environmental Scientist with 20 years of experience in conducting the investigation and remediation of contaminated sites and overall environmental management. As a Member of the BC Contaminated Sites Approved Professional Society (CSAP), Mr. Jarman has been involved in the detailed review of all stages of environmental reports and completed over 20 recommendations to the Ministry of Environment for legal instruments for various sites across BC since 2007.

Mr. Jarman provided senior input and senior review for the report.

Lora Paul, P.Eng. – Project Manager and Report Author

Ms. Paul has over 12 years of consulting experience as a Project Engineer/Project Manager specializing in contaminated site investigations of commercial and industrial sites, regulatory approvals for property development, and due diligence for property transfer. Ms. Paul has investigated soil, groundwater, and vapour issues related to various commercial and industrial activities including former service stations, dry cleaning facilities, landfills, automotive recycling yards, highway works yards, former shipyards, and airports.

Ms. Paul project managed and was the primary author of this report.

Kristy Gabelhouse, B.Sc., BIT – Field Assessor

Ms. Gabelhouse has five years of contaminated sites experience including Stage 1 and 2 Preliminary Site Investigations, Phase I and II Environmental Site Assessments, and various field-based projects. Ms. Gabelhouse has authored over ten environmental investigation reports. Ms. Gabelhouse conducted the groundwater monitoring and soil vapour sampling.

Mike Gallo, B.Sc. – Field Assessor and Intermediate Hydrogeologist

Mr. Gallo is an intermediate hydrogeologist and environmental scientist with the Environment Group of Tetra Tech EBA. He has over 15 years of experience in conducting hydrogeological assessment and environmental site assessments and investigations.

Mr. Gallo monitored the drilling, and completed the hydrogeological section of this report.

Scott Schillereff, Ph.D., P.Geo. – Senior Hydrogeologist and Senior Input

Dr. Schillereff is a senior hydrogeologist for this project. He is a registered professional geoscientist with the Association of Professional Engineers and Geoscientists of BC (APEGBC) and a Principal Specialist with Tetra Tech EBA. He has over 27 years of experience coordinating and providing senior support for hydrogeological and contaminated sites projects.

12.0 CLOSURE

Conclusions and recommendations presented herein are based on a visual site inspection, review of previous investigation report for the Property, field observations made during the sampling event, and analytical results identified in this report. This report was prepared by personnel with professional experience in investigations of this nature and who specifically conducted the investigations at this Property. Reference should be made to the 'Geo-environmental Report – General Conditions' attached in Appendix A that forms a part of this report. The assessment has been carried out in accordance with generally accepted engineering practice. No other warranty is made, either expressed or implied. Professional judgment has been applied in developing the recommendations in this report.

This report was prepared in accordance with requirements of the Environmental Management Act and the Contaminated Sites Regulation. This report has been prepared based on the scope of work and for the use of City of Nanaimo which includes distribution as required for the purposes for which this assessment was commissioned.

Respectfully submitted,
Tetra Tech EBA Inc.

Prepared by:

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TABLES

Table 1: Groundwater Potentiometric Surfaces

Well ID	Total Depth (m-btoc)[1]	Elevation of Top of PVC Casing (m)[2]	September 2014 - Low Tide		September 2014 - HIgh Tide		November 2014	
			Water Level Depth (m-btoc)[1]	Groundwater Potentimetric Surface (m-asl)	Water Level Depth (m-btoc)[1]	Groundwater Potentimetric Surface (m-asl)	Water Level Depth (m-btoc)[1]	Groundwater Potentimetric Surface (m-asl)
BH00-07	7.5	4.92	4.538	0.382	4.542	0.378	4.37	0.550
BH00-10	-	4.734	4.328	0.406	4.334	0.400	-	-
BH09-19	-	-	2.562	-	2.412	-	-	-
BH09-20	-	-	3.630	-	3.665	-	-	-
BH09-4	-	4.309	3.890	0.419	3.900	0.409	-	-
14BH02	4.555	3.038	2.689	0.349	2.782	0.256	-	-
14BH05	8.508	6.185	5.797	0.388	5.801	0.384	-	-
14BH07	6.200	4.932	4.505	0.427	4.510	0.422	-	-
14BH08	6.123	4.795	4.397	0.398	4.403	0.392	-	-
14BH10	6.068	4.132	3.730	0.402	3.735	0.397	3.565	0.567
14BH11	5.767	4.054	3.660	0.394	3.670	0.384	-	-
14BH12	5.384	4.064	3.650	0.414	3.650	0.414	-	-
14BH13	6.058	4.25	3.830	0.420	3.830	0.420	-	-
14BH14	5.913	4.584	4.180	0.404	4.200	0.384	-	-
14BH15	6.074	4.749	4.370	0.379	4.380	0.369	-	-
14BH16	6.090	4.659	4.290	0.369	4.290	0.369	-	-
14BH19	4.269	2.511	2.328	0.183	2.233	0.278	-	-
14BH21	4.503	3.26	2.876	0.384	3.075	0.185	-	-
14BH23	6.003	4.425	3.819	0.606	3.725	0.700	-	-
14BH25	5.453	3.841	3.510	0.331	3.520	0.321	-	-
14BH26	7.61	4.983	-	-	-	-	4.44	0.543
14BH27	6.05	4.898	-	-	-	-	4.35	0.548
14BH29	6.11	4.006	-	-	-	-	3.46	0.546
14BH35	6.07	4.029	-	-	-	-	3.47	0.559

Notes:

1. m-btoc indicates metres below top of casing.
2. m-asl indicates metres above mean sea level.

~: Approximate value - Water level btoc was less than the metal probe length at end of water level meter.

"-" indicates no data.

Table 2: Soil Analytical Results - Metals

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 1																
					Borehole	14BH01					14BH02				14BH03			14BH04			14BH17	
					Field ID	14BH01-1	DUP2	14BH01-2	14BH01-3	14BH01-5	14BH02-1	14BH02-2	14BH02-3	14BH02-4	14BH03-1	14BH03-2	14BH03-4	14BH04-2	14BH04-3	14BH04-4	14BH17-2	14BH17-3
					Depth	0.5 - 0.9		1.55 - 1.7	2.44 - 2.59	5.33 - 5.49	0.65 - 0.75	1.15 - 1.27	2.15 - 2.3	2.5 - 2.67	0.55 - 0.7	1.35 - 1.45	3.50 - 3.65	0.95 - 1.05	2.29 - 2.44	3.53 - 3.70	1.05 - 1.2	2.34 - 2.49
					Date	15-Sep-2014		15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	15-Sep-2014	15-Sep-2014
Routine																						
pH (Lab)	pH Units	-	-	-		7.39	7.42	7.53	7.16	-	7.75	7.51	7.25	6.87	7.93	7.21	-	7.19	7.13	7.19	7.4	6.6
Calcium	mg/kg	-	-	-		14,600	14,100	3460	3360	-	28,900	26,200	28,000	6500	51,300	16,600	-	11,000	24,800	7990	5920	13,300
Magnesium	mg/kg	-	-	-		12,800	12,200	6830	6590	-	10,700	10,200	8010	4350	6770	5520	-	8880	6410	6110	4360	8150
Potassium	mg/kg	-	-	-		1180	1040	1310	1190	-	1030	1020	1770	800	1460	969	-	1040	1560	669	2440	1690
Sodium	mg/kg	-	-	-		358	395	2380	2740	-	433	361	2710	1040	1240	454	-	449	1060	1470	496	4280
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	7.85	-	-	-	-
Moisture	%	-	-	-		3.2	-	10	-	16	-	8.6	26	-	-	8.9	17	9.1	32	-	11	26
pH (aqueous extract)	pH Units	-	-	-		7.39	7.42	7.53	7.16	-	7.75	7.51	7.25	6.87	7.93	7.21	-	7.19	7.13	7.19	7.4	6.6
pH (after HCL)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	-	-
Metals																						
Aluminium	mg/kg	-	-	-		23,400	21,900	13,500	13,800	-	23,500	23,500	30,800	11,500	28,300	13,000	-	23,300	24,600	13,900	20,500	25,300
Antimony	mg/kg	4	40	400		0.57	0.64	0.45	0.34	-	0.4	1.05	0.45	0.3	0.43	0.4	-	0.63	0.3	<0.1	0.26	0.55
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		8.13	8.06	5.47	4.29	-	4.74	14.9	6.97	2.95	5.63	9.98	-	6.96	3.83	3.09	2.16	9.64
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		108	112	98.8	88.8	-	217	149	498	87.6	668	86.5	-	167	319	50.4	128	213
Beryllium	mg/kg	1.5	8	80		0.6	0.52	0.5	0.42	-	0.45	0.64	0.69	<0.4	0.76	0.45	-	0.6	0.61	<0.4	0.45	0.55
Bismuth	mg/kg	-	-	-		0.12	0.11	0.11	0.11	-	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	-	0.13	<0.1	<0.1	<0.1	<0.1
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		0.375	0.357	0.194	0.226	-	0.32	0.461	0.441	1.09	0.659	0.293	-	0.351	0.555	0.156	0.089	0.402
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]		<1	-	-	-	-	-	1.3	-	-	-	-	-	<1	-	-	-	-
Chromium	mg/kg	90	60 [#1]	3000 [#1]		**130**	**116**	83.6	88.4	-	**124**	**125**	82	19.4	71.5	77.1	-	**138**	52.6	18.9	22.7	78.1
Chromium (Trivalent)	mg/kg	90	95 [#1]	-		**130**	-	-	-	-	-	**124**	-	-	-	-	-	**138**	-	-	-	-
Cobalt	mg/kg	50	300	1500		26.4	26.3	13.9	10.9	-	23.2	29.7	19.6	5.87	12.4	19.7	-	26.4	11.8	6.35	5.6	16.7
Copper	mg/kg	150	250 [#1]	2500 [#1]		74	73.5	108	97.7	-	73.1	89.8	85.2	26.3	73.5	68.8	-	73.1	68.1	22.9	14.9	83.3
Iron	mg/kg	-	-	-		38,000	33,500	18,400	16,500	-	29,200	36,500	28,800	11,200	26,400	25,000	-	29,000	18,500	15,700	15,200	34,900
Lead	mg/kg	30	700 [#1]	7000 [#1]		8.97	8.81	8.99	6.73	-	6.13	9.85	6.72	2.98	4.05	7.17	-	9.98	4.81	1.83	58.3	8.33
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		25.4	22.9	20.8	25.5	-	25	26.7	43.1	16.9	36.9	20.6	-	33.8	24.7	18	17.9	39.1
Manganese	mg/kg	-	19,000 [#3]	-		559	567	383	371	-	572	614	555	149	517	342	-	658	429	230	281	514
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		0.364	0.379	0.445	0.292	-	0.19	0.43	0.197	0.158	0.188	0.392	-	0.174	0.112	<0.05	0.067	0.588
Molybdenum	mg/kg	1	40	400		3.13	3.05	3.18	2.52	-	2.5	4.86	3.38	1.32	3.79	3.92	-	2.3	2.23	0.47	0.54	3.45
Nickel	mg/kg	55	500	5000		200	188	102	102	-	214	213	145	46.8	123	159	-	241	103	19.1	29	142
Phosphorus (P)	mg/kg	-	-	-		303	290	176	169	-	290	234	777	422	818	226	-	302	710	401	520	580
Selenium	mg/kg	4	10	100		0.92	0.94	0.66	0.72	-	1.02	1.43	0.59	1.05	0.56	1.38	-	0.66	0.56	<0.5	<0.5	0.72
Silver	mg/kg	1	40	400		0.154	0.144	0.121	0.117	-	0.145	0.187	0.166	0.068	0.123	0.121	-	0.144	0.17	<0.05	<0.05	0.149
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		92.6	96.4	97.9	84.8	-	258	209	485	99.9	649	154	-	164	517	37.5	50.2	292
Thallium	mg/kg	-	-	2000		0.152	0.13	0.119	0.103	-	0.083	0.206	0.093	0.305	0.055	0.128	-	0.112	0.098	<0.05	0.102	0.201
Tin	mg/kg	4	300	3000		0.85	0.97	1.19	0.59	-	0.47	0.58	0.65	0.38	0.6	0.8	-	0.68	0.74	0.25	1.02	0.97
Titanium	mg/kg	-	-	-		247	224	515	554	-	265	225	1010	963	1050	426	-	265	1140	1420	548	696
Uranium	mg/kg	-	200 [#3]	2000 [#3]		0.37	0.362	0.483	0.418	-	0.347	0.4	0.82	0.687	0.89	0.503	-	0.377	0.942	0.297	0.569	1.02
Vanadium	mg/kg	250	-	6500		92.3	86.1	69.3	75.3	-	81.1	126	94	40.8	92.6	72.7	-	89.6	68.2	46.2	30	79.1
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		87.7	82.7	65.5	44	-	69.9	83.7	68.4	40.2	24.3	48.7	-	80.3	48.1	34.2	52.6	61.5
Zirconium	mg/kg	-	-	-		8.12	7	5.41	6.46	-	9.22	10.7	17.9	4.48	25.4	6.74	-	9.21	16.4	4.9	1.27	13.3

NOTES:

#1	Schedule 5 Substance
#2	Standard is pH dependant
#3	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 2: Soil Analytical Results - Metals

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 1												AEC 1B
					Borehole	14BH18			14BH19				14BH20					15BH37
					Field ID	14BH18-1	14BH18-2	14BH18-3	14BH19-1	14BH19-3	DUP1	14BH19-4	14BH20-1	14BH20-2	14BH20-3	14BH20-4	14BH20-5	15BH37
					Depth	0.6 - 0.7	1.68 - 1.8	2.57 - 2.74	0.66 - 0.78	1.9 - 2.05		3.96 - 4.11	0.62 - 0.75	1.8 - 1.98	2.82 - 3.0	3.86 - 4.04	5.33 - 5.49	5.1
					Date	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014		15-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	26-Mar-2015
Routine																		
pH (Lab)	pH Units	-	-	-		7.91	7.25	7.4	7.16	7.18	7.06	7.19	7.48	7.48	7.34	7.37	7.71	7.18
Calcium	mg/kg	-	-	-		-	1920	3540	3590	2340	2410	-	9310	3250	4020	2650	-	-
Magnesium	mg/kg	-	-	-		-	12,400	7230	3780	7120	8000	-	8050	9640	8230	8430	-	-
Potassium	mg/kg	-	-	-		-	1650	1590	2080	1290	1360	-	1050	1520	1110	1250	-	-
Sodium	mg/kg	-	-	-		-	2250	3590	493	3820	4040	-	266	2550	2380	2980	-	-
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		-	-	17	-	17	17	-	-	10	-	12	-	35
pH (aqueous extract)	pH Units	-	-	-		7.91	7.25	7.4	7.16	7.18	7.06	7.19	7.48	7.48	7.34	7.37	7.71	
pH (after HCL)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																		
Aluminium	mg/kg	-	-	-		-	24,500	16,000	15,600	13,900	15,300	-	16,500	19,100	16,200	16,400	-	-
Antimony	mg/kg	4	40	400		-	0.44	1.08	0.15	0.38	0.36	-	0.46	0.64	0.62	0.38	-	-
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		-	7.56	18.6	2.04	5.16	5.02	-	7.96	8.37	8.2	6.7	-	-
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		-	87.2	101	63.1	84.3	105	-	81.4	184	117	93.2	-	-
Beryllium	mg/kg	1.5	8	80		-	<0.4	0.41	0.58	0.51	0.57	-	0.54	0.69	0.44	0.51	-	-
Bismuth	mg/kg	-	-	-		-	0.2	0.56	<0.1	<0.1	<0.1	-	0.11	0.12	<0.1	0.11	-	-
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		-	0.129	0.132	0.093	0.187	0.145	-	0.321	0.257	0.194	0.206	-	-
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]		-	-	-	-	-	-	-	-	<1	-	<1	-	<1.0
Chromium	mg/kg	90	60 [#1]	3000 [#1]		-	86.5	57.4	15.4	85.9	**95**	81.9	**109**	**115**	81.6	**96.8**	77.1	48.5
Chromium (Trivalent)	mg/kg	90	95 [#1]	-		-	-	-	-	-	-	-	-	**115**	-	**96.8**	-	48.5
Cobalt	mg/kg	50	300	1500		-	13.9	16.6	5.03	10.9	11.2	-	23.6	23.3	20.6	14.7	-	-
Copper	mg/kg	150	250 [#1]	2500 [#1]		72	107	160	5.41	89.8	90.1	-	73	90.7	95.1	93.9	-	-
Iron	mg/kg	-	-	-		-	31,600	51,800	15,200	16,600	18,500	-	28,800	28,400	27,900	22,800	-	-
Lead	mg/kg	30	700 [#1]	7000 [#1]		-	13.7	62.3	5.9	5.74	5.82	-	8.38	8.09	15	8.65	-	-
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		-	45.2	26.6	18.3	23.6	26.2	-	23.4	23.1	20.8	26.2	-	-
Manganese	mg/kg	-	19,000 [#3]	-		-	482	653	304	386	412	-	411	601	625	505	-	-
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		-	0.237	0.354	<0.05	0.38	0.387	-	0.33	0.426	0.613	0.404	-	-
Molybdenum	mg/kg	1	40	400		-	3.13	8.4	0.28	2.97	3.2	-	3.26	3.65	3.2	2.92	-	-
Nickel	mg/kg	55	500	5000		-	131	78.7	12.9	101	101	-	171	142	110	111	-	-
Phosphorus (P)	mg/kg	-	-	-		-	408	576	378	245	274	-	134	270	357	267	-	-
Selenium	mg/kg	4	10	100		-	0.65	0.75	<0.5	0.69	0.58	-	0.92	0.86	0.59	0.67	-	-
Silver	mg/kg	1	40	400		-	0.149	0.071	<0.05	0.085	0.096	-	0.154	0.105	0.086	0.086	-	-
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		-	104	80.6	28.8	82.3	89.8	-	75	102	114	76	-	-
Thallium	mg/kg	-	-	2000		-	0.078	0.103	0.104	0.066	0.073	-	0.125	0.102	0.063	0.06	-	-
Tin	mg/kg	4	300	3000		-	2.43	7.19	0.66	0.42	0.43	-	0.45	0.55	2.49	0.65	-	-
Titanium	mg/kg	-	-	-		-	57.7	222	577	516	519	-	215	350	426	339	-	-
Uranium	mg/kg	-	200 [#3]	2000 [#3]		-	0.474	1.42	0.574	0.487	0.531	-	0.459	0.754	0.483	0.514	-	-
Vanadium	mg/kg	250	-	6500		-	63	57.4	32.4	74	82.4	-	80.9	94.1	73.1	77.6	-	-
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		-	107	134	34.8	47.9	48.6	-	73.1	70.2	65.1	57.9	-	-
Zirconium	mg/kg	-	-	-		-	3.11	2.7	1.38	5.13	5.93	-	7.12	7.15	6.04	5.8	-	-

NOTES:

#1	Schedule 5 Substance
#2	Standard is pH dependant
#3	Schedule 10 Substance
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Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 2: Soil Analytical Results - Metals

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 2														
					Borehole	14BH05					14BH06						14BH07			
					Field ID	14BH05-2	14BH05-3	14BH05-5	14BH05-6	14BH05-7	14BH06-2	14BH06-3	DUP 6	14BH06-4	14BH06-5	14BH06-6	14BH07-1	14BH07-3	14BH07-4	14BH07-5
					Depth	1.67 - 1.83	2.36 - 2.54	5.18 - 5.33	5.64 - 6.1	6.93 - 7.21	2.12 - 2.22	3.91 - 4.11		4.88 - 5.03	5.59 - 5.79	6.68 - 6.78	1.22 - 1.35	3.81 - 3.96	4.88 - 5.03	5.56 - 5.72
					Date	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	17-Sep-2014	17-Sep-2014		17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014
Routine																				
pH (Lab)	pH Units	-	-	-		6.4	-	-	-	-	7.95	-	-	-	-	-	7.28	8.06	-	-
Calcium	mg/kg	-	-	-		17,500	-	-	-	-	15,200	-	-	-	-	-	3590	26,600	-	-
Magnesium	mg/kg	-	-	-		3410	-	-	-	-	6290	-	-	-	-	-	3330	3010	-	-
Potassium	mg/kg	-	-	-		1340	-	-	-	-	1080	-	-	-	-	-	884	1240	-	-
Sodium	mg/kg	-	-	-		829	-	-	-	-	318	-	-	-	-	-	313	124	-	-
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		-	4.5	13	11	20	14	13	14	37	25	22	9.1	6.2	22	17
pH (aqueous extract)	pH Units	-	-	-		6.4	-	-	-	-	7.95	-	-	-	-	-	7.28	8.06	-	-
pH (after HCL)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																				
Aluminium	mg/kg	-	-	-		26,200	-	-	-	-	15,700	-	-	-	-	-	9680	9900	-	-
Antimony	mg/kg	4	40	400		0.4	-	-	-	-	1.12	-	-	-	-	-	0.33	0.3	-	-
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		3.21	-	-	-	-	5.39	-	-	-	-	-	8.95	2.67	-	-
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		488	-	-	-	-	148	-	-	-	-	-	131	109	-	-
Beryllium	mg/kg	1.5	8	80		0.66	-	-	-	-	0.57	-	-	-	-	-	<0.4	<0.4	-	-
Bismuth	mg/kg	-	-	-		<0.1	-	-	-	-	0.13	-	-	-	-	-	0.12	0.2	-	-
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		0.345	-	-	-	-	0.282	-	-	-	-	-	0.311	0.232	-	-
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/kg	90	60 [#1]	3000 [#1]		32.7	-	-	12.9	-	69.2	-	-	-	-	14.3	42.6	29.3	-	-
Chromium (Trivalent)	mg/kg	90	95 [#1]	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/kg	50	300	1500		7.15	-	-	-	-	21.4	-	-	-	-	-	9.99	9.26	-	-
Copper	mg/kg	150	250 [#1]	2500 [#1]		46.3	-	-	-	-	81.7	-	-	-	-	-	76.1	57.4	-	-
Iron	mg/kg	-	-	-		22,000	-	-	-	-	26,200	-	-	-	-	-	23,900	13,500	-	-
Lead	mg/kg	30	700 [#1]	7000 [#1]		5.71	-	-	-	-	25.3	-	-	-	-	-	16.9	8.57	-	-
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		26.1	-	-	-	-	22.4	-	-	-	-	-	16.4	20	-	-
Manganese	mg/kg	-	19,000 [#3]	-		327	-	-	-	-	374	-	-	-	-	-	382	308	-	-
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		0.07	-	-	-	-	0.362	-	-	-	-	-	0.552	0.156	-	-
Molybdenum	mg/kg	1	40	400		1.74	-	-	-	-	2.47	-	-	-	-	-	2.38	1.55	-	-
Nickel	mg/kg	55	500	5000		52.1	-	-	-	-	112	-	-	-	-	-	74.6	41.3	-	-
Phosphorus (P)	mg/kg	-	-	-		808	-	-	-	-	336	-	-	-	-	-	324	151	-	-
Selenium	mg/kg	4	10	100		<0.5	-	-	-	-	0.84	-	-	-	-	-	0.71	0.69	-	-
Silver	mg/kg	1	40	400		0.096	-	-	-	-	0.115	-	-	-	-	-	0.096	0.116	-	-
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		530	-	-	-	-	167	-	-	-	-	-	157	102	-	-
Thallium	mg/kg	-	-	2000		0.059	-	-	-	-	0.092	-	-	-	-	-	0.164	0.108	-	-
Tin	mg/kg	4	300	3000		0.59	-	-	-	-	2.76	-	-	-	-	-	0.99	0.48	-	-
Titanium	mg/kg	-	-	-		808	-	-	-	-	390	-	-	-	-	-	306	66.7	-	-
Uranium	mg/kg	-	200 [#3]	2000 [#3]		0.618	-	-	-	-	0.579	-	-	-	-	-	0.503	0.323	-	-
Vanadium	mg/kg	250	-	6500		63.7	-	-	-	-	64.2	-	-	-	-	-	44.1	38.9	-	-
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		23.2	-	-	-	-	61.5	-	-	-	-	-	52.6	47.6	-	-
Zirconium	mg/kg	-	-	-		17.1	-	-	-	-	7.16	-	-	-	-	-	5.65	3.44	-	-

NOTES:

#1	Schedule 5 Substance
#2	Standard is pH dependant
#3	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 2: Soil Analytical Results - Metals

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 2															
					Borehole	14BH08					14BH09								14BH26		
					Field ID	14BH08-2	14BH08-3	14BH08-4	DUP 3	14BH08-5	14BH09-2	14BH09-3	14BH09-4	14BH09-5	DUP5	14BH09-6	14BH09-7	14BH09-8	14BH26-4	14BH26-5	14BH26-7
					Depth	2.1 - 2.25	3.91 - 4.06	4.57 - 4.88		5.33 - 5.49	2.13 - 2.29	4.04 - 4.17	4.77 - 4.90	5.18 - 5.44		6.86 - 7.01	8.31 - 8.46	8.76 - 8.92	4.27 - 4.42	5.1 - 5.25	6.88 - 7.01
					Date	16-Sep-2014	16-Sep-2014	16-Sep-2014		16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014		16-Sep-2014	16-Sep-2014	16-Sep-2014	12-Nov-2014	12-Nov-2014	12-Nov-2014
Routine																					
pH (Lab)	pH Units	-	-	-		7.96	-	7.81	7.95	-	7.78	7.32	-	6.54	-	7.77	7.12	-	-	-	7.79
Calcium	mg/kg	-	-	-		34,200	-	22,100	25,600	-	23,700	32,400	-	-	-	10,400	-	-	-	-	-
Magnesium	mg/kg	-	-	-		7320	-	6910	6880	-	5160	4740	-	-	-	14,300	-	-	-	-	-
Potassium	mg/kg	-	-	-		1240	-	1280	1150	-	1010	1590	-	-	-	1480	-	-	-	-	-
Sodium	mg/kg	-	-	-		632	-	570	538	-	420	774	-	-	-	240	-	-	-	-	-
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		17	10	33	24	27	13	33	34	20	22	14	26	18	17	16	-
pH (aqueous extract)	pH Units	-	-	-		7.96	-	7.81	7.95	-	7.78	7.32	-	6.54	-	7.77	7.12	-	-	-	7.79
pH (after HCL)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																					
Aluminium	mg/kg	-	-	-		24,800	-	22,200	21,700	-	14,700	25,500	-	-	-	24,900	-	-	-	-	-
Antimony	mg/kg	4	40	400		0.37	-	0.34	0.47	-	1.15	0.33	-	-	-	0.4	-	-	-	-	-
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		4.72	-	5.14	5.85	-	6.42	3.79	-	-	-	6.93	-	-	-	-	-
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		345	-	198	212	-	263	528	-	-	-	94.1	-	-	-	-	-
Beryllium	mg/kg	1.5	8	80		0.49	-	0.44	0.49	-	<0.4	0.54	-	-	-	0.49	-	-	-	-	-
Bismuth	mg/kg	-	-	-		<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	0.14	-	-	-	-	-
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		0.414	-	0.417	0.428	-	0.295	0.403	-	-	-	0.303	-	-	-	-	-
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]		-	-	-	-	-	-	-	-	-	-	<1	-	-			
Chromium	mg/kg	90	60 [#1]	3000 [#1]		75	-	64	66.5	-	56.2	56.3	-	43.9	-	**116**	24.1	-	-	-	**93.1**
Chromium (Trivalent)	mg/kg	90	95 [#1]	-		-	-	-	-	-	-	-	-	-	-	**116**	-	-			
Cobalt	mg/kg	50	300	1500		17	-	11.8	12.5	-	17.2	11.4	-	-	-	21.4	-	-	-	-	-
Copper	mg/kg	150	250 [#1]	2500 [#1]		67	-	65.6	121	-	95.4	63.2	-	-	-	68.6	-	-	-	-	-
Iron	mg/kg	-	-	-		22,600	-	29,200	27,600	-	22,300	22,200	-	-	-	45,500	-	-	-	-	-
Lead	mg/kg	30	700 [#1]	7000 [#1]		5	-	4.83	5.79	-	13	3.81	-	-	-	11.2	-	-	-	-	-
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		31.9	-	29.9	29	-	18.8	32.8	-	-	-	32.3	-	-	-	-	-
Manganese	mg/kg	-	19,000 [#3]	-		433	-	463	540	-	628	414	-	-	-	484	-	-	-	-	-
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		0.312	-	0.333	0.317	-	0.404	0.145	-	-	-	0.232	-	-	-	-	-
Molybdenum	mg/kg	1	40	400		2.39	-	2.41	2.68	-	2.61	2.41	-	-	-	2.11	-	-	-	-	-
Nickel	mg/kg	55	500	5000		138	-	97.9	103	-	105	105	-	-	-	162	-	-	-	-	-
Phosphorus (P)	mg/kg	-	-	-		673	-	521	539	-	477	795	-	-	-	431	-	-	-	-	-
Selenium	mg/kg	4	10	100		0.62	-	1.28	1.14	-	0.95	<0.5	-	-	-	0.85	-	-	-	-	-
Silver	mg/kg	1	40	400		0.109	-	0.104	0.117	-	0.11	0.103	-	-	-	0.144	-	-	-	-	-
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		504	-	312	336	-	312	581	-	-	-	97.1	-	-	-	-	-
Thallium	mg/kg	-	-	2000		0.078	-	0.088	0.094	-	0.095	<0.05	-	-	-	0.144	-	-	-	-	-
Tin	mg/kg	4	300	3000		0.56	-	0.49	0.62	-	5.13	0.75	-	-	-	0.76	-	-	-	-	-
Titanium	mg/kg	-	-	-		620	-	640	595	-	631	1150	-	-	-	86.1	-	-	-	-	-
Uranium	mg/kg	-	200 [#3]	2000 [#3]		0.528	-	0.628	0.609	-	0.563	0.606	-	-	-	0.419	-	-	-	-	-
Vanadium	mg/kg	250	-	6500		76.8	-	67.5	70.6	-	65.3	77	-	-	-	76.5	-	-	-	-	-
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		45.9	-	41	42.7	-	48.2	22.5	-	-	-	86.8	-	-	-	-	-
Zirconium	mg/kg	-	-	-		15	-	13.2	13.3	-	7.97	16.9	-	-	-	5.83	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Standard is pH dependant
#3	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
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Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
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Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 2: Soil Analytical Results - Metals

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 2				AEC 3												
					Borehole	14BH27				14BH10						14BH11			14BH12			
					Field ID	14BH27-4	DUPA	14BH27-5	14BH27-6	14BH10-1	14BH10-2	14BH10-3	14BH10-4	14BH10-5	14BH10-6	14BH11-2	14BH11-4	14BH11-6	14BH12-1	14BH12-2	DUP 8	14BH12-4
					Depth	3.76 - 4.0		5.05 - 5.23	5.72 - 5.84	0.71 - 0.84	1.12 - 1.35	2.18 - 2.44	3.78 - 3.9	4.98 - 5.13		0.77 - 0.95	3.56 - 3.71	5.3 - 5.49	0.56 - 0.71	1.17 - 1.30		3.91 - 4.04
					Date	12-Nov-2014	12-Nov-2014	12-Nov-2014	12-Nov-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014		17-Sep-2014
Routine																						
pH (Lab)	pH Units	-	-	-		-	-	-	-	7.82	8.18	-	8.2	7.81		-	7.18	8.25	8.6	-	-	-
Calcium	mg/kg	-	-	-		-	-	-	-	-	8580	-	-	-	-	-	6610	-	24,700	-	-	-
Magnesium	mg/kg	-	-	-		-	-	-	-	-	5940	-	-	-	-	-	4560	-	5710	-	-	-
Potassium	mg/kg	-	-	-		-	-	-	-	-	639	-	-	-	-	-	428	-	464	-	-	-
Sodium	mg/kg	-	-	-		-	-	-	-	-	789	-	-	-	-	-	484	-	659	-	-	-
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		32	30	32	35	9.2	5.8	5.7	19	22	-	5.2	18	22	5.6	10	14	22
pH (aqueous extract)	pH Units	-	-	-		-	-	-	-	7.82	8.18	-	8.2	7.81	-	-	7.18	8.25	8.6	-	-	-
pH (after HCL)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																						
Aluminium	mg/kg	-	-	-		-	-	-	-	-	14,000	-	-	-	-	-	10,100	-	11,800	-	-	-
Antimony	mg/kg	4	40	400		-	-	-	-	-	0.56	-	-	-	-	-	<0.1	-	0.1	-	-	-
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		-	-	-	-	-	3.55	-	-	-	-	-	3.19	-	3.01	-	-	-
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		-	-	-	-	-	40.1	-	-	-	-	-	26.4	-	37.6	-	-	-
Beryllium	mg/kg	1.5	8	80		-	-	-	-	-	<0.4	-	-	-	-	-	<0.4	-	<0.4	-	-	-
Bismuth	mg/kg	-	-	-		-	-	-	-	-	<0.1	-	-	-	-	-	<0.1	-	<0.1	-	-	-
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		-	-	-	-	-	0.209	-	-	-	-	-	0.23	-	0.202	-	-	-
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]						-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/kg	90	60 [#1]	3000 [#1]		-	-	-	-	-	19.9	-	-	-	-	-	14.2	-	17.3	-	-	-
Chromium (Trivalent)	mg/kg	90	95 [#1]	-						-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/kg	50	300	1500		-	-	-	-	-	8.09	-	-	-	-	-	5.53	-	6.69	-	-	-
Copper	mg/kg	150	250 [#1]	2500 [#1]		-	-	-	-	-	32.9	-	-	-	-	-	17.2	-	21.2	-	-	-
Iron	mg/kg	-	-	-		-	-	-	-	-	19,700	-	-	-	-	-	13,100	-	17,700	-	-	-
Lead	mg/kg	30	700 [#1]	7000 [#1]		-	-	-	-	-	4.25	-	-	-	-	-	1.04	-	1.35	-	-	-
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		-	-	-	-	-	16.2	-	-	-	-	-	13.9	-	14.1	-	-	-
Manganese	mg/kg	-	19,000 [#3]	-		-	-	-	-	-	252	-	-	-	-	-	189	-	227	-	-	-
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		-	-	-	-	-	0.187	-	-	-	-	-	<0.05	-	<0.05	-	-	-
Molybdenum	mg/kg	1	40	400		-	-	-	-	-	1.42	-	-	-	-	-	0.7	-	0.6	-	-	-
Nickel	mg/kg	55	500	5000		-	-	-	-	-	16.2	-	-	-	-	-	12.5	-	13.2	-	-	-
Phosphorus (P)	mg/kg	-	-	-		-	-	-	-	-	701	-	-	-	-	-	337	-	453	-	-	-
Selenium	mg/kg	4	10	100		-	-	-	-	-	<0.5	-	-	-	-	-	<0.5	-	<0.5	-	-	-
Silver	mg/kg	1	40	400		-	-	-	-	-	<0.05	-	-	-	-	-	<0.05	-	<0.05	-	-	-
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		-	-	-	-	-	37.4	-	-	-	-	-	28.1	-	118	-	-	-
Thallium	mg/kg	-	-	2000		-	-	-	-	-	0.122	-	-	-	-	-	0.191	-	0.098	-	-	-
Tin	mg/kg	4	300	3000		-	-	-	-	-	0.22	-	-	-	-	-	0.19	-	0.36	-	-	-
Titanium	mg/kg	-	-	-		-	-	-	-	-	734	-	-	-	-	-	1170	-	1360	-	-	-
Uranium	mg/kg	-	200 [#3]	2000 [#3]		-	-	-	-	-	0.521	-	-	-	-	-	0.685	-	0.355	-	-	-
Vanadium	mg/kg	250	-	6500		-	-	-	-	-	52.8	-	-	-	-	-	39.2	-	52.5	-	-	-
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		-	-	-	-	-	47.1	-	-	-	-	-	24.5	-	27.8	-	-	-
Zirconium	mg/kg	-	-	-		-	-	-	-	-	3.17	-	-	-	-	-	3.91	-	3.85	-	-	-

NOTES:

#1	Schedule 5 Substance
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Table 2: Soil Analytical Results - Metals

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 3									AEC 4					
					Borehole	14BH13			14BH34			14BH35			14BH14			14BH15		
					Field ID	14BH13-1	14BH13-2	14BH13-4	14BH34-01	14BH34-02	14BH34-04	14BH35-02	14BH35-03	14BH35-06	14BH14-1	14BH14-2	14BH14-3	14BH15-1	14BH15-2	14BH15-4
					Depth	0.5 - 0.6	1.0 - 1.2	3.53 - 3.61	0.4 - 0.55	1.15 - 1.28	3.4 - 3.5	1.32 - 1.45	2.18 - 2.36	4.72 - 4.87	0.3 - 0.43	0.83 - 0.96	2.13 - 2.25	0.62 - 0.76	2.5 - 2.64	4.27 - 4.42
					Date	17-Sep-2014	17-Sep-2014	17-Sep-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014
Routine																				
pH (Lab)	pH Units	-	-	-		-	8.67	8.13	8.62	-	8.46	8.63	8.6	7.93	7.39	-	-	-	8.05	-
Calcium	mg/kg	-	-	-		-	86,600	-	-	-	-	-	-	-	9240	-	-	-	12,400	-
Magnesium	mg/kg	-	-	-		-	4780	-	-	-	-	-	-	-	4820	-	-	-	1230	-
Potassium	mg/kg	-	-	-		-	428	-	-	-	-	-	-	-	718	-	-	-	887	-
Sodium	mg/kg	-	-	-		-	1040	-	-	-	-	-	-	-	484	-	-	-	<100	-
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		8.7	5.7	18	7.3	10	22	6.3	6.4	27	10	4.3	36	18	6.9	13
pH (aqueous extract)	pH Units	-	-	-		-	8.67	8.13	8.62	-	8.46	8.63	8.6	7.93	7.39	-	-	-	8.05	-
pH (after HCL)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																				
Aluminium	mg/kg	-	-	-		-	10,200	-	-	-	-	-	-	-	12,700	-	-	-	6710	-
Antimony	mg/kg	4	40	400		-	0.12	-	-	-	-	-	-	-	0.63	-	-	-	0.38	-
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		-	3.05	-	-	-	-	-	-	-	22.6	2.83	-	15.9	1.68	-
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		-	44.8	-	-	-	-	-	-	-	123	-	-	-	108	-
Beryllium	mg/kg	1.5	8	80		-	<0.4	-	-	-	-	-	-	-	<0.4	-	-	-	0.57	-
Bismuth	mg/kg	-	-	-		-	<0.1	-	-	-	-	-	-	-	<0.1	-	-	-	0.2	-
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		-	0.255	-	-	-	-	-	-	-	0.3	-	-	-	0.26	-
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]		-	-	-							-	-	-	-	-	-
Chromium	mg/kg	90	60 [#1]	3000 [#1]		-	15.7	-	-	-	-	-	-	-	26.4	-	-	-	20.1	-
Chromium (Trivalent)	mg/kg	90	95 [#1]	-		-	-	-							-	-	-	-	-	-
Cobalt	mg/kg	50	300	1500		-	5.9	-	-	-	-	-	-	-	7.42	-	-	-	5.72	-
Copper	mg/kg	150	250 [#1]	2500 [#1]		-	20.4	-	-	-	-	-	-	-	30.5	-	-	-	53.1	-
Iron	mg/kg	-	-	-		-	14,900	-	-	-	-	-	-	-	20,800	-	-	-	5410	-
Lead	mg/kg	30	700 [#1]	7000 [#1]		-	1.08	-	-	-	-	-	-	-	11.3	-	-	-	9.63	-
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		-	12.4	-	-	-	-	-	-	-	15.9	-	-	-	16.1	-
Manganese	mg/kg	-	19,000 [#3]	-		-	200	-	-	-	-	-	-	-	323	-	-	-	131	-
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		-	<0.05	-	-	-	-	-	-	-	0.253	-	-	-	0.156	-
Molybdenum	mg/kg	1	40	400		-	0.63	-	-	-	-	-	-	-	1.88	-	-	-	0.86	-
Nickel	mg/kg	55	500	5000		-	13.4	-	-	-	-	-	-	-	27.3	-	-	-	21.8	-
Phosphorus (P)	mg/kg	-	-	-		-	554	-	-	-	-	-	-	-	479	-	-	-	65	-
Selenium	mg/kg	4	10	100		-	<0.5	-	-	-	-	-	-	-	<0.5	-	-	-	<0.5	-
Silver	mg/kg	1	40	400		-	<0.05	-	-	-	-	-	-	-	0.063	-	-	-	0.118	-
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		-	539	-	-	-	-	-	-	-	85.2	-	-	-	39	-
Thallium	mg/kg	-	-	2000		-	0.099	-	-	-	-	-	-	-	0.227	-	-	-	0.076	-
Tin	mg/kg	4	300	3000		-	0.15	-	-	-	-	-	-	-	0.87	-	-	-	0.46	-
Titanium	mg/kg	-	-	-		-	1030	-	-	-	-	-	-	-	1160	-	-	-	71.9	-
Uranium	mg/kg	-	200 [#3]	2000 [#3]		-	0.743	-	-	-	-	-	-	-	0.457	-	-	-	0.361	-
Vanadium	mg/kg	250	-	6500		-	44.6	-	-	-	-	-	-	-	59.9	-	-	-	42.3	-
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		-	25.5	-	-	-	-	-	-	-	49.9	-	-	-	41	-
Zirconium	mg/kg	-	-	-		-	3.72	-	-	-	-	-	-	-	5.42	-	-	-	4.47	-

NOTES:

#1	Schedule 5 Substance
#2	Standard is pH dependant
#3	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 2: Soil Analytical Results - Metals

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 4							APEC 8						APEC 9		
					Borehole	14BH16				14BH36	14VP05		14BH21			14BH22			14BH23		
					Field ID	14BH16-1	DUP 10	14BH16-2	14BH16-4	14BH36-1	14VP05-1	14VP05-2	14BH21-2	14BH21-3	14BH21-4	14BH22-2	14BH22-3	14BH22-4	14BH23-2	14BH23-3	DUP 13
					Depth	0.74 - 0.9		1.98 - 2.13	4.04 - 4.14	0.38 - 0.5	0.35 - 0.45	0.85 - 0.95	1.25 - 1.5	2.13 - 2.29	3.75 - 3.91	1.25 - 1.4	2.08 - 2.24	4.88 - 5.28	2.44 - 2.74	3.78 - 3.96	
					Date	18-Sep-2014		18-Sep-2014	18-Sep-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	
Routine																					
pH (Lab)	pH Units	-	-	-		6.83	6.79	-	-	8.63	7.53	8.35	6.96	7.75	-	-	7.78	7.21	7.97	7.33	7.53
Calcium	mg/kg	-	-	-		8270	8720	-	-	-	-	-	4500	20,900	-	-	27,100	2760	8900	12,800	12,100
Magnesium	mg/kg	-	-	-		4220	4160	-	-	-	-	-	7290	4950	-	-	5550	7280	8400	7720	7580
Potassium	mg/kg	-	-	-		1150	1220	-	-	-	-	-	950	745	-	-	729	944	1100	1290	1250
Sodium	mg/kg	-	-	-		536	572	-	-	-	-	-	206	263	-	-	357	1190	598	3730	3410
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		12	11	13	14	7.4	14	7.1	9	9.3	17	22	12	-	9.3	22	19
pH (aqueous extract)	pH Units	-	-	-		6.83	6.79	-	-	8.63	7.53	8.35	6.96	7.75	-	-	7.78	7.21	7.97	7.33	7.53
pH (after HCL)	pH Units	-	-	-		-	-	-	-				-	-	-	-	-	-	-	-	-
Metals																					
Aluminium	mg/kg	-	-	-		20,400	20,800	-	-	-	-	-	14,000	9980	-	-	10,500	12,700	15,100	20,300	19,200
Antimony	mg/kg	4	40	400		0.62	0.64	-	-	-	-	-	0.42	0.33	-	-	0.34	0.32	0.49	0.32	0.3
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		20.5	20.3	-	-	-	22.7	3.1	8.52	4.56	-	-	5.18	6.05	6.05	5.38	5.27
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		215	227	-	-	-	-	-	85.9	80.9	-	-	75.3	92	134	220	215
Beryllium	mg/kg	1.5	8	80		0.45	0.47	-	-	-	-	-	<0.4	<0.4	-	-	<0.4	0.43	0.5	0.57	0.51
Bismuth	mg/kg	-	-	-		<0.1	<0.1	-	-	-	-	-	0.12	<0.1	-	-	<0.1	0.11	<0.1	<0.1	<0.1
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		0.468	0.449	-	-	-	-	-	0.282	0.227	-	-	0.199	0.219	0.271	0.36	0.339
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]		-	-	-	-				-	-	-	-	-	-	-	-	-
Chromium	mg/kg	90	60 [#1]	3000 [#1]		38.9	39.4	-	-	-	-	-	78.3	75.8	-	-	75.3	75.5	66.8	61.3	62
Chromium (Trivalent)	mg/kg	90	95 [#1]	-		-	-	-	-				-	-	-	-	-	-	-	-	-
Cobalt	mg/kg	50	300	1500		11.9	12.3	-	-	-	-	-	17.3	11.2	-	-	9.74	14.7	17.7	15	14.7
Copper	mg/kg	150	250 [#1]	2500 [#1]		52	55.1	-	-	-	-	-	73.8	83.6	-	-	79.4	66.8	47.7	50.2	48.6
Iron	mg/kg	-	-	-		21,300	21,700	-	-	-	-	-	33,400	15,600	-	-	16,000	25,200	29,900	26,600	25,200
Lead	mg/kg	30	700 [#1]	7000 [#1]		12.1	13.6	-	-	-	-	-	8.06	6.06	-	-	6.48	7.91	15.6	9.11	9.36
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		25.8	25.5	-	-	-	-	-	22.2	19.3	-	-	21.7	24.9	21.3	32	31.4
Manganese	mg/kg	-	19,000 [#3]	-		340	378	-	-	-	-	-	480	405	-	-	417	2110	707	485	521
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		0.265	0.205	-	-	-	-	-	0.558	0.312	-	-	0.4	0.321	0.322	0.173	0.16
Molybdenum	mg/kg	1	40	400		2.25	2.13	-	-	-	-	-	3.12	2.64	-	-	2.49	4.23	1.6	2.43	2.25
Nickel	mg/kg	55	500	5000		57	57.1	-	-	-	-	-	145	111	-	-	102	128	112	108	106
Phosphorus (P)	mg/kg	-	-	-		445	441	-	-	-	-	-	157	111	-	-	130	252	489	638	663
Selenium	mg/kg	4	10	100		<0.5	<0.5	-	-	-	-	-	1.07	0.86	-	-	0.79	1.08	0.71	0.74	0.64
Silver	mg/kg	1	40	400		0.1	0.083	-	-	-	-	-	0.103	0.117	-	-	0.102	0.082	0.088	0.147	0.17
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		178	191	-	-	-	-	-	69.7	79.2	-	-	102	70.4	120	321	345
Thallium	mg/kg	-	-	2000		0.143	0.138	-	-	-	-	-	0.294	0.112	-	-	0.088	0.138	0.074	0.111	0.112
Tin	mg/kg	4	300	3000		0.95	0.98	-	-	-	-	-	0.52	0.4	-	-	0.45	0.45	0.96	0.69	0.91
Titanium	mg/kg	-	-	-		811	768	-	-	-	-	-	262	472	-	-	461	355	214	495	469
Uranium	mg/kg	-	200 [#3]	2000 [#3]		0.597	0.58	-	-	-	-	-	0.497	0.34	-	-	0.343	0.563	0.389	2.79	2.74
Vanadium	mg/kg	250	-	6500		76.8	78.8	-	-	-	-	-	60.2	68.5	-	-	66.2	72.6	61.1	57	57.6
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		50.2	51.5	-	-	-	-	-	74.2	40.2	-	-	37.3	49.9	69.2	53.7	52.6
Zirconium	mg/kg	-	-	-		9.7	9.54	-	-	-	-	-	4.11	3.99	-	-	3.81	4.23	4.56	10.2	9.92

NOTES:

#1	Schedule 5 Substance
#2	Standard is pH dependant
#3	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 2: Soil Analytical Results - Metals

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	APEC 10												
					Borehole	14BH24			14BH25						14BH32			
					Field ID	14BH24-1	14BH24-2	14BH24-3	14BH25-1	14BH25-2	DUP 11	14BH25-3	14BH25-4	14BH25-5	14BH32-1	14BH32-2	14BH32-3	14BH32-5
					Depth	0.63 - 0.75	1.2 - 1.25	2.13 - 2.29	1.05 - 1.25	1.85 - 2.1		2.72 - 2.84	3.73 - 3.85	5.8 - 6.0	0.5 - 0.67	1.25 - 1.4	2.5 - 2.67	4.27 - 4.42
					Date	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014		18-Sep-2014	18-Sep-2014	18-Sep-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014
Routine																		
pH (Lab)	pH Units	-	-	-		7.91	-	-	7.01	6.84	6.86	6.84	7.38	7.31	7.77	7.77	7.66	8.28
Calcium	mg/kg	-	-	-		10,900	-	-	-	15,200	14,900	-	3610	-	-	-	-	-
Magnesium	mg/kg	-	-	-		7320	-	-	-	3580	3920	-	11,900	-	-	-	-	-
Potassium	mg/kg	-	-	-		870	-	-	-	1080	1060	-	1410	-	-	-	-	-
Sodium	mg/kg	-	-	-		509	-	-	-	619	597	-	2620	-	-	-	-	-
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		7.3	9.3	11	25	27	24	12	16	-	-	6.6	-	-
pH (aqueous extract)	pH Units	-	-	-		7.91	-	-	7.01	6.84	6.86	6.84	7.38	-	7.77	7.77	7.66	8.28
pH (after HCL)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																		
Aluminium	mg/kg	-	-	-		17,000	-	-	-	16,600	16,400	-	21,900	-	-	-	-	-
Antimony	mg/kg	4	40	400		1.07	-	-	-	9.24	8.97	-	2.26	-	-	-	-	-
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		6.46	-	-	-	3.72	3.7	-	8.93	-	-	-	-	-
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		106	-	-	-	337	343	-	132	-	-	-	-	-
Beryllium	mg/kg	1.5	8	80		<0.4	-	-	-	0.42	0.47	-	0.43	-	-	-	-	-
Bismuth	mg/kg	-	-	-		<0.1	-	-	-	<0.1	<0.1	-	0.12	-	-	-	-	-
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		0.349	0.307	0.238	**4.23**	**4.77**	**4.11**	0.207	0.462	-	0.308	0.361	0.467	-
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]		-	-	-	-	-	-	-	<1	-	-	-	-	-
Chromium	mg/kg	90	60 [#1]	3000 [#1]		54.8	-	-	-	46.7	49.3	-	**123**	**99.7**	-	-	44.6	17.8
Chromium (Trivalent)	mg/kg	90	95 [#1]	-		-	-	-	-	-	-	-	**123**	-	-	-	-	-
Cobalt	mg/kg	50	300	1500		13.9	-	-	-	9.3	9.1	-	25.3	-	-	-	-	-
Copper	mg/kg	150	250 [#1]	2500 [#1]		54.6	-	-	-	92.6	83.7	-	81.3	-	-	-	-	-
Iron	mg/kg	-	-	-		25,500	-	-	-	17,400	17,500	-	39,100	-	-	-	-	-
Lead	mg/kg	30	700 [#1]	7000 [#1]		25.8	-	-	-	43.2	40.8	-	36.3	-	-	-	-	-
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		17.5	-	-	-	22.1	22.8	-	26.7	-	-	-	-	-
Manganese	mg/kg	-	19,000 [#3]	-		391	-	-	-	294	281	-	853	-	-	-	-	-
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		0.216	-	-	-	0.164	0.191	-	0.305	-	-	-	-	-
Molybdenum	mg/kg	1	40	400		1.54	-	-	-	2.1	2.26	-	4.02	-	-	-	-	-
Nickel	mg/kg	55	500	5000		77.9	-	-	-	115	113	-	179	-	-	-	-	-
Phosphorus (P)	mg/kg	-	-	-		450	-	-	-	556	524	-	297	-	-	-	-	-
Selenium	mg/kg	4	10	100		<0.5	-	-	-	<0.5	<0.5	-	0.8	-	-	-	-	-
Silver	mg/kg	1	40	400		0.146	-	-	-	0.14	0.151	-	0.078	-	-	-	-	-
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		106	-	-	-	288	310	-	54.7	-	-	-	-	-
Thallium	mg/kg	-	-	2000		0.138	-	-	-	0.06	0.063	-	0.122	-	-	-	-	-
Tin	mg/kg	4	300	3000		2.27	-	-	-	4.33	5.03	-	3.75	-	-	-	-	-
Titanium	mg/kg	-	-	-		1270	-	-	-	1070	1040	-	166	-	-	-	-	-
Uranium	mg/kg	-	200 [#3]	2000 [#3]		0.401	-	-	-	0.508	0.517	-	0.454	-	-	-	-	-
Vanadium	mg/kg	250	-	6500		71.3	-	-	-	65.2	63.3	-	85.1	-	-	-	-	-
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		69	48	85.6	**1460**	**1950**	**1750**	140	146	-	60	172	69.6	-
Zirconium	mg/kg	-	-	-		8.19	-	-	-	13.1	13.7	-	5.68	-	-	-	-	-

NOTES:

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#2	Standard is pH dependant
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-	Not analyzed or no CSR standard exists.
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Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	APEC 10					APEC 11		APEC 12					APEC 13		
					Borehole	14BH33					14TP01		14BH28		14BH29		14BH30	14BH31		
					Field ID	14BH33-2	DUPD	14BH33-3	14BH33-5	14BH33-6	14TP01-1	14TP01-2	14BH28-2	14BH28-4	14BH29-1	14BH29-3	14BH30-2	14BH31-1	DUPC	14BH31-4
					Depth	1.1 - 1.24		2.4 - 2.55	4.27 - 4.42	5.74 - 6.02	1.0	1.2	0.8 - 0.95	3.88 - 4.0	0.4 - 0.5	2.35 - 2.49	1.98 - 2.13	0.5 - 0.7		3.35 - 3.51
					Date	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	18-Sep-2014	18-Sep-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014
Routine																				
pH (Lab)	pH Units	-	-	-		7.85	7.9	7.81	7.49	7.62	-	-	7.18	7.72	7.22	8.1	7.05	7.48	7.53	7.37
Calcium	mg/kg	-	-	-		-	-	-	-	-	-	-	28,200	4830	13,600	5560	2550	23,000	15,600	5910
Magnesium	mg/kg	-	-	-		-	-	-	-	-	-	-	4590	10,200	4620	12,400	8360	9070	8770	4520
Potassium	mg/kg	-	-	-		-	-	-	-	-	-	-	1230	1460	891	1800	1160	905	847	574
Sodium	mg/kg	-	-	-		-	-	-	-	-	-	-	831	1530	384	2140	2730	516	494	804
pH (Initial)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		-	-	-	-	-	12	7.3	18	11	-	8	15	10	10	-
pH (aqueous extract)	pH Units	-	-	-		7.85	7.9	7.81	7.49	7.62	-	-	7.18	7.72	7.22	8.1	7.05	7.48	7.53	7.37
pH (after HCL)	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																				
Aluminium	mg/kg	-	-	-		-	-	-	-	-	-	-	20,900	18,200	12,500	22,300	13,600	17,800	17,000	10,600
Antimony	mg/kg	4	40	400		-	-	-	-	-	-	-	0.76	0.56	1.93	0.48	0.56	2.35	0.95	0.12
Arsenic	mg/kg	10	25 [#1]	1000 [#1]		-	-	-	-	-	-	-	4.52	8.71	7.06	13.3	5.79	9.52	8.32	2.85
Barium	mg/kg	300	1500 [#1]	15,000 [#1]		-	-	-	-	-	-	-	493	93.9	191	126	110	129	116	43.7
Beryllium	mg/kg	1.5	8	80		-	-	-	-	-	-	-	0.57	0.48	0.43	0.61	0.48	0.51	0.47	<0.4
Bismuth	mg/kg	-	-	-		-	-	-	-	-	-	-	<0.1	0.12	0.1	0.14	0.1	0.11	0.11	<0.1
Cadmium	mg/kg	0.35	2 [#1,2]	1000 [#1]		0.2	0.164	0.173	-	-	-	-	0.326	0.238	0.296	0.234	0.16	0.352	0.393	0.132
Chromium (hexavalent)	mg/kg	90	60 [#1]	3000 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	mg/kg	90	60 [#1]	3000 [#1]		-	-	-	**91.6**	63.4	-	-	39.2	**92.9**	48.7	73	81	**109**	**102**	15.2
Chromium (Trivalent)	mg/kg	90	95 [#1]	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cobalt	mg/kg	50	300	1500		-	-	-	-	-	-	-	8.27	24.2	11.4	26.6	22.2	24.5	22.3	5.08
Copper	mg/kg	150	250 [#1]	2500 [#1]		-	-	-	-	-	-	-	50.5	60.2	69.7	51.2	54.7	84.4	79.7	18.1
Iron	mg/kg	-	-	-		-	-	-	-	-	-	-	17,700	39,100	26,500	44,800	31,400	28,000	26,500	13,300
Lead	mg/kg	30	700 [#1]	7000 [#1]		-	-	-	-	-	-	-	6.61	12.6	36.7	11.3	12.1	23.6	14.3	1.77
Lithium	mg/kg	-	20,000 [#3]	200,000 [#3]		-	-	-	-	-	-	-	26.2	31.7	22.2	38	17.3	24.4	24.2	16.1
Manganese	mg/kg	-	19,000 [#3]	-		-	-	-	-	-	-	-	290	615	406	1480	412	451	386	185
Mercury	mg/kg	0.025	40 [#1]	400 [#1]		-	-	-	-	-	-	-	0.098	0.175	0.369	0.553	0.236	0.568	0.52	<0.05
Molybdenum	mg/kg	1	40	400		-	-	-	-	-	-	-	2.58	4.27	2.62	2.99	4.27	3.69	3.37	0.48
Nickel	mg/kg	55	500	5000		-	-	-	-	-	-	-	73.1	150	89.2	131	122	182	171	15.7
Phosphorus (P)	mg/kg	-	-	-		-	-	-	-	-	-	-	862	391	347	741	430	301	280	463
Selenium	mg/kg	4	10	100		-	-	-	-	-	-	-	<0.5	0.68	0.72	<0.5	0.53	1.13	1.17	<0.5
Silver	mg/kg	1	40	400		-	-	-	-	-	-	-	0.087	0.119	0.116	0.084	0.102	0.309	0.162	<0.05
Strontium	mg/kg	-	100,000 [#3]	1,000,000 [#3]		-	-	-	-	-	-	-	677	108	208	73.1	175	161	141	45.4
Thallium	mg/kg	-	-	2000		-	-	-	-	-	-	-	<0.05	0.088	0.159	0.093	0.066	0.164	0.15	0.1
Tin	mg/kg	4	300	3000		-	-	-	-	-	-	-	0.68	1.09	3.05	0.73	0.77	4.16	1.43	0.2
Titanium	mg/kg	-	-	-		-	-	-	-	-	-	-	944	272	587	230	179	278	239	1010
Uranium	mg/kg	-	200 [#3]	2000 [#3]		-	-	-	-	-	-	-	0.682	1.04	0.484	0.576	1.23	0.415	0.399	0.372
Vanadium	mg/kg	250	-	6500		-	-	-	-	-	-	-	59.3	69.9	55.5	73.2	56	87.6	81	37.1
Zinc	mg/kg	100	150 [#1,2]	6000 [#1]		39.8	37.8	40.2	-	-	-	-	14.5	70.9	45.6	93.5	63.6	108	100	28.4
Zirconium	mg/kg	-	-	-		-	-	-	-	-	-	-	15	6.33	6.9	6.09	3.61	7.48	7	3.57

NOTES:

#1	Schedule 5 Substance
#2	Standard is pH dependant
#3	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 1																
					Borehole	14BH01					14BH02				14BH03			14BH04			14BH17	
					Field ID	14BH01-1	DUP 2	14BH01-2	14BH01-3	14BH01-5	14BH02-1	14BH02-2	14BH02-3	14BH02-4	14BH03-1	14BH03-2	14BH03-4	14BH04-2	14BH04-3	14BH04-4	14BH17-2	14BH17-3
					Depth	0.5 - 0.9		1.55 - 1.7	2.44 - 2.59	5.33 - 5.49	0.65 - 0.75	1.15 - 1.27	2.15 - 2.3	2.5 - 2.67	0.55 - 0.7	1.35 - 1.45	3.50 - 3.65	0.95 - 1.05	2.29 - 2.44	3.53 - 3.70	1.05 - 1.2	2.34 - 2.49
					Date	15-Sep-2014		15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	15-Sep-2014	15-Sep-2014
Routine																						
pH (Lab)	pH Units	-	-	-		7.39	7.42	7.53	7.16	-	7.75	7.51	7.25	6.87	7.93	7.21	-	7.19	7.13	7.19	7.4	6.6
Moisture	%	-	-	-		3.2	-	10	-	16	-	8.6	26	-	-	8.9	17	9.1	32	-	11	26
Hydrocarbons																						
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-		-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	-	2.5 [#1]	1500 [#1]		-	-	-	-	0.01	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	-	25 [#1]	250 [#1]		-	-	-	-	0.038	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	-	20 [#1]	200 [#1]		-	-	-	-	0.014	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes (m & p)	mg/kg	-	-	-		-	-	-	-	0.063	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	-	-	-		-	-	-	-	0.049	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes Total	mg/kg	-	50 [#1]	500 [#1]		-	-	-	-	0.11	-	-	-	-	-	-	-	-	-	-	-	-
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		-	-	1290	-	-	-	-	140	-	-	-	<100	496	-	-	-	-
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		-	-	1730	-	-	-	-	170	-	-	-	<100	572	-	-	-	-
HEPH	mg/kg	-	5000	50,000		-	-	1730	-	-	-	-	170	-	-	-	-	-	-	-	-	-
LEPH	mg/kg	-	2000	20,000		-	-	1280	-	-	-	-	137	-	-	-	-	-	-	-	-	-
VPH C_6-C_{10}	mg/kg	-	200	2000		-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-
Hazardous Waste Oil	%	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																						
Benzo(b+j)fluoranthene	mg/kg	-	-	-		-	-	<0.1	-	-	-	0.063	<0.05	-	-	0.088	-	-	<0.05	-	<0.05	0.084
2-methylnaphthalene	mg/kg	-	-	-		-	-	15	-	-	-	6.1	2.7	-	-	9.8	-	-	2.8	-	1.8	6.8
Acenaphthene	mg/kg	-	-	-		-	-	1.5	-	-	-	0.73	0.21	-	-	0.85	-	-	0.21	-	0.15	0.52
Acenaphthylene	mg/kg	-	-	-		-	-	<0.05	-	-	-	<0.05	<0.05	-	-	<0.05	-	-	<0.05	-	<0.05	<0.05
Anthracene	mg/kg		-	-		-	-	0.47	-	-	-	0.21	0.079	-	-	0.43	-	-	0.054	-	0.06	0.21
Benz(a)anthracene	mg/kg	-	10	100		-	-	0.35	-	-	-	0.17	0.054	-	-	0.25	-	-	<0.05	-	0.073	0.2
Benzo(a) pyrene	mg/kg	-	10 [#1]	100 [#1]		-	-	0.081	-	-	-	0.051	<0.05	-	-	0.056	-	-	<0.05	-	<0.05	0.058
Benzo(b)fluoranthene	mg/kg	-	10	100		-	-	<0.06	-	-	-	<0.05	<0.05	-	-	0.05	-	-	<0.05	-	<0.05	0.05
Benzo(g,h,i)perylene	mg/kg	-	-	-		-	-	<0.05	-	-	-	<0.05	<0.05	-	-	<0.05	-	-	<0.05	-	<0.05	<0.05
Benzo(k)fluoranthene	mg/kg	-	10	100		-	-	<0.05	-	-	-	<0.05	<0.05	-	-	<0.05	-	-	<0.05	-	<0.05	<0.05
Chrysene	mg/kg	-	-	-		-	-	0.22	-	-	-	0.14	0.051	-	-	0.2	-	-	<0.05	-	0.071	0.18
Dibenz(a,h)anthracene	mg/kg	-	10	100		-	-	<0.05	-	-	-	<0.05	<0.05	-	-	<0.05	-	-	<0.05	-	<0.05	<0.05
Fluoranthene	mg/kg	-	-	-		-	-	0.39	-	-	-	0.13	0.057	-	-	0.29	-	-	<0.05	-	0.075	0.23
Fluorene	mg/kg	-	-	-		-	-	0.14	-	-	-	0.062	<0.05	-	-	0.16	-	-	<0.05	-	<0.05	0.066
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		-	-	<0.05	-	-	-	<0.05	<0.05	-	-	<0.05	-	-	<0.05	-	<0.05	<0.05
Naphthalene	mg/kg	-	50	500		-	-	11	-	-	-	3.6	1.9	-	-	6.7	-	-	2.1	-	1.2	4.9
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	1.5	-	-	-	0.77	0.25	-	-	1.3	-	-	0.073	-	0.33	1.1
PAHs (Sum of total)	mg/kg	-	-	-		-	-	32	-	-	-	12	5.6	-	-	21	-	-	5.6	-	3.9	15
Phenanthrene	mg/kg	-	50	500		-	-	2.5	-	-	-	1	0.41	-	-	2.1	-	-	0.33	-	0.43	1.4
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	30	-	-	-	12	5.3	-	-	20	-	-	5.5	-	3.6	14
Pyrene	mg/kg		100	1000		-	-	0.51	-	-	-	0.23	0.091	-	-	0.4	-	-	0.073	-	0.11	0.31
Glycols																						
Tetraethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 [#1]	200,000 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil.
	- Toxicity to soil invertebrates and plants.
	- Groundwater flow to surface water used by marine aquatic life.
	Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 1												AEC 2				
					Borehole	14BH18			14BH19				14BH20					14BH05				
					Field ID	14BH18-1	14BH18-2	14BH18-3	14BH19-1	14BH19-3	DUP1	14BH19-4	14BH20-1	14BH20-2	14BH20-3	14BH20-4	14BH20-5	14BH05-2	14BH05-3	14BH05-5	14BH05-6	14BH05-7
					Depth	0.6 - 0.7	1.68 - 1.8	2.57 - 2.74	0.66 - 0.78	1.9 - 2.05		3.96 - 4.11	0.62 - 0.75	1.8 - 1.98	2.82 - 3.0	3.86 - 4.04	5.33 - 5.49	1.67 - 1.83	2.36 - 2.54	5.18 - 5.33	5.64 - 6.1	6.93 - 7.21
					Date	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014		15-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014
Routine																						
pH (Lab)	pH Units	-	-	-		7.91	7.25	7.4	7.16	7.18	7.06	7.19	7.48	7.48	7.34	7.37	7.71	6.4	-	-	-	-
Moisture	%	-	-	-		-	-	17	-	17	17	-	-	10	-	12	-	-	4.5	13	11	20
Hydrocarbons																						
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	-	2.5 [#1]	1500 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	-	25 [#1]	250 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	-	20 [#1]	200 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes (m & p)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes Total	mg/kg	-	50 [#1]	500 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		-	-	682	-	993	1190	-	-	403	-	-	-	-	722	1040	917	<100
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		-	-	658	-	1280	1920	-	-	501	-	-	-	-	926	1260	817	<100
HEPH	mg/kg	-	5000	50,000		-	-	658	-	1280	1920	-	-	501	-	-	-	-	925	1260	817	-
LEPH	mg/kg	-	2000	20,000		-	-	675	-	983	1170	-	-	397	-	-	-	-	714	1030	909	-
VPH C_6-C_{10}	mg/kg	-	200	2000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hazardous Waste Oil	%	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																						
Benzo(b+j)fluoranthene	mg/kg	-	-	-		-	-	<0.083	-	<0.075	0.23	-	-	0.068	-	-	-	-	0.23	0.25	<0.083	-
2-methylnaphthalene	mg/kg	-	-	-		-	-	9.1	-	11	15	-	-	6.3	-	-	-	-	8.3	13	9.3	-
Acenaphthene	mg/kg	-	-	-		-	-	0.7	-	1.3	1.4	-	-	<0.1	-	-	-	-	0.87	1.4	1.2	-
Acenaphthylene	mg/kg	-	-	-		-	-	<0.05	-	<0.05	<0.05	-	-	<0.05	-	-	-	-	<0.05	<0.05	<0.05	-
Anthracene	mg/kg		-	-		-	-	0.19	-	0.44	0.84	-	-	0.27	-	-	-	-	0.32	0.62	0.3	-
Benz(a)anthracene	mg/kg	-	10	100		-	-	0.21	-	0.22	0.56	-	-	0.17	-	-	-	-	0.41	0.42	0.19	-
Benzo(a) pyrene	mg/kg	-	10 [#1]	100 [#1]		-	-	<0.05	-	<0.05	0.17	-	-	<0.05	-	-	-	-	0.16	0.2	0.055	-
Benzo(b)fluoranthene	mg/kg	-	10	100		-	-	<0.05	-	<0.05	0.15	-	-	<0.05	-	-	-	-	0.15	0.15	<0.052	-
Benzo(g,h,i)perylene	mg/kg	-	-	-		-	-	<0.05	-	<0.05	0.088	-	-	<0.08	-	-	-	-	0.13	0.16	<0.05	-
Benzo(k)fluoranthene	mg/kg	-	10	100		-	-	<0.05	-	<0.05	<0.05	-	-	<0.05	-	-	-	-	<0.05	<0.05	<0.05	-
Chrysene	mg/kg	-	-	-		-	-	0.2	-	0.15	0.37	-	-	0.14	-	-	-	-	0.4	0.42	0.17	-
Dibenz(a,h)anthracene	mg/kg	-	10	100		-	-	<0.05	-	<0.05	<0.05	-	-	<0.05	-	-	-	-	<0.05	<0.05	<0.05	-
Fluoranthene	mg/kg	-	-	-		-	-	0.23	-	0.31	0.63	-	-	0.17	-	-	-	-	0.37	0.43	0.24	-
Fluorene	mg/kg	-	-	-		-	-	0.1	-	0.14	0.2	-	-	<0.06	-	-	-	-	0.15	0.62	0.6	-
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		-	-	<0.05	-	<0.05	0.06	-	-	<0.05	-	-	-	-	<0.05	0.056	<0.05	-
Naphthalene	mg/kg	-	50	500		-	-	5	-	7.6	11	-	-	4.4	-	-	-	-	4.8	7.8	5.6	-
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	0.98	-	1.1	3	-	-	0.78	-	-	-	-	2.3	2.6	1	-
PAHs (Sum of total)	mg/kg	-	-	-		-	-	18	-	24	34	-	-	13	-	-	-	-	19	29	20	-
Phenanthrene	mg/kg	-	50	500		-	-	2	-	1.9	2.9	-	-	1.1	-	-	-	-	2.5	2.8	1.7	-
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	17	-	23	31	-	-	12	-	-	-	-	17	27	19	-
Pyrene	mg/kg		100	1000		-	-	0.34	-	0.4	0.85	-	-	0.23	-	-	-	-	0.56	0.7	0.37	-
Glycols																						
Tetraethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 [#1]	200,000 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 2														
					Borehole	14BH06						14BH07				14BH08				
					Field ID	14BH06-2	14BH06-3	DUP 6	14BH06-4	14BH06-5	14BH06-6	14BH07-1	14BH07-3	14BH07-4	14BH07-5	14BH08-2	14BH08-3	14BH08-4	DUP 3	14BH08-5
					Depth	2.12 - 2.22	3.91 - 4.11		4.88 - 5.03	5.59 - 5.79	6.68 - 6.78	1.22 - 1.35	3.81 - 3.96	4.88 - 5.03	5.56 - 5.72	2.1 - 2.25	3.91 - 4.06	4.57 - 4.88		5.33 - 5.49
					Date	17-Sep-2014	17-Sep-2014		17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014		16-Sep-2014
Routine																				
pH (Lab)	pH Units	-	-	-		7.95	-	-	-	-	-	7.28	8.06	-	-	7.96	-	7.81	7.95	-
Moisture	%	-	-	-		14	13	14	37	25	22	9.1	6.2	22	17	17	10	33	24	27
Hydrocarbons																				
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	-	2.5 [#1]	1500 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	-	25 [#1]	250 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	-	20 [#1]	200 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes (m & p)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes Total	mg/kg	-	50 [#1]	500 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		881	1320	1400	**2340**	182	<100	-	261	403	<100	-	372	166	151	<100
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		1110	950	1020	782	196	<100	-	340	390	<100	-	375	209	182	<100
HEPH	mg/kg	-	5000	50,000		1110	-	-	781	196	-	-	340	389	-	-	-	209	181	-
LEPH	mg/kg	-	2000	20,000		868	-	-	**2340**	180	-	-	259	400	-	-	-	164	149	-
VPH C_6-C_{10}	mg/kg	-	200	2000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hazardous Waste Oil	%	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																				
Benzo(b+j)fluoranthene	mg/kg	-	-	-		0.096	-	-	<0.05	<0.05	-	<0.08	0.075	0.056	-	0.068	-	<0.05	<0.05	-
2-methylnaphthalene	mg/kg	-	-	-		17	-	-	1.9	1.9	-	14	1.7	3	-	7.5	-	2.5	2.7	-
Acenaphthene	mg/kg	-	-	-		<0.16	-	-	<0.16	<0.07	-	1.2	<0.08	<0.2	-	0.57	-	<0.06	<0.09	-
Acenaphthylene	mg/kg	-	-	-		<0.06	-	-	<0.12	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-
Anthracene	mg/kg		-	-		0.52	-	-	<0.1	0.12	-	0.39	0.12	0.15	-	0.21	-	0.11	0.1	-
Benz(a)anthracene	mg/kg	-	10	100		0.28	-	-	<0.05	0.069	-	0.22	0.13	0.093	-	0.14	-	0.064	0.06	-
Benzo(a) pyrene	mg/kg	-	10 [#1]	100 [#1]		0.11	-	-	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-
Benzo(b)fluoranthene	mg/kg	-	10	100		0.062	-	-	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-
Benzo(g,h,i)perylene	mg/kg	-	-	-		<0.05	-	-	<0.05	<0.05	-	<0.05	<0.12	<0.1	-	<0.05	-	<0.07	<0.07	-
Benzo(k)fluoranthene	mg/kg	-	10	100		<0.05	-	-	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-
Chrysene	mg/kg	-	-	-		0.21	-	-	<0.05	0.061	-	0.17	0.13	0.082	-	0.11	-	0.056	<0.05	-
Dibenz(a,h)anthracene	mg/kg	-	10	100		<0.05	-	-	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-
Fluoranthene	mg/kg	-	-	-		0.26	-	-	0.081	0.098	-	0.26	0.1	0.1	-	0.13	-	0.059	0.052	-
Fluorene	mg/kg	-	-	-		<0.16	-	-	<0.89	<0.11	-	0.13	<0.05	<0.13	-	0.086	-	<0.05	<0.05	-
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		<0.05	-	-	<0.05	<0.05	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-
Naphthalene	mg/kg	-	50	500		11	-	-	1	1.4	-	9.5	1	2.1	-	5.5	-	1.8	1.9	-
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		1.3	-	-	0.17	0.34	-	1	0.58	0.48	-	0.66	-	0.27	0.2	-
PAHs (Sum of total)	mg/kg	-	-	-		32	-	-	3.7	4	-	29	4.3	6.4	-	15	-	5.1	5.4	-
Phenanthrene	mg/kg	-	50	500		2	-	-	0.29	0.32	-	2	0.78	0.68	-	0.91	-	0.4	0.39	-
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		31	-	-	3.5	3.6	-	28	3.7	5.9	-	15	-	4.8	5.2	-
Pyrene	mg/kg		100	1000		0.37	-	-	0.093	0.11	-	0.37	0.15	0.15	-	0.21	-	0.086	0.085	-
Glycols																				
Tetraethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 [#1]	200,000 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 2														
					Borehole	14BH09								14BH26			14BH27			
					Field ID	14BH09-2	14BH09-3	14BH09-4	14BH09-5	DUP5	14BH09-6	14BH09-7	14BH09-8	14BH26-4	14BH26-5	14BH26-7	14BH27-4	DUPA	14BH27-5	14BH27-6
					Depth	2.13 - 2.29	4.04 - 4.17	4.77 - 4.90	5.18 - 5.44		6.86 - 7.01	8.31 - 8.46	8.76 - 8.92	4.27 - 4.42	5.1 - 5.25	6.88 - 7.01	3.76 - 4.0		5.05 - 5.23	5.72 - 5.84
					Date	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014		16-Sep-2014	16-Sep-2014	16-Sep-2014	12-Nov-2014	12-Nov-2014	12-Nov-2014	12-Nov-2014	12-Nov-2014	12-Nov-2014	12-Nov-2014
Routine																				
pH (Lab)	pH Units	-	-	-		7.78	7.32	-	6.54	-	7.77	7.12	-	-	-	7.79	-	-	-	-
Moisture	%	-	-	-		13	33	34	20	22	14	26	18	17	16	-	32	30	32	35
Hydrocarbons																				
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-		-	-	<10	110	73	-	-	-							
Benzene	mg/kg	-	2.5 [#1]	1500 [#1]		-	-	0.087	0.08	0.26	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	-	25 [#1]	250 [#1]		-	-	0.3	0.22	0.81	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	-	20 [#1]	200 [#1]		-	-	0.34	0.17	0.51	-	-	-	-	-	-	-	-	-	-
Xylenes (m & p)	mg/kg	-	-	-		-	-	0.85	0.49	1.5	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	-	-	-		-	-	0.35	0.23	0.69	-	-	-	-	-	-	-	-	-	-
Xylenes Total	mg/kg	-	50 [#1]	500 [#1]		-	-	1.2	0.72	2.1	-	-	-	-	-	-	-	-	-	-
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		-	493	1400	**10,100**	**10,400**	250	2050	<100	1210	1060	-	1240	1280	533	105
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		-	558	1420	3090	3330	294	**11,700**	202	1240	1120	-	1130	1070	409	111
HEPH	mg/kg	-	5000	50,000		-	557	1420	3090	3330	294	-	-	-	-	-	-	-	-	-
LEPH	mg/kg	-	2000	20,000		-	486	1390	**10,100**	**10,400**	245	-	-	-	-	-	-	-	-	-
VPH C_6-C_{10}	mg/kg	-	200	2000		-	-	<10	110	70	-	-	-	-	-	-	-	-	-	-
Hazardous Waste Oil	%	-	-	-		-	-	-	<0.5	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																				
Benzo(b+j)fluoranthene	mg/kg	-	-	-		0.085	<0.05	<0.05	0.099	<0.5	0.05	-	-	-	-	-	-	-	-	-
2-methylnaphthalene	mg/kg	-	-	-		25	11	12	18	18	5.7	-	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	-	-	-		0.97	<0.22	0.77	3.6	4.9	<0.17	-	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	-	-	-		<0.05	<0.12	<0.05	<1.5	<0.5	<0.05	-	-	-	-	-	-	-	-	-
Anthracene	mg/kg		-	-		0.42	0.13	0.21	<0.23	1	0.18	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	mg/kg	-	10	100		0.21	0.082	0.083	0.19	<0.5	0.11	-	-	-	-	-	-	-	-	-
Benzo(a) pyrene	mg/kg	-	10 [#1]	100 [#1]		0.05	<0.05	<0.05	0.054	<0.5	<0.05	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	-	10	100		0.053	<0.05	<0.05	0.066	<0.5	<0.05	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	-	-	-		<0.05	<0.06	<0.05	<0.17	<0.5	<0.066	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	-	10	100		<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-
Chrysene	mg/kg	-	-	-		0.19	0.089	0.1	0.22	<0.5	0.1	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	-	10	100		<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	-	-	-		0.31	0.098	0.14	0.4	0.57	0.089	-	-	-	-	-	-	-	-	-
Fluorene	mg/kg	-	-	-		0.36	<0.22	1.2	8.1	10	0.12	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	-	50	500		12	5	6.6	4.9	7.2	4	-	-	-	-	-	-	-	-	-
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		1.3	0.43	0.54	1.6	1.3	0.51	-	-	-	-	-	-	-	-	-
PAHs (Sum of total)	mg/kg	-	-	-		44	18	24	43	47	11	-	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	-	50	500		3.5	1.9	2.4	5	4.9	0.84	-	-	-	-	-	-	-	-	-
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		42	18	24	41	46	11	-	-	-	-	-	-	-	-	-
Pyrene	mg/kg		100	1000		0.45	0.16	0.22	0.69	0.77	0.15	-	-	-	-	-	-	-	-	-
Glycols																				
Tetraethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 [#1]	200,000 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
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CL	Commercial Land Use
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Site specific factors include:	- Intake of contaminated soil.
	- Toxicity to soil invertebrates and plants.
	- Groundwater flow to surface water used by marine aquatic life.
	Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 3															
					Borehole	14BH10						14BH11			14BH12				14BH13		
					Field ID	14BH10-1	14BH10-2	14BH10-3	14BH10-4	14BH10-5	14BH10-6	14BH11-2	14BH11-4	14BH11-6	14BH12-1	14BH12-2	DUP 8	14BH12-4	14BH13-1	14BH13-2	14BH13-4
					Depth	0.71 - 0.84	1.12 - 1.35	2.18 - 2.44	3.78 - 3.9	4.98 - 5.13		0.77 - 0.95	3.56 - 3.71	5.3 - 5.49	0.56 - 0.71	1.17 - 1.30		3.91 - 4.04	0.5 - 0.6	1.0 - 1.2	3.53 - 3.61
					Date	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014		17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014
Routine																					
pH (Lab)	pH Units	-	-	-		7.82	8.18	-	8.2	7.81		-	7.18	8.25	8.6	-	-	-	-	8.67	8.13
Moisture	%	-	-	-		9.2	5.8	5.7	19	22		5.2	18	22	5.6	10	14	22	8.7	5.7	18
Hydrocarbons																					
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-		-	350	600	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	-	2.5 #1	1500 #1		-	0.014	<0.005	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	-	25 #1	250 #1		-	0.071	0.051	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	-	20 #1	200 #1		-	2.3	2.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes (m & p)	mg/kg	-	-	-		-	14	15	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	-	-	-		-	8.5	9.5	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes Total	mg/kg	-	50 #1	500 #1		-	23	24	-	-	-	-	-	-	-	-	-	-	-	-	-
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HEPH	mg/kg	-	5000	50,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPH	mg/kg	-	2000	20,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VPH C_6-C_{10}	mg/kg	-	200	2000		-	**<u>320</u>**	**<u>570</u>**	-	-	-	-	-	-	-	-	-	-	-	-	-
Hazardous Waste Oil	%	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																					
Benzo(b+j)fluoranthene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
2-methylnaphthalene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.058	-
Acenaphthene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Acenaphthylene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Anthracene	mg/kg		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Benz(a)anthracene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Benzo(a) pyrene	mg/kg	-	10 #1	100 #1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Benzo(b)fluoranthene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Benzo(g,h,i)perylene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Benzo(k)fluoranthene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Chrysene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Dibenz(a,h)anthracene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Fluoranthene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Fluorene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Naphthalene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
PAHs (Sum of total)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.058	-
Phenanthrene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.058	-
Pyrene	mg/kg		100	1000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	-
Glycols																					
Tetraethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 #2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 #1	200,000 #1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 #2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
<u>Bold and Underlined</u>	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 3						AEC 4										
					Borehole	14BH34			14BH35			14BH14			14BH15			14BH16				14BH36
					Field ID	14BH34-01	14BH34-02	14BH34-04	14BH35-02	14BH35-03	14BH35-06	14BH14-1	14BH14-2	14BH14-3	14BH15-1	14BH15-2	14BH15-4	14BH16-1	DUP 10	14BH16-2	14BH16-4	14BH36-1
					Depth	0.4 - 0.55	1.15 - 1.28	3.4 - 3.5	1.32 - 1.45	2.18 - 2.36	4.72 - 4.87	0.3 - 0.43	0.83 - 0.96	2.13 - 2.25	0.62 - 0.76	2.5 - 2.64	4.27 - 4.42	0.74 - 0.9		1.98 - 2.13	4.04 - 4.14	0.38 - 0.5
					Date	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014		18-Sep-2014	18-Sep-2014	14-Nov-2014
Routine																						
pH (Lab)	pH Units	-	-	-		8.62	-	8.46	8.63	8.6	7.93	7.39	-	-	-	8.05	-	6.83	6.79	-	-	8.63
Moisture	%	-	-	-		7.3	10	22	6.3	6.4	27	10	4.3	36	18	6.9	13	12	11	13	14	7.4
Hydrocarbons																						
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-		-	<10	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	
Benzene	mg/kg	-	2.5 [#1]	1500 [#1]		-	<0.005	-	-	0.0061	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	-	25 [#1]	250 [#1]		-	<0.02	-	-	<0.02	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	-	20 [#1]	200 [#1]		-	<0.01	-	-	<0.01	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes (m & p)	mg/kg	-	-	-		-	<0.04	-	-	<0.04	-	-	-	-	-	-	-	-	-	-	-	-
Xylene (o)	mg/kg	-	-	-		-	<0.04	-	-	<0.04	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes Total	mg/kg	-	50 [#1]	500 [#1]		-	<0.04	-	-	<0.04	-	-	-	-	-	-	-	-	-	-	-	-
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HEPH	mg/kg	-	5000	50,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPH	mg/kg	-	2000	20,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VPH C_6-C_{10}	mg/kg	-	200	2000		-	<10	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-
Hazardous Waste Oil	%	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																						
Benzo(b+j)fluoranthene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	0.14	-	0.069	-	-	-	-
2-methylnaphthalene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	1.4	-	1.6	-	-	-	-
Acenaphthene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	<0.7	-	<0.17	-	-	-	-
Acenaphthylene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	-	-
Anthracene	mg/kg		-	-		-	-	-	-	-	-	-	-	-	-	0.21	-	0.069	-	-	-	-
Benz(a)anthracene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	0.25	-	0.092	-	-	-	-
Benzo(a) pyrene	mg/kg	-	10 [#1]	100 [#1]		-	-	-	-	-	-	-	-	-	-	<0.06	-	<0.05	-	-	-	-
Benzo(b)fluoranthene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	0.093	-	<0.05	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	-	-
Benzo(k)fluoranthene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	-	-
Chrysene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	0.28	-	0.097	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	-	-
Fluoranthene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	0.29	-	0.16	-	-	-	-
Fluorene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	<0.09	-	<0.05	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	<0.05	-	<0.05	-	-	-	-
Naphthalene	mg/kg	-	50	500		-	<0.05	-	-	<0.05	-	-	-	-	-	0.38	-	1	-	-	-	-
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	1.3	-	0.59	-	-	-	-
PAHs (Sum of total)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	5.7	-	3.7	-	-	-	-
Phenanthrene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	2.4	-	0.5	-	-	-	-
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	4.4	-	3.2	-	-	-	-
Pyrene	mg/kg		100	1000		-	-	-	-	-	-	-	-	-	-	0.37	-	0.17	-	-	-	-
Glycols																						
Tetraethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 [#1]	200,000 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 4		APEC 8						APEC 9			APEC 10		
					Borehole	14VP05		14BH21			14BH22			14BH23			14BH24		
					Field ID	14VP05-1	14VP05-2	14BH21-2	14BH21-3	14BH21-4	14BH22-2	14BH22-3	14BH22-4	14BH23-2	14BH23-3	DUP 13	14BH24-1	14BH24-2	14BH24-3
					Depth	0.35 - 0.45	0.85 - 0.95	1.25 - 1.5	2.13 - 2.29	3.75 - 3.91	1.25 - 1.4	2.08 - 2.24	4.88 - 5.28	2.44 - 2.74	3.78 - 3.96		0.63 - 0.75	1.2 - 1.25	2.13 - 2.29
					Date	14-Nov-2014	14-Nov-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014	19-Sep-2014		18-Sep-2014	18-Sep-2014	18-Sep-2014
Routine																			
pH (Lab)	pH Units	-	-	-		7.53	8.35	6.96	7.75	-	-	7.78	7.21	7.97	7.33	7.53	7.91	-	-
Moisture	%	-	-	-		14	7.1	9	9.3	17	22	12	-	9.3	22	19	7.3	9.3	11
Hydrocarbons																			
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-				-	-	-	-	-	-	-	70	-	-	-	-
Benzene	mg/kg	-	2.5 [#1]	1500 [#1]		-	-	-	-	-	-	-	-	-	1.1	-	-	-	-
Toluene	mg/kg	-	25 [#1]	250 [#1]		-	-	-	-	-	-	-	-	-	3.4	-	-	-	-
Ethylbenzene	mg/kg	-	20 [#1]	200 [#1]		-	-	-	-	-	-	-	-	-	0.65	-	-	-	-
Xylenes (m & p)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	3.6	-	-	-	-
Xylene (o)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	2.4	-	-	-	-
Xylenes Total	mg/kg	-	50 [#1]	500 [#1]		-	-	-	-	-	-	-	-	-	6	-	-	-	-
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		-	-	748	-	<100	285	489	-	492	425	403	144	685	576
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		-	-	893	-	<100	361	696	-	599	498	502	307	853	716
HEPH	mg/kg	-	5000	50,000		-	-	-	-	-	-	696	-	-	498	-	-	853	-
LEPH	mg/kg	-	2000	20,000		-	-	-	-	-	-	485	-	-	417	-	-	677	-
VPH C_6-C_{10}	mg/kg	-	200	2000		-	-	-	-	-	-	-	-	-	59	-	-	-	-
Hazardous Waste Oil	%	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																			
Benzo(b+j)fluoranthene	mg/kg	-	-	-		-	-	-	0.061	-	-	<0.05	-	-	0.054	-	-	0.082	-
2-methylnaphthalene	mg/kg	-	-	-		-	-	-	6	-	-	5.1	-	-	8.3	-	-	8.6	-
Acenaphthene	mg/kg	-	-	-		-	-	-	<0.69	-	-	<0.6	-	-	<0.11	-	-	<0.79	-
Acenaphthylene	mg/kg	-	-	-		-	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-
Anthracene	mg/kg		-	-		-	-	-	0.24	-	-	0.2	-	-	0.2	-	-	0.32	-
Benz(a)anthracene	mg/kg	-	10	100		-	-	-	0.16	-	-	0.13	-	-	0.14	-	-	0.21	-
Benzo(a) pyrene	mg/kg	-	10 [#1]	100 [#1]		-	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	0.063	-
Benzo(b)fluoranthene	mg/kg	-	10	100		-	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-
Benzo(g,h,i)perylene	mg/kg	-	-	-		-	-	-	<0.05	-	-	<0.05	-	-	<0.11	-	-	<0.05	-
Benzo(k)fluoranthene	mg/kg	-	10	100		-	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-
Chrysene	mg/kg	-	-	-		-	-	-	0.12	-	-	0.099	-	-	0.12	-	-	0.17	-
Dibenz(a,h)anthracene	mg/kg	-	10	100		-	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-
Fluoranthene	mg/kg	-	-	-		-	-	-	0.21	-	-	0.17	-	-	0.16	-	-	0.23	-
Fluorene	mg/kg	-	-	-		-	-	-	<0.08	-	-	<0.07	-	-	<0.05	-	-	<0.1	-
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		-	-	-	<0.05	-	-	<0.05	-	-	<0.05	-	-	<0.05	-
Naphthalene	mg/kg	-	50	500		-	-	-	3.5	-	-	3	-	-	6.8	-	-	5.9	-
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	-	0.83	-	-	0.64	-	-	0.68	-	-	1.1	-
PAHs (Sum of total)	mg/kg	-	-	-		-	-	-	12	-	-	9.9	-	-	17	-	-	17	-
Phenanthrene	mg/kg	-	50	500		-	-	-	1.1	-	-	0.97	-	-	1.2	-	-	1.7	-
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		-	-	-	11	-	-	9.3	-	-	17	-	-	16	-
Pyrene	mg/kg		100	1000		-	-	-	0.28	-	-	0.23	-	-	0.2	-	-	0.33	-
Glycols																			
Tetraethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 [#1]	200,000 [#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 [#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil.
	- Toxicity to soil invertebrates and plants.
	- Groundwater flow to surface water used by marine aquatic life.
	Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	APEC 10															APEC 11	
					Borehole	14BH25						14BH32				14BH33					14TP01	
					Field ID	14BH25-1	14BH25-2	DUP 11	14BH25-3	14BH25-4	14BH25-5	14BH32-1	14BH32-2	14BH32-3	14BH32-5	14BH33-2	DUPD	14BH33-3	14BH33-5	14BH33-6	14TP01-1	14TP01-2
					Depth	1.05 - 1.25	1.85 - 2.1		2.72 - 2.84	3.73 - 3.85		0.5 - 0.67	1.25 - 1.4	2.5 - 2.67	4.27 - 4.42	1.1 - 1.24		2.4 - 2.55	4.27 - 4.42	5.74 - 6.02	1.0	1.2
					Date	18-Sep-2014	18-Sep-2014		18-Sep-2014	18-Sep-2014	18-Sep-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	18-Sep-2014	18-Sep-2014
Routine																						
pH (Lab)	pH Units	-	-	-		7.01	6.84	6.86	6.84	7.38	7.31	7.77	7.77	7.66	8.28	7.85	7.9	7.81	7.49	7.62	-	-
Moisture	%	-	-	-		25	27	24	12	16		-	6.6	-	-	-	-	-	-	-	12	7.3
Hydrocarbons																					-	-
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-		-	-	-	-	-	-										170	<10
Benzene	mg/kg	-	2.5 #1	1500 #1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.79	<0.005
Toluene	mg/kg	-	25 #1	250 #1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	<0.02
Ethylbenzene	mg/kg	-	20 #1	200 #1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	<0.01
Xylenes (m & p)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.7	<0.04
Xylene (o)	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.3	<0.04
Xylenes Total	mg/kg	-	50 #1	500 #1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	<0.04
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		-	-	-	440	-	-	-	-	-	-	-	-	-	-	-	-	-
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		-	-	-	584	-	-	-	-	-	-	-	-	-	-	-	-	-
HEPH	mg/kg	-	5000	50,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPH	mg/kg	-	2000	20,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VPH C_6-C_{10}	mg/kg	-	200	2000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	160	<10
Hazardous Waste Oil	%	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																						
Benzo(b+j)fluoranthene	mg/kg	-	-	-		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
2-methylnaphthalene	mg/kg	-	-	-		-	1.3	1.4	-	-		-	-	-	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	-	-	-		-	<0.14	<0.13	-	-		-	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	-	-	-		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Anthracene	mg/kg		-	-		-	0.052	0.056	-	-		-	-	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	mg/kg	-	10	100		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Benzo(a) pyrene	mg/kg	-	10 #1	100 #1		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	-	10	100		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	-	-	-		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	-	10	100		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Chrysene	mg/kg	-	-	-		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	-	10	100		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	-	-	-		-	0.054	0.057	-	-		-	-	-	-	-	-	-	-	-	-	-
Fluorene	mg/kg	-	-	-		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		-	<0.05	<0.05	-	-		-	-	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	-	50	500		-	0.83	0.91	-	-		-	-	-	-	-	-	-	-	-	6.1	<0.05
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		-	0.13	0.14	-	-		-	-	-	-	-	-	-	-	-	0.74	<0.05
PAHs (Sum of total)	mg/kg	-	-	-		-	2.6	2.8	-	-		-	-	-	-	-	-	-	-	-	17	<0.05
Phenanthrene	mg/kg	-	50	500		-	0.3	0.31	-	-		-	-	-	-	-	-	-	-	-	-	-
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		-	2.5	2.7	-	-		-	-	-	-	-	-	-	-	-	17	<0.05
Pyrene	mg/kg		100	1000		-	0.076	0.079	-	-		-	-	-	-	-	-	-	-	-	-	-
Glycols																						
Tetraethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 #2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 #1	200,000 #1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 #2		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 3: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	APEC 12					APEC 13		
					Borehole	14BH28		14BH29		14BH30	14BH31		
					Field ID	14BH28-2	14BH28-4	14BH29-1	14BH29-3	14BH30-2	14BH31-1	DUPC	14BH31-4
					Depth	0.8 - 0.95	3.88 - 4.0	0.4 - 0.5	2.35 - 2.49	1.98 - 2.13	0.5 - 0.7		3.35 - 3.51
					Date	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014
Routine													
pH (Lab)	pH Units	-	-	-		7.18	7.72	7.22	8.1	7.05	7.48	7.53	7.37
Moisture	%	-	-	-		18	11	-	8	15	10	10	-
Hydrocarbons													
Volatile Hydrocarbons (VH6-10)	mg/kg	-	-	-		-	-	-	-	-	-	-	-
Benzene	mg/kg	-	2.5 [#1]	1500 [#1]		1.6	-	-	-	-	-	-	-
Toluene	mg/kg	-	25 [#1]	250 [#1]		4.5	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	-	20 [#1]	200 [#1]		0.8	-	-	-	-	-	-	-
Xylenes (m & p)	mg/kg	-	-	-		5.1	-	-	-	-	-	-	-
Xylene (o)	mg/kg	-	-	-		3.8	-	-	-	-	-	-	-
Xylenes Total	mg/kg	-	50 [#1]	500 [#1]		8.9	-	-	-	-	-	-	-
EPH C_{10}-C_{19}	mg/kg	-	2000*	20,000*		341	-	-	<100	1220	-	-	-
EPH C_{19}-C_{32}	mg/kg	-	5000*	50,000*		435	-	-	132	1340	-	-	-
HEPH	mg/kg	-	5000	50,000		-	-	-	131	1340	-	-	-
LEPH	mg/kg	-	2000	20,000		-	-	-	<100	1210	-	-	-
VPH C_6-C_{10}	mg/kg	-	200	2000		60	-	-	-	-	-	-	-
Hazardous Waste Oil	%	-	-	-		-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)													
Benzo(b+j)fluoranthene	mg/kg	-	-	-		-	0.09	-	<0.05	0.057	-	-	-
2-methylnaphthalene	mg/kg	-	-	-		-	18	-	1.8	13	-	-	-
Acenaphthene	mg/kg	-	-	-		-	<0.12	-	<0.05	<0.099	-	-	-
Acenaphthylene	mg/kg	-	-	-		-	<0.05	-	<0.05	<0.061	-	-	-
Anthracene	mg/kg		-	-		-	0.49	-	0.054	0.36	-	-	-
Benz(a)anthracene	mg/kg	-	10	100		-	0.24	-	0.052	0.17	-	-	-
Benzo(a) pyrene	mg/kg	-	10 [#1]	100 [#1]		-	0.076	-	<0.05	<0.05	-	-	-
Benzo(b)fluoranthene	mg/kg	-	10	100		-	0.051	-	<0.05	<0.05	-	-	-
Benzo(g,h,i)perylene	mg/kg	-	-	-		-	<0.17	-	<0.05	<0.18	-	-	-
Benzo(k)fluoranthene	mg/kg	-	10	100		-	<0.05	-	<0.05	<0.05	-	-	-
Chrysene	mg/kg	-	-	-		-	0.19	-	0.055	0.14	-	-	-
Dibenz(a,h)anthracene	mg/kg	-	10	100		-	<0.05	-	<0.05	<0.05	-	-	-
Fluoranthene	mg/kg	-	-	-		-	0.32	-	0.059	0.29	-	-	-
Fluorene	mg/kg	-	-	-		-	<0.16	-	<0.05	<0.089	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	-	10	100		-	<0.05	-	<0.05	<0.05	-	-	-
Naphthalene	mg/kg	-	50	500		3	15	-	1.4	9.6	-	-	-
Heavy Molecular Wt. PAH Sum	mg/kg	-	-	-		-	1.3	-	0.24	0.96	-	-	-
PAHs (Sum of total)	mg/kg	-	-	-		-	37	-	3.9	26	-	-	-
Phenanthrene	mg/kg	-	50	500		-	2.1	-	0.34	2.1	-	-	-
Light Molecular Wt. PAH Sum	mg/kg	-	-	-		-	36	-	3.6	25	-	-	-
Pyrene	mg/kg		100	1000		-	0.37	-	0.072	0.31	-	-	-
Glycols													
Tetraethylene Glycol	mg/kg	-	-	-		<10	-	-	-	-	-	-	-
Diethylene glycol	mg/kg	-	6200	62,000 [#2]		<10	-	-	-	-	-	-	-
Ethylene glycol	mg/kg	-	1500 [#1]	200,000 [#1]		<10	-	-	-	-	-	-	-
Propylene glycol	mg/kg	-	100,000	1,000,000 [#2]		<10	-	-	-	-	-	-	-
Triethylene Glycol	mg/kg	-	-	-		<10	-	-	-	-	-	-	-

NOTES:

#1	Schedule 5 Substance
#2	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C_{10}-C_{19} concentrations compared to the LEPH standard and EPH C_{19}-C_{32} concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil.
	- Toxicity to soil invertebrates and plants.
	- Groundwater flow to surface water used by marine aquatic life.
	Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 4: Soil Analytical Results - VOCs and Phenols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 1			AEC 2			AEC 3																AEC 3						
					Borehole	14BH01	14BH02	14BH04	14BH09			14BH10						14BH11			14BH12				14BH13			14BH34			14BH35			
					Field ID	14BH01-5	14BH02-2	14BH04-2	14BH09-4	14BH09-5	DUP5	14BH10-1	14BH10-2	14BH10-3	14BH10-4	14BH10-5	14BH10-6	14BH11-2	14BH11-4	14BH11-6	14BH12-1	14BH12-2	DUP 8	14BH12-4	14BH13-1	14BH13-2	14BH13-4	14BH34-01	14BH34-02	14BH34-04	14BH35-02	14BH35-03	14BH35-06	14BH14-1
					Depth	5.33 - 5.49	1.15 - 1.27	0.95 - 1.05	4.77 - 4.90	5.18 - 5.44		0.71 - 0.84	1.12 - 1.35	2.18 - 2.44	3.78 - 3.9	4.98 - 5.13		0.77 - 0.95	3.56 - 3.71	5.3 - 5.49	0.56 - 0.71	1.17 - 1.30		3.91 - 4.04	0.5 - 0.6	1.0 - 1.2	3.53 - 3.61	0.4 - 0.55	1.15 - 1.28	3.4 - 3.5	1.32 - 1.45	2.18 - 2.36	4.72 - 4.87	0.3 - 0.43
					Date	15-Sep-2014	15-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014		17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014		17-Sep-2014	17-Sep-2014	17-Sep-2014	17-Sep-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	18-Sep-2014
Routine																																		
pH (Lab)	pH Units	-	-	-		-	7.51	7.19	-	6.54	-	7.82	8.18	-	8.2	7.81	-	-	7.18	8.25	8.6	-	-	-	-	8.67	8.13	8.62	-	8.46	8.63	8.6	7.93	7.39
Volatile Organic Compounds (VOCs)																																		
pH of Leaching Fluid	pH Units	-	-	-		-	-	4.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	mg/kg	-	73[#1]	730[#1]		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	mg/kg	-	50	500		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/kg	-	9.3[#1]	93[#1]		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	mg/kg	-	50	500		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	mg/kg	-	50	500		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	mg/kg	-	50	500		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	mg/kg	-	10	100		-	-	-	<0.025	<0.025	-	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	-	10	100		-	-	-	<0.025	<0.025	-	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	mg/kg	-	-	-		-	-	-	1.6	2.3	-	-	160	130	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	<0.2	-	-
1,2-Dibromoethane	mg/kg	-	0.73[#1]	7.3[#1]		-	-	-	<0.025	<0.025	-	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.025	-	-	<0.025	-	-
1,2-Dichlorobenzene	mg/kg	-	10	100		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	mg/kg	-	50	500		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.025	-	-	<0.025	-	-
1,2-Dichloropropane	mg/kg	-	50	90,000		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	mg/kg	-	-	-		-	-	-	0.4	0.32	-	-	33	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	<0.2	-	-
1,3-Butadiene	mg/kg	-	1.2[#1]	12[#1]		-	-	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	<0.1	-	-
1,3-Dichlorobenzene	mg/kg	-	10	100		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	-	10	100		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	mg/kg	-	92[#1]	920[#1]		-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	mg/kg	-	18[#1]	180[#1]		-	-	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	mg/kg	-	2200[#1]	22,000[#1]		-	-	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	mg/kg	-	13[#1]	130[#1]		-	-	-	<0.3	<0.3	<0.3	-	<0.3	<0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	mg/kg	-	50	500		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	mg/kg	-	10	100		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	mg/kg	-	26[#1]	260[#1]		-	-	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	mg/kg	-	65[#1]	650[#1]		-	-	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	mg/kg	-	50	500		-	-	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	mg/kg	-	160[#1]	1600[#1]		-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-dichloroethene	mg/kg	-	50	500		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-dichloropropene	mg/kg	-	50	500		-	-	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decane	mg/kg	-	-	-		-	-	-	<2	<3.5	-	-	160	150	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	-	-	<2	-	-
Dibromomethane	mg/kg	-	230[#1]	2300[#1]		-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	mg/kg	-	50	500		-	-	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	-	220[#1,3]	2200[#1,3]		-	-	-	<0.2	<0.2	-	-	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexane	mg/kg	-	-	-		-	-	-	<0.5	<0.5	-	-	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	-	-	<0.5	-	-
Isopropylbenzene	mg/kg	-	-	-		-	-	-	<0.2	0.38	-	-	1.9	2.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	<0.2	-	-
Methylcyclohexane	mg/kg	-	-	-		-	-	-	0.45	0.28	-	-	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.2	-	-	<0.2	-	-
MTBE	mg/kg	-	700[#1]	7000[#1]		<0.1	-	-	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	<0.1	-	-
Styrene	mg/kg	-	50	500		<0.03	-	-	<0.03	<0.03	<0.03	-	<0.03	<0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	mg/kg	-	0.65[#2]	500[#2]		-	-	-	<0.009	<0.009	<0.009	-	<0.009	<0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	mg/kg	-	5[#2]	500[#2]		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-dichloroethene	mg/kg	-	50	500		-	-	-	<0.025	<0.025	<0.025	-	<0.025	<0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-dichloropropene	mg/kg	-	50	500		-	-	-	<0.05	<0.05	<0.05	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	mg/kg	-	2000[#1]	20,000[#1]		-	-	-	<0.2	<0.2	<0.2	-	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	mg/kg	-	7.5[#1]	75[#1]		-	-	-	<0.06	<0.06	<0.06	-	<0.06	<0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenols																																		
2,3- Dichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.05	<0.005	<0.005	<0.05	<0.05	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,3,4,5-tetrachlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	0.094	<0.05	<0.005	<0.005	0.6	<0.05	0.01	0.41	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	0.046	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,3,4,6-tetrachlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	0.16	**170**	**57**	1.5	**6.9**	0.14	0.0063	2.5	0.098	<0.005	0.55	0.81	<0.005	<0.05	<0.005	0.012	<0.005	-	<0.005	0.037	0.045	<0.025	0.17
2,3,4-Trichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.05	<0.005	<0.005	0.41	<0.05	<0.005	0.67	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,3,5,6-Tetrachlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.05	<0.005	<0.005	<0.05	<0.05	<0.005	0.074	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,3,5-Trichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.05	<0.005	<0.005	0.11	<0.05	<0.005	0.54	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,3,6-Trichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.05	<0.0061	<0.005	<0.05	<0.05	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,4,5-trichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	0.19	**6.7**	2.8	1.8	2.5	<0.05	<0.005	0.44	<0.05	<0.005	0.015	0.029	<0.005	<0.05	<0.005	0.011	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,4,6-trichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.092	<0.036	<0.005	<0.05	<0.05	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,4-dimethylphenol	mg/kg	-	10	100		-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5
2,4-dinitrophenol	mg/kg	-	10	100		-	<0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.8
2,6-dichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.05	<0.13	<0.21	<0.05	<0.05	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2,6-Dimethylphenol	mg/kg	-	370	3700[#1]		-	<0.5	-	-	-	-	-	<0.5	<0.05	<0.05	-	<0.5	<0.05	<0.05	-	<0.05	<0.05	<0.05	<0.05	<0.5	<0.05	-	-	-	-	-	-	-	<0.5
2,4 & 2,5-Dichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.05	<0.005	<0.16	0.46	<0.05	<0.005	<0.012	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2-chlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	<0.05	<0.05	<0.005	<0.005	<0.05	<0.05	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	<0.005	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
2-methylphenol	mg/kg	-	10	100		-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5
2-nitrophenol	mg/kg	-	10	100		-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5
3 & 4 -Chlorophenol	mg/kg	-	5	50		-	<0.059	-	-	-	-	**6.1**	<0.66	<0.24	<0.22	4.3	<0.12	<0.005	<0.017	<0.05	<0.005	<0.005	<0.005	<0.005	0.12	<0.005	<0.0086	<0.005	-	<0.005	<0.005	<0.005	<0.025	0.072
3-&4-methylphenol	mg/kg	-	10	100		-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5
3,4 Dichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	1.1	0.34	0.068	4	**10**	<0.1	<0.005	1.8	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	0.033	<0.005	-	<0.005	<0.005	<0.005	<0.077	<0.05
3,4-Dimethylphenol	mg/kg	-	620	6200[#1]		-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5
3,5-Dichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	0.79	<0.05	<0.005	<0.005	1.2	<0.05	<0.005	0.43	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	0.052	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
4,6-Dinitro-2-methylphenol	mg/kg	-	10	100		-	<0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.8
4-nitrophenol	mg/kg	-	10	100		-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5
3,4,5-Trichlorophenol	mg/kg	-	5	50		-	<0.05	-	-	-	-	0.64	0.073	<0.036	0.098	1.3	<0.05	<0.005	0.57	<0.05	<0.005	<0.005	<0.005	<0.005	<0.073	<0.005	0.039	<0.005	-	<0.005	<0.005	<0.005	<0.025	<0.05
dichlorophenols	mg/kg	-	-	-		-	-	-	-	-	-	1.8	-	-	-	12	-	-	-	<0.05	-	-	-	-	-	-	0.085	<0.005	-	<0.005	<0.005	<0.005	<0.077	-
monochlorophenols	mg/kg	-	-	-		-	-	-	-	-	-	6.1	-	-	-	4.3	-	-	-	<0.05	-	-	-	-	-	-	<0.0086	<0.005	-	<0.005	<0.005	<0.005	<0.025	-
Pentachlorophenol	mg/kg	-	0.15[#2]	500[#2]		-	<0.05	-	-	-	-	**0.4**	**140**	**25**	**0.87**	**1.4**	0.083	0.035	**1.5**	0.12	0.0053	0.01	0.012	<0.005	0.061	<0.005	0.052	0.014	-	<0.005	0.053	0.052	<0.025	**0.27**
trichlorophenols	mg/kg	-	-	-		-	-	-	-	-	-	0.83	-	-	-	4.3	-	-	-	<0.05	-	-	-	-	-	-	0.051	<0.005	-	<0.005	<0.005	<0.005	<0.025	-
Tetrachlorophenol	mg/kg	-	-	-		-	-	-	-	-	-	0.25	-	-	-	7.5	-	-	-	0.098	-	-	-	-	-	-	0.058	<0.005	-	<0.005	0.037	0.045	<0.025	-
Phenol	mg/kg	-	10	100		-	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5
Total Chlorophenols	mg/kg	-	-	-		-	-	-	-	-	-	9.4	-	-	-	29	-	-	-	0.22	-	-	-	-	-	-	0.25	0.014	-	<0.005	0.09	0.097	<0.077	-

NOTES:

#1	Schedule 10 Substance
#2	Schedule 5 Substance
#3	Standard is for 1,3-Hexachlorobutadiene
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 4: Soil Analytical Results - VOCs and Phenols

Parameter	Unit	Protocol 4	CSR - CL/IL	Protocol 11 - Upper Cap Concentration	APEC/AEC	AEC 4												APEC 9	APEC 10			APEC 11		APEC 12	APEC 13	
					Borehole	14BH14		14BH15			14BH16				14BH36	14VP05		14BH23	14BH24	14BH25	14BH32	14TP01		14BH28	14BH31	
					Field ID	14BH14-2	14BH14-3	14BH15-1	14BH15-2	14BH15-4	14BH16-1	DUP 10	14BH16-2	14BH16-4	14BH36-1	14VP05-1	14VP05-2	14BH23-3	14BH24-3	14BH25-1	14BH32-2	14TP01-1	14TP01-2	14BH28-2	14BH31-1	DUPC
					Depth	0.83 - 0.96	2.13 - 2.25	0.62 - 0.76	2.5 - 2.64	4.27 - 4.42	0.74 - 0.9		1.98 - 2.13	4.04 - 4.14	0.38 - 0.5	0.35 - 0.45	0.85 - 0.95	3.78 - 3.96	2.13 - 2.29	1.05 - 1.25	1.25 - 1.4	1.0	1.2	0.8 - 0.95	0.5 - 0.7	
					Date	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014	18-Sep-2014		18-Sep-2014	18-Sep-2014	14-Nov-2014	14-Nov-2014	14-Nov-2014	19-Sep-2014	18-Sep-2014	18-Sep-2014	13-Nov-2014	18-Sep-2014	18-Sep-2014	13-Nov-2014	13-Nov-2014	13-Nov-2014
Routine																										
pH (Lab)	pH Units	-	-	-		-	-	-	8.05	-	6.83	6.79	-	-	8.63	7.53	8.35	7.33	-	7.01	7.77	-	-	7.18	7.48	7.53
Volatile Organic Compounds (VOCs)																										
pH of Leaching Fluid	pH Units	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	mg/kg	-	73[#1]	730[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/kg	-	9.3[#1]	93[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.2	<0.2	-	-	-
1,2,4-Trimethylbenzene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2	-	-
1,2-Dibromoethane	mg/kg	-	0.73[#1]	7.3[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.025	-	-
1,2-Dichlorobenzene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.025	-	-
1,2-Dichloropropane	mg/kg	-	50	90,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	<0.2	0.69	-	-
1,3-Butadiene	mg/kg	-	1.2[#1]	12[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-
1,3-Dichlorobenzene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	mg/kg	-	92[#1]	920[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	mg/kg	-	18[#1]	180[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	mg/kg	-	2200[#1]	22,000[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	mg/kg	-	13[#1]	130[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	mg/kg	-	10	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	mg/kg	-	26[#1]	260[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	mg/kg	-	65[#1]	650[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	mg/kg	-	160[#1]	1600[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-dichloroethene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-dichloropropene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decane	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.5	<2	<2.6	-	-
Dibromomethane	mg/kg	-	230[#1]	2300[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	-	220[#1,3]	2200[#1,3]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexane	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-
Isopropylbenzene	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.49	-	-
Methylcyclohexane	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-
MTBE	mg/kg	-	700[#1]	7000[#1]		-	-	-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	<0.1	-	-
Styrene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	<0.03	-	-	-	-	-	-	-	-
Trichloroethene	mg/kg	-	0.65[#2]	500[#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	mg/kg	-	5[#2]	500[#2]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-dichloroethene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-dichloropropene	mg/kg	-	50	500		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	mg/kg	-	2000[#1]	20,000[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	mg/kg	-	7.5[#1]	75[#1]		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenols																										
2,3- Dichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2,3,4,5-tetrachlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2,3,4,6-tetrachlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.091	<0.025	-	-	-	<0.025	<0.025
2,3,4-Trichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2,3,5,6-Tetrachlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2,3,5-Trichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2,3,6-Trichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2,4,5-trichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2,4,6-trichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2,4-dimethylphenol	mg/kg	-	10	100		<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.51	<0.5	-	-	-	-	<0.5	<0.5	-	-	-	-	-	-
2,4-dinitrophenol	mg/kg	-	10	100		<0.08	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	-	-	-	-	<0.8	<0.8	-	-	-	-	-	-
2,6-dichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.13	<0.11	<0.05	<0.05	<0.097	<0.082	<0.005	<0.01	<0.005	-	<0.06	<0.13	<0.025	-	-	-	<0.025	<0.025
2,6-Dimethylphenol	mg/kg	-	370	3700[#1]		<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	-	-	-	-	-
2,4 & 2,5-Dichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.058	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2-chlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
2-methylphenol	mg/kg	-	10	100		<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	-	-	-	-	-
2-nitrophenol	mg/kg	-	10	100		<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	-	-	-	-	-
3 & 4 -Chlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	0.22	0.3	0.073	0.084	0.26	0.22	<0.005	<0.01	<0.005	-	0.2	0.39	<0.025	-	-	-	<0.025	<0.025
3-&4-methylphenol	mg/kg	-	10	100		<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	<0.5	0.51	-	-	-	-	-	-
3,4 Dichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	<0.010	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
3,4-Dimethylphenol	mg/kg	-	620	6200[#1]		<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	-	-	-	-	-
3,5-Dichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.065	<0.059	<0.05	<0.05	<0.063	<0.056	<0.005	<0.010	<0.005	-	<0.05	<0.079	<0.025	-	-	-	<0.025	<0.025
4,6-Dinitro-2-methylphenol	mg/kg	-	10	100		<0.08	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	-	-	-	-	<0.8	<0.8	-	-	-	-	-	-
4-nitrophenol	mg/kg	-	10	100		<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	-	-	-	-	-
3,4,5-Trichlorophenol	mg/kg	-	5	50		<0.005	<0.05	<0.05	<0.21	<0.17	<0.054	<0.05	<0.13	<0.1	<0.005	<0.010	<0.005	-	<0.062	<0.15	<0.025	-	-	-	<0.025	<0.025
dichlorophenols	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	<0.005	<0.01	<0.005	-	-	-	<0.025	-	-	-	<0.025	<0.025
monochlorophenols	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	<0.005	<0.01	<0.005	-	-	-	<0.025	-	-	-	<0.025	<0.025
Pentachlorophenol	mg/kg	-	0.15[#2]	500[#2]		0.0064	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.005	0.01	<0.005	-	<0.05	<0.05	<0.025	-	-	-	<0.025	<0.025
trichlorophenols	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	<0.005	<0.01	<0.005	-	-	-	<0.025	-	-	-	<0.025	<0.025
Tetrachlorophenol	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	<0.005	<0.01	<0.005	-	-	-	<0.025	-	-	-	<0.025	<0.025
Phenol	mg/kg	-	10	100		<0.05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	-	-	-	-	-
Total Chlorophenols	mg/kg	-	-	-		-	-	-	-	-	-	-	-	-	<0.005	0.01	<0.005	-	-	-	<0.025	-	-	-	<0.025	<0.025

NOTES:

#1	Schedule 10 Substance
#2	Schedule 5 Substance
#3	Standard is for 1,3-Hexachlorobutadiene
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR CL/IL standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 5: Leachable Soil Analytical Results

Parameter	Units	CSR - AW	Protocol 11 - Upper Cap Concentration	HWR	APEC	AEC 1						AEC 2		AEC 3		AEC4
					Borehole	14BH01	14BH02	14BH04	14BH18	14BH20		14BH09		14BH10	14BH11	14VP05
					Sample ID	14BH01-1	14BH02-2	14BH04-2	14BH18-2	14BH20-2	14BH20-4	14BH09-5	14BH09-6	14BH10-2	14BH11-4	14VP05-1
					Date	15-Sep-2014	15-Sep-2014	15-Sep-2014	15-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	16-Sep-2014	17-Sep-2014	17-Sep-2014	14-Nov-2014
Oil & Grease																
Hazardous Waste Oil	%	NS	NS	NS		-	-	-	-	-	-	<0.50	-	-	-	-
SPLP Metals																
Arsenic	mg/L	0.125	1.25	NS		-	-	-	-	-	-	-	-	-	-	0.0023
Cadmium (Cd)	mg/L	0.001	0.01	NS		-	-	-	-	-	-	-	-	-	-	-
Chromium (Cr)	mg/L	0.15	1.5	NS		0.0011	<0.0010	0.0101	-	0.0403	0.0231	-	0.0021	-	-	-
Copper (Cu)	mg/L	0.02	0.2	NS		-	-	-	**0.0261**	-	-	-	-	-	-	-
Zinc (Zn)	mg/L	0.1	1	NS		-	-	-	-	-	-	-	-	-	-	-
TCLP Metals																
Chromium (Cr)	mg/L	NS	NS	5		-	-	<0.10	-	-	-	-	-	-	-	-
Total Chlorophenols	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	3.5	-	-
Total Dichlorophenols	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.05	-	-
Total Monochlorophenols	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.05	-	-
Total Tetrachlorophenols	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	2.4	-	-
Total Trichlorophenols	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	0.099	-	-
2,3,4,5-tetrachlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.05	-	-
2,3,4,6-tetrachlorophenol	mg/L	NS	NS	10		-	-	-	-	-	-	-	-	2.4	-	-
2,3,4-trichlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	0.0006	-	-
2,3,5,6-tetrachlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.05	-	-
2,3,5-trichlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.0005	-	-
2,3,6-Trichlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.0005	-	-
2,3-Dichlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.0005	-	-
2,4 + 2,5-Dichlorophenol	mg/L	NS	NS	90		-	-	-	-	-	-	-	-	<0.0005	-	-
2,4,5-trichlorophenol	mg/L	NS	NS	400		-	-	-	-	-	-	-	-	0.097	-	-
2,4,6-trichlorophenol	mg/L	NS	NS	0.5		-	-	-	-	-	-	-	-	0.0022	-	-
2,6-dichlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.0005	-	-
2-chlorophenol	mg/L	NS	NS	NS		-	-	-	-	,	-	-	-	<0.0005	-	-
3 & 4-chlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.0014	-	-
3,4,5-Trichlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.05	-	-
3,4-Dichlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	0.0079	-	-
3,5-Dichlorophenol	mg/L	NS	NS	NS		-	-	-	-	-	-	-	-	<0.0005	-	-
Pentachlorophenol	mg/L	NS	NS	6		-	-	-	-	-	-	-	-	1	0.0053	-

NOTES:

-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014).
HWR	Hazardous Waste Regulation (HWR), B.C. Reg. 63/88 (1988), O.C. 268/88, including amendments up to BC Reg. 63/2009, April 1, 2009
AW	Marine Aquatic Life
Site specific factors include:	- Intake of contaminated soil.
	- Toxicity to soil invertebrates and plants.
	- Groundwater flow to surface water used by marine aquatic life.
	Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR AW or HWR Standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 5: Leachable Soil Analytical Results

Parameter	Units	CSR - AW	Protocol 11 - Upper Cap Concentration	HWR	APEC	APEC 10		APEC13
					Borehole	14BH25		14BH31
					Sample ID	14BH25-2	14BH25-4	14BH31-1
					Date	18-Sep-2014	18-Sep-2014	14-Nov-2014
Oil & Grease								
Hazardous Waste Oil	%	NS	NS	NS		-	-	-
SPLP Metals								
Arsenic	mg/L	0.125	1.25	NS		-	-	-
Cadmium (Cd)	mg/L	0.001	0.01	NS		0.000141	-	-
Chromium (Cr)	mg/L	0.15	1.5	NS		-	0.0411	0.0014
Copper (Cu)	mg/L	0.02	0.2	NS		-	-	-
Zinc (Zn)	mg/L	0.1	1	NS		0.074	-	-
TCLP Metals								
Chromium (Cr)	mg/L	NS	NS	5		-	-	-
Total Chlorophenols	mg/L	NS	NS	NS		-	-	-
Total Dichlorophenols	mg/L	NS	NS	NS		-	-	-
Total Monochlorophenols	mg/L	NS	NS	NS		-	-	-
Total Tetrachlorophenols	mg/L	NS	NS	NS		-	-	-
Total Trichlorophenols	mg/L	NS	NS	NS		-	-	-
2,3,4,5-tetrachlorophenol	mg/L	NS	NS	NS		-	-	-
2,3,4,6-tetrachlorophenol	mg/L	NS	NS	10		-	-	-
2,3,4-trichlorophenol	mg/L	NS	NS	NS		-	-	-
2,3,5,6-tetrachlorophenol	mg/L	NS	NS	NS		-	-	-
2,3,5-trichlorophenol	mg/L	NS	NS	NS		-	-	-
2,3,6-Trichlorophenol	mg/L	NS	NS	NS		-	-	-
2,3-Dichlorophenol	mg/L	NS	NS	NS		-	-	-
2,4 + 2,5-Dichlorophenol	mg/L	NS	NS	90		-	-	-
2,4,5-trichlorophenol	mg/L	NS	NS	400		-	-	-
2,4,6-trichlorophenol	mg/L	NS	NS	0.5		-	-	-
2,6-dichlorophenol	mg/L	NS	NS	NS		-	-	-
2-chlorophenol	mg/L	NS	NS	NS		-	-	-
3 & 4-chlorophenol	mg/L	NS	NS	NS		-	-	-
3,4,5-Trichlorophenol	mg/L	NS	NS	NS		-	-	-
3,4-Dichlorophenol	mg/L	NS	NS	NS		-	-	-
3,5-Dichlorophenol	mg/L	NS	NS	NS		-	-	-
Pentachlorophenol	mg/L	NS	NS	6		-	-	-

NOTES:

-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulatio
HWR	Hazardous Waste Regulation (HWR), B.C. Reg. 63/88 (1988), O.C. 268/88, including amendments
AW	Marine Aquatic Life
Site specific factors include:	- Intake of contaminated soil.
	- Toxicity to soil invertebrates and plants.
	- Groundwater flow to surface water used by marine aquatic life.
	Most stringent applicable site specific factor is shown.
Bold and Underlined	Bold and underlined indicates an exceedance of the CSR AW or HWR Standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentrations.

Table 6: Groundwater Analytical Results - Metals

Parameter	Unit	CSR - AW	Protocol 11 - Upper Cap Concentration	APEC	AEC 1					AEC 2							
				Date	24-Sep-2014	24-Sep-2014	1-Apr-2015	24-Sep-2014	1-Apr-2015	24-Sep-2014	24-Sep-2014	24-Sep-2014	24-Sep-2014	20-Nov-2014	20-Nov-2014	20-Nov-2014	21-Nov-2014
				Location	14MW02	DUP1	14MW02	14MW19		14MW05	DUP2	14MW07	14MW08	14MW26	14MW27	DUP4	MW00-07
General																	
pH (field)	pH Units	-	-		6.59	-	6.98	6.41	6.80	6.64	-	6.66	6.5	6.48	6.45	-	6.40
Conductivity (field)	µS/cm	-	-		4580	-	3180	18400	10000	1188	-	1499	2578	850	855	-	857
Temperature (field)	°c	-	-		17.3	-	13.1	20.5	11.2	13.5	-	15	14.7	13.24	13.37	-	12.58
Total Dissolved Solids (field)	ppm	-	-		2,290	-	1,590	9,270	4,720	593	-	750	1,228	710	714	-	729
Dissolved Hardness	µg/L	-	-		1,580,000	1,560,000	1,210,000	4,190,000	3,390,000	-	-	-	-	-	-	-	-
Total Dissolved Solids (TDS)	µg/L	-	-		-	-	-	24,900,000	-	788,000	-	1,060,000	1,740,000	-	-	-	-
Anions																	
Chloride	µg/L	-	-		-	-	-	14,000,000	-	-	-	-	-	-	-	-	-
Sodium	µg/L	-	-		1,060,000	1,040,000	626,000	6,570,000	4,560,000	-	-	-	-	-	-	-	-
Salinity	µg/L	40,000,000 #1	400,000,000 #1		-	-	-	23,300,000	-	-	-	-	-	-	-	-	-
Dissolved Metals																	
Aluminium	µg/L	-	-		<3	<3	3.2	14	13	-	-	-	-	-	-	-	-
Antimony	µg/L	200	2000		<0.5	<0.5	<0.50	<2	<2.0	-	-	-	-	-	-	-	-
Arsenic	µg/L	125	1250		0.34	0.32	0.25	0.51	<0.40	-	-	-	-	-	-	-	-
Barium	µg/L	5000	50,000		66.7	65.3	46.1	85.9	40.0	-	-	-	-	-	-	-	-
Beryllium	µg/L	1000	10,000		<0.1	<0.1	<0.10	<0.4	<0.40	-	-	-	-	-	-	-	-
Bismuth	µg/L	-	-		<1	<1	<1.0	<4	<4.0	-	-	-	-	-	-	-	-
Boron	µg/L	50,000	500,000		1450	1560	1260	3050	2200	-	-	-	-	-	-	-	-
Cadmium	µg/L	1	10		<0.01	0.01	0.012	0.286	0.113	-	-	-	-	-	-	-	-
Calcium	µg/L	-	-		333,000	325,000	304,000	338,000	290,000	-	-	-	-	-	-	-	-
Chromium	µg/L	150 #2	1500 #2		<1	<1	<1.0	<4	<4.0	-	-	-	-	-	-	-	-
Cobalt	µg/L	40	400		<0.5	<0.5	<0.50	3.5	<2.0	-	-	-	-	-	-	-	-
Copper	µg/L	20	200		<0.2	0.65	<0.20	0.94	0.84	-	-	-	-	-	-	-	-
Iron	µg/L	-	-		669	656	916	<20	<20	-	-	-	-	-	-	-	-
Lead	µg/L	20	200		<0.2	<0.2	<0.20	<0.8	<0.80	-	-	-	-	-	-	-	-
Lithium	µg/L	-	-		48	49.8	37.6	128	83	-	-	-	-	-	-	-	-
Magnesium	µg/L	-	-		182,000	181,000	110,000	813,000	648,000	-	-	-	-	-	-	-	-
Manganese	µg/L	-	-		371	359	188	452	55.0	-	-	-	-	-	-	-	-
Mercury	µg/L	1	10		<0.01	<0.01	<0.010	<0.01	<0.010	-	-	-	-	-	-	-	-
Molybdenum	µg/L	10,000	100,000		1.3	1.4	<1.0	4.7	4.9	-	-	-	-	-	-	-	-
Nickel	µg/L	83	830		2.1	2.1	2.0	18.7	10.1	-	-	-	-	-	-	-	-
Potassium	µg/L	-	-		45,600	44500	31,800	247,000	192,000	-	-	-	-	-	-	-	-
Selenium	µg/L	540	5400		<0.1	<0.1	<0.10	<0.4	<0.40	-	-	-	-	-	-	-	-
Silicon	µg/L	-	-		13,600	14000	13,600	4830	4390	-	-	-	-	-	-	-	-
Silver	µg/L	15	150		<0.02	<0.02	<0.020	<0.08	<0.080	-	-	-	-	-	-	-	-
Strontium	µg/L	-	-		2970	2930	2360	5910	4580	-	-	-	-	-	-	-	-
Sulphur	µg/L	-	-		158,000	158000	123,000	648,000	535,000	-	-	-	-	-	-	-	-
Thallium	µg/L	3	30		<0.05	<0.05	<0.050	<0.2	<0.20	-	-	-	-	-	-	-	-
Tin	µg/L	-	-		<5	<5	<5.0	<20	<20	-	-	-	-	-	-	-	-
Titanium	µg/L	1000	10,000		<5	<5	<5.0	<20	<20	-	-	-	-	-	-	-	-
Uranium	µg/L	1000	10,000		1.06	1.07	0.86	0.76	1.79	-	-	-	-	-	-	-	-
Vanadium	µg/L	-	-		<5	<5	<5.0	<20	<20	-	-	-	-	-	-	-	-
Zinc	µg/L	100	1000		<5	<5	<5.0	<20	<20	-	-	-	-	-	-	-	-
Zirconium	µg/L	-	-		<0.5	<0.5	<0.50	<2	<2.0	-	-	-	-	-	-	-	-

NOTES:

#1	Standard varies with natural salinity
#2	Standard is specific to Chromium VI
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 6 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014) Table 5.
AW	Marine Aquatic Life Water Use
Bold and Underlined	Bold and underlined indicates an exceedence of the applicable CSR AW standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentration.

Table 6: Groundwater Analytical Results - Metals

Parameter	Unit	CSR - AW	Protocol 11 - Upper Cap Concentration	APEC	AEC 3							AEC 4			APEC 8		APEC 9
				Date	25-Sep-2014	25-Sep-2014	20-Nov-2014	24-Sep-2014	24-Sep-2014	25-Sep-2014	20-Nov-2014	25-Sep-2014	25-Sep-2014	25-Sep-2014	25-Sep-2014	9-Apr-2015	25-Sep-2014
				Location	14MW10	DUP3	14MW10	14MW11	14MW12	14MW13	14MW35	14MW14	14MW15	14MW16	14MW21		14MW23
General																	
pH (field)	pH Units	-	-		6.7	-	6.72	7.14	7.12	7.16	6.45	6.98	6.41	6.71	6.32	6.81	6.44
Conductivity (field)	µS/cm	-	-		1222	-	1416	1366	1385	1191	1312	1028	952	823	9690	1243	18320
Temperature (field)	°c	-	-		14	-	13.5	15	15.9	14.5	14.32	13.6	13.3	15.6	15.5	13.2	17.7
Total Dissolved Solids (field)	ppm	-	-		617	-	760	682	693	596	1071	514	459	411	4,850	621	9,150
Dissolved Hardness	µg/L	-	-		-	-	-	507,000	483,000	589,000	-	594,000	-	481,000	2,710,000	368,000	5,040,000
Total Dissolved Solids (TDS)	µg/L	-	-		832,000	-	-	864,000	898,000	764,000	-	692,000	-	560,000	11,800,000	-	25,400,000
Anions																	
Chloride	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	6,200,000	-	15,000,000
Sodium	µg/L	-	-		-	-	-	128,000	157,000	68,000	-	17,500	-	6220	3,390,000	237,000	7,550,000
Salinity	µg/L	40,000,000 [#1]	400,000,000 [#1]		-	-	-	-	-	-	-	-	-	-	10,700,000	-	25,500,000
Dissolved Metals																	
Aluminium	µg/L	-	-		-	-	-	<3	<3	14.6	-	6.4	-	5.3	<30	3.8	<30
Antimony	µg/L	200	2000		-	-	-	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<5	<0.50	<5
Arsenic	µg/L	125	1250		-	-	-	6.08	0.97	2.67	-	4.51	-	1.37	<1	0.14	1.2
Barium	µg/L	5000	50,000		-	-	-	104	33.1	78.9	-	235	-	154	104	11.0	76
Beryllium	µg/L	1000	10,000		-	-	-	<0.1	<0.1	<0.1	-	<0.1	-	<0.1	<1	<0.10	<1
Bismuth	µg/L	-	-		-	-	-	<1	<1	<1	-	<1	-	<1	<10	<1.0	<10
Boron	µg/L	50,000	500,000		-	-	-	1210	946	1480	-	1130	-	342	1800	759	3450
Cadmium	µg/L	1	10		-	-	-	<0.01	<0.01	<0.01	-	<0.01	-	0.049	0.17	0.015	0.14
Calcium	µg/L	-	-		-	-	-	147,000	136,000	168,000	-	193,000	-	173,000	316,000	77,500	471,000
Chromium	µg/L	150 [#2]	1500 [#2]		-	-	-	<1	<1	<1	-	<1	-	<1	<10	<1.0	<10
Cobalt	µg/L	40	400		-	-	-	0.56	<0.5	<0.5	-	1.25	-	1.82	<5	<0.50	<5
Copper	µg/L	20	200		-	-	-	<0.2	<0.2	0.31	-	<0.2	-	0.72	<2	0.93	<2
Iron	µg/L	-	-		-	-	-	6790	2040	8430	-	1110	-	19.6	<50	<5.0	<50
Lead	µg/L	20	200		-	-	-	<0.2	<0.2	<0.2	-	<0.2	-	<0.2	<2	<0.20	<2
Lithium	µg/L	-	-		-	-	-	54.7	34.5	48.4	-	49.5	-	18.1	64	14.6	155
Magnesium	µg/L	-	-		-	-	-	34,100	35,100	41,000	-	27,100	-	12,100	465,000	42,400	938,000
Manganese	µg/L	-	-		-	-	-	786	146	635	-	591	-	1130	210	18.9	130
Mercury	µg/L	1	10		-	-	-	<0.01	<0.01	<0.01	-	<0.01	-	<0.01	<0.01	<0.010	<0.01
Molybdenum	µg/L	10,000	100,000		-	-	-	2.1	<1	2.6	-	<1	-	1.7	<10	1.3	<10
Nickel	µg/L	83	830		-	-	-	1.7	<1	<1	-	2.8	-	13.5	36	5.6	28
Potassium	µg/L	-	-		-	-	-	18,300	18,900	20,200	-	17,800	-	5710	118,000	15,800	305,000
Selenium	µg/L	540	5400		-	-	-	<0.1	<0.1	<0.1	-	<0.1	-	0.17	<1	0.14	<1
Silicon	µg/L	-	-		-	-	-	20,900	19,800	14,200	-	18,500	-	8590	6980	6520	5600
Silver	µg/L	15	150		-	-	-	<0.02	<0.02	<0.02	-	<0.02	-	<0.02	<0.2	<0.020	<0.2
Strontium	µg/L	-	-		-	-	-	939	931	1230	-	1210	-	907	3610	593	6070
Sulphur	µg/L	-	-		-	-	-	5600	12,700	21,200	-	29,800	-	25,500	374,000	77,000	709,000
Thallium	µg/L	3	30		-	-	-	<0.05	<0.05	<0.05	-	<0.05	-	<0.05	<0.5	<0.050	<0.5
Tin	µg/L	-	-		-	-	-	<5	<5	<5	-	<5	-	<5	<50	<5.0	<50
Titanium	µg/L	1000	10,000		-	-	-	<5	<5	<5	-	<5	-	<5	<50	<5.0	<50
Uranium	µg/L	1000	10,000		-	-	-	0.87	0.23	0.64	-	1.1	-	0.79	1.3	0.54	2.3
Vanadium	µg/L	-	-		-	-	-	<5	<5	<5	-	<5	-	<5	<50	<5.0	<50
Zinc	µg/L	100	1000		-	-	-	<5	<5	<5	-	<5	-	<5	<50	<5.0	<50
Zirconium	µg/L	-	-		-	-	-	<0.5	<0.5	<0.5	-	<0.5	-	<0.5	<5	<0.50	<5

NOTES:

#1	Standard varies with natural salinity
#2	Standard is specific to Chromium VI
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 6 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014) Table 5.
AW	Marine Aquatic Life Water Use
Bold and Underlined	Bold and underlerd indicates an exceedence of the applicable CSR AW standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentration.

Table 6: Groundwater Analytical Results - Metals

Parameter	Unit	CSR - AW	Protocol 11 - Upper Cap Concentration	APEC	APEC 10			AEC12			Background
				Date	24-Sep-2014	1-Apr-2015	1-Apr-2015	21-Nov-2014	7-Apr-2015	7-Apr-2015	30-Sep-2014
				Location	14MW25		DUP6	14MW29		SNC09-03	14SW01
General											
pH (field)	pH Units	-	-		6.28	6.79	-	6.27	6.65	6.60	8.15
Conductivity (field)	µS/cm	-	-		14900	8770	-	17930	11040	7840	18310
Temperature (field)	°c	-	-		16.3	11.7	-	13.36	12.8	13.7	14.5
Total Dissolved Solids (field)	ppm	-	-		7,450	4,390	-	14990	5,530	3,920	9,150
Dissolved Hardness	µg/L	-	-		3,630,000	1,660,000	1,680,000	2,610,000	2,630,000	1,640,000	-
Total Dissolved Solids (TDS)	µg/L	-	-		17,800,000	-	-	-	-	-	-
Anions											
Chloride	µg/L	-	-		11,000,000	-	-	-	-	-	16,000,000
Sodium	µg/L	-	-		4,610,000	2,380,000	2,310,000	4,060,000	3,860,000	2,300,000	7,630,000
Salinity	µg/L	40,000,000 #1	400,000,000 #1		17,500,000	-	-	-	-	-	26,900,000
Dissolved Metals											
Aluminium	µg/L	-	-		5.7	<12	<12	<12	94	<6.0	-
Antimony	µg/L	200	2000		<0.5	<2.0	<2.0	<2	<2.0	<1.0	-
Arsenic	µg/L	125	1250		0.27	<0.40	<0.40	0.9	<0.40	0.21	-
Barium	µg/L	5000	50,000		89.5	26.6	26.1	91	45.4	24.4	-
Beryllium	µg/L	1000	10,000		<0.1	<0.40	<0.40	<0.4	<0.40	<0.20	-
Bismuth	µg/L	-	-		<1	<4.0	<4.0	<4	<4.0	<2.0	-
Boron	µg/L	50,000	500,000		2220	1600	1730	2260	1870	1510	-
Cadmium	µg/L	1	10		0.246	<0.040	<0.040	0.347	0.209	0.023	-
Calcium	µg/L	-	-		427,000	186,000	184,000	218,000	242,000	180,000	-
Chromium	µg/L	150 #2	1500 #2		<1	<4.0	<4.0	<4	<4.0	<2.0	-
Cobalt	µg/L	40	400		0.61	<2.0	<2.0	2.3	<2.0	<1.0	-
Copper	µg/L	20	200		1.03	0.84	0.98	1.43	85.9	1.24	-
Iron	µg/L	-	-		13.7	<20	<20	<20	157	<10	-
Lead	µg/L	20	200		0.28	<0.80	<0.80	<0.8	2.63	<0.40	-
Lithium	µg/L	-	-		111	62	65	76	66	49	-
Magnesium	µg/L	-	-		623,000	290,000	296,000	500,000	492,000	289,000	-
Manganese	µg/L	-	-		239	5.5	5.3	910	84.6	<2.0	-
Mercury	µg/L	1	10		<0.01	<0.010	<0.010	<0.2	<0.010	<0.010	-
Molybdenum	µg/L	10,000	100,000		1.6	<4.0	<4.0	5.3	4.1	3.8	-
Nickel	µg/L	83	830		19.7	5.0	5.1	49.6	24.9	10.0	-
Potassium	µg/L	-	-		167,000	99,000	99,800	147,000	137,000	89,600	-
Selenium	µg/L	540	5400		0.22	<0.40	<0.40	0.45	<0.40	<0.20	-
Silicon	µg/L	-	-		7390	7230	7020	4450	4610	5320	-
Silver	µg/L	15	150		0.104	<0.080	<0.080	<0.08	<0.080	<0.040	-
Strontium	µg/L	-	-		5920	2360	2330	3410	3260	2210	-
Sulphur	µg/L	-	-		498,000	296,000	265,000	404,000	377,000	248,000	-
Thallium	µg/L	3	30		0.117	<0.20	<0.20	<0.2	<0.20	<0.10	-
Tin	µg/L	-	-		<5	<20	<20	<20	<20	<10	-
Titanium	µg/L	1000	10,000		<5	<20	<20	<20	<20	<10	-
Uranium	µg/L	1000	10,000		0.4	0.50	0.55	1.35	2.03	2.28	-
Vanadium	µg/L	-	-		<5	<20	<20	<20	<20	<10	-
Zinc	µg/L	100	1000		27.3	<20	<20	<20	69	<10	-
Zirconium	µg/L	-	-		<0.5	<2.0	<2.0	<2	<2.0	<1.0	-

NOTES:

#1	Standard varies with natural salinity
#2	Standard is specific to Chromium VI
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 6 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014) Table 5.
AW	Marine Aquatic Life Water Use
Bold and Underlined	Bold and underled indicates an exceedence of the applicable CSR AW standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentration.

Table 7: Groundwater Analytical Results - Hydrocarbons, Glycols and PAHs

Parameter	Unit	CSR - AW	Protocol 11 - Upper Cap Concentration	APEC	AEC 1					AEC 2		
				Date	24-Sep-2014	24-Sep-2014	1-Apr-2015	24-Sep-2014	1-Apr-2015	24-Sep-2014	24-Sep-2014	8-Apr-2015
				Location	14MW02	DUP1	14MW02	14MW19	14MW19	14MW05	DUP2	14MW05
General												
pH (field)	pH Units	-	-		6.59	-	6.98	6.41	6.80	6.64	-	6.91
Conductivity (field)	µS/cm	-	-		4580	-	3180	18400	10000	1188	-	924
Temperature (field)	°C	-	-		17.3	-	13.1	20.5	11.2	13.5	-	12.2
Glycols												
Tetraethylene Glycol	µg/L	-	-		-	-	-	-	-	-	-	-
Diethylene glycol	µg/L	-	-		-	-	-	-	-	-	-	-
Ethylene glycol	µg/L	1,920,000	19,200,000		-	-	-	-	-	-	-	-
Propylene glycol	µg/L	5,000,000	50,000,000		-	-	-	-	-	-	-	-
Triethylene Glycol	µg/L	-	-		-	-	-	-	-	-	-	-
Hydrocarbons												
EPH C_{10}-C_{19}	µg/L	5000	5000		<200	-	<200	<200	<200	<200	<200	<200
EPH C_{19}-C_{32}	µg/L	-	-		<200	-	<200	<200	<200	<200	<200	<200
LEPH	µg/L	500	5000		<200	-	<200	<200	<200	<200	<200	<200
HEPH	µg/L	-	-		<200	-	<200	<200	<200	<200	<200	<200
Volatile Hydrocarbons (VH_{6-10})	µg/L	15,000	15,000		-	-	-	-	-	-	-	-
VPH C_6-C_{10}	µg/L	1500	15,000		-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)												
2-methylnaphthalene	µg/L	-	-		<0.1	<0.1	<0.10	<0.1	<0.10	<0.1	<0.1	<0.10
Acenaphthene	µg/L	60	600		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Acenaphthylene	µg/L	-	-		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Acridine	µg/L	0.5	5		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Anthracene	µg/L	1	10		<0.01	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.010
Benz(a)anthracene	µg/L	1	10		<0.01	<0.01	<0.010	<0.01	<0.010	<0.01	<0.01	<0.010
Benzo(a) pyrene	µg/L	0.1	1		<0.009	<0.009	<0.0090	<0.009	<0.0090	<0.009	<0.009	<0.0090
Benzo(b+j)fluoranthene	µg/L	-	-		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Benzo(g,h,i)perylene	µg/L	-	-		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Benzo(k)fluoranthene	µg/L	-	-		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Chrysene	µg/L	1	10		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Dibenz(a,h)anthracene	µg/L	-	-		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Fluoranthene	µg/L	2	20		<0.02	<0.02	<0.020	<0.02	<0.020	<0.02	<0.02	0.023
Fluorene	µg/L	120	1200		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Heavy Molecular Wt. PAH Sum	µg/L	-	-		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Indeno(1,2,3-c,d)pyrene	µg/L	-	-		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Light Molecular Wt. PAH Sum	µg/L	-	-		<0.24	<0.1	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Naphthalene	µg/L	10	100		<0.1	<0.1	<0.10	<0.1	<0.10	<0.1	<0.1	<0.10
PAHs (Sum of total)	µg/L	-	-		<0.24	<0.1	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Phenanthrene	µg/L	3	30		<0.05	<0.05	<0.050	<0.05	<0.050	<0.05	<0.05	<0.050
Pyrene	µg/L	0.2	2		<0.02	<0.02	<0.020	<0.02	<0.020	<0.02	<0.02	<0.020
Quinoline	µg/L	34	340		<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24

Parameter	AEC 2 (cont.)											AEC 3					
Date	24-Sep-2014	9-Apr-2015	24-Sep-2014	9-Apr-2015	20-Nov-2014	9-Apr-2015	20-Nov-2014	20-Nov-2014	9-Apr-2015	21-Nov-2014	8-Apr-2015	20-Nov-2014	6-Apr-2015	6-Apr-2015	8-Apr-2015	8-Apr-2015	8-Apr-2015
Location	14MW07	14MW07	14MW08	14MW08	14MW26	14MW26	14MW27	DUP4	14MW27	MW00-07	MW00-07	14MW10	14MW10	DUP5	14MW11	14MW12	14MW13
General																	
pH (field)	6.66	6.79	6.5	6.83	6.48	6.8	6.45	-	6.78	6.40	6.96	6.72	6.97	-	7.09	7.07	7.10
Conductivity (field)	1499	1150	2578	1179	850	669	855	-	766	857	831	1416	1074	-	1066	1211	807
Temperature (field)	15	13.9	14.7	13.6	13.24	13.4	13.37	-	13.1	12.58	13.2	13.5	12.5	-	12.5	12.0	12.8
Glycols																	
Tetraethylene Glycol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diethylene glycol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene glycol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Propylene glycol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Triethylene Glycol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hydrocarbons																	
EPH C_{10}-C_{19}	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	-	-	-	-	-	-
EPH C_{19}-C_{32}	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	-	-	-	-	-	-
LEPH	<200	<200	<200	<200	<200	<200	<200	-	<200	<200	<200	-	-	-	-	-	-
HEPH	<200	<200	<200	<200	<200	<200	<200	-	<200	<200	<200	-	-	-	-	-	-
Volatile Hydrocarbons (VH_{6-10})	-	-	-	-	-	-	-	-	-	-	<300	<300	660	790	<300	<300	<300
VPH C_6-C_{10}	-	-	-	-	-	-	-	-	-	-	<300	<300	500	610	<300	<300	<300
Polycyclic Aromatic Hydrocarbons (PAHs)																	
2-methylnaphthalene	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	-	<0.10	<0.1	<0.10	-	-	-	-	-	-
Acenaphthene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.15	-	0.12	<0.05	<0.050	-	-	-	-	-	-
Acenaphthylene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Acridine	<0.05	<0.050	<0.05	<0.050	<0.01	<0.050	<0.02	-	<0.050	<0.01	<0.050	-	-	-	-	-	-
Anthracene	<0.01	<0.010	<0.01	<0.010	<0.05	<0.010	<0.05	-	<0.010	<0.05	<0.010	-	-	-	-	-	-
Benz(a)anthracene	<0.01	<0.010	<0.01	<0.010	<0.01	<0.010	<0.01	-	<0.010	<0.01	<0.010	-	-	-	-	-	-
Benzo(a) pyrene	<0.009	<0.0090	<0.009	<0.0090	<0.009	<0.0090	<0.009	-	<0.0090	<0.009	<0.0090	-	-	-	-	-	-
Benzo(b+j)fluoranthene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Benzo(g,h,i)perylene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Benzo(k)fluoranthene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Chrysene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Dibenz(a,h)anthracene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Fluoranthene	<0.02	<0.020	<0.02	<0.020	<0.02	<0.020	<0.02	-	<0.020	<0.02	<0.020	-	-	-	-	-	-
Fluorene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Heavy Molecular Wt. PAH Sum	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Light Molecular Wt. PAH Sum	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.4	-	<0.24	<0.24	<0.24	-	-	-	-	-	-
Naphthalene	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	-	<0.10	<0.1	<0.10	-	-	-	-	-	-
PAHs (Sum of total)	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.4	-	<0.24	<0.24	<0.24	-	-	-	-	-	-
Phenanthrene	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.05	-	<0.050	<0.05	<0.050	-	-	-	-	-	-
Pyrene	<0.02	<0.020	<0.02	<0.020	<0.02	<0.020	<0.02	-	<0.020	<0.02	<0.020	-	-	-	-	-	-
Quinoline	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.4	-	<0.24	<0.24	<0.24	-	-	-	-	-	-

NOTES:

EPHw	Extractable Petroleum Hydrocarbons in Water
LEPH/HEPH	Light/Heavy Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 6 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014) Table 5.
AW	Marine Aquatic Life Water Use
Bold and Underlined	Bold and underlined indicates an exceedence of the applicable CSR AW standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentration.

Table 7: Groundwater Analytical Results - Hydrocarbons, Glycols and PAHs

Parameter	Unit	CSR - AW	Protocol 11 - Upper Cap Concentration	APEC			AEC 4			APEC 8		APEC 9		APEC 10			AEC12		
				Date	20-Nov-2014	1-Apr-2015	8-Apr-2015	6-Apr-2015	1-Apr-2015	25-Sep-2014	9-Apr-2015	25-Sep-2014	7-Apr-2015	24-Sep-2014	1-Apr-2015	1-Apr-2015	21-Nov-2014	7-Apr-2015	7-Apr-2015
				Location	14MW35	14MW35	14MW14	14MW15	14MW16	14MW21	14MW21	14MW23	14MW23	14MW25	14MW25	DUP6	14MW29	14MW29	SNC09-03
General																			
pH (field)	pH Units	-	-		6.45	-	7.13	6.77	6.75	6.32	6.81	6.44	6.72	6.28	6.79	-	6.27	6.65	6.60
Conductivity (field)	µS/cm	-	-		1312	-	844	854	1266	9690	1243	18320	16500	14900	8770	-	17930	11040	7840
Temperature (field)	°C	-	-		14.32	-	12.8	12.0	14.0	15.5	13.2	17.7	12.6	16.3	11.7	-	13.36	12.8	13.7
Glycols																			
Tetraethylene Glycol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10,000
Diethylene glycol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10,000
Ethylene glycol	µg/L	1,920,000	19,200,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10,000
Propylene glycol	µg/L	5,000,000	50,000,000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10,000
Triethylene Glycol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	<10,000
Hydrocarbons																			
EPH C_{10}-C_{19}	µg/L	5000	5000		-	-	-	-	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
EPH C_{19}-C_{32}	µg/L	-	-		-	-	-	-	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
LEPH	µg/L	500	5000		-	-	-	-	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
HEPH	µg/L	-	-		-	-	-	-	-	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Volatile Hydrocarbons (VH_{6-10})	µg/L	15,000	15,000		<300	<300	<300	<300	<300	<300	-	<300	<300	-	-	-	-	-	<300
VPH C_6-C_{10}	µg/L	1500	15,000		<300	<300	<300	<300	<300	<300	-	<300	<300	-	-	-	-	-	<300
Polycyclic Aromatic Hydrocarbons (PAHs)																			
2-methylnaphthalene	µg/L	-	-		-	-	-	-	-	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.10	0.14	<0.10	<0.10
Acenaphthene	µg/L	60	600		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Acenaphthylene	µg/L	-	-		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Acridine	µg/L	0.5	5		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.01	<0.050	<0.050
Anthracene	µg/L	1	10		-	-	-	-	-	<0.01	<0.010	<0.01	<0.010	<0.01	<0.010	<0.010	<0.05	<0.010	<0.010
Benz(a)anthracene	µg/L	1	10		-	-	-	-	-	<0.01	<0.010	<0.01	<0.010	<0.01	<0.010	<0.010	<0.01	<0.010	<0.010
Benzo(a) pyrene	µg/L	0.1	1		-	-	-	-	-	<0.009	<0.0090	<0.009	<0.0090	<0.009	<0.0090	<0.0090	<0.009	<0.0090	<0.0090
Benzo(b+j)fluoranthene	µg/L	-	-		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Benzo(g,h,i)perylene	µg/L	-	-		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Benzo(k)fluoranthene	µg/L	-	-		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Chrysene	µg/L	1	10		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Dibenz(a,h)anthracene	µg/L	-	-		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Fluoranthene	µg/L	2	20		-	-	-	-	-	<0.02	<0.020	<0.02	<0.020	<0.02	<0.020	<0.020	<0.02	<0.020	<0.020
Fluorene	µg/L	120	1200		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Heavy Molecular Wt. PAH Sum	µg/L	-	-		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Indeno(1,2,3-c,d)pyrene	µg/L	-	-		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Light Molecular Wt. PAH Sum	µg/L	-	-		-	-	-	-	-	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	0.27	<0.24	<0.24
Naphthalene	µg/L	10	100		-	-	-	-	-	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.10	0.13	<0.10	<0.10
PAHs (Sum of total)	µg/L	-	-		-	-	-	-	-	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	0.27	<0.24	<0.24
Phenanthrene	µg/L	3	30		-	-	-	-	-	<0.05	<0.050	<0.05	<0.050	<0.05	<0.050	<0.050	<0.05	<0.050	<0.050
Pyrene	µg/L	0.2	2		-	-	-	-	-	<0.02	<0.020	<0.02	<0.020	<0.02	<0.020	<0.020	<0.02	<0.020	<0.020
Quinoline	µg/L	34	340		-	-	-	-	-	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24

NOTES:

EPHw	Extractable Petroleum Hydrocarbons in Water
LEPH/HEPH	Light/Heavy Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 6 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014) Table 5.
AW	Marine Aquatic Life Water Use
Bold and Underlined	Bold and underled indicates an exceedence of the applicable CSR AW standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentration.

Table 8: Groundwater Analytical Results - Volatiles and Phenols

Parameter	Unit	CSR - AW	Protocol 11 - Upper Cap Concentration	APEC	AEC 1/APEC 13				AEC 2	AEC 3				
				Date	24-Sep-2014	1-Apr-2015	24-Sep-2014	1-Apr-2015	8-Apr-2015	25-Sep-2014	25-Sep-2014	20-Nov-2014	6-Apr-2015	6-Apr-2015
				Location	14MW02	14MW02	14MW19	14MW19	MW00-07	14MW10	DUP3	14MW10	14MW10	DUP5
General														
pH (field)	pH Units	-	-		6.59	6.98	6.41	6.80	6.96	6.7	-	6.72	6.97	-
Temperature (field)	°c	-	-		17.3	13.1	20.5	11.2	13.2	14	-	13.5	12.5	-
BTEXS														
Benzene	µg/L	1000	10,000		-	-	-	-	<0.40	-	-	<0.4	<0.40	<0.40
Toluene	µg/L	3300	33,000		-	-	-	-	<0.40	-	-	<0.4	0.68	0.77
Ethylbenzene	µg/L	2500	25,000		-	-	-	-	<0.40	-	-	3.5	21	22
Xylene (o)	µg/L	-	-		-	-	-	-	<0.40	-	-	8.2	50	52
Xylenes (m & p)	µg/L	-	-		-	-	-	-	<0.40	-	-	20	95	98
Xylenes Total	µg/L	-	-		-	-	-	-	<0.40	-	-	28	150	150
Styrene	µg/L	720	7200		-	-	-	-	<0.40	-	-	<0.5	<0.40	<0.40
Volatile Organic Compounds (VOCs)														
1,1,2,2-tetrachloroethane	µg/L	-	-		-	-	-	-	-	-	-	<0.5	-	-
1,1,2-trichloroethane	µg/L	-	-		-	-	-	-	-	-	-	<0.5	-	-
1,1-dichloroethane	µg/L	-	-		-	-	-	-	-	-	-	<0.5	-	-
1,1-dichloroethene	µg/L	-	-		-	-	-	-	-	-	-	<0.5	-	-
1,2,3-trichlorobenzene	µg/L	80	800		-	-	-	-	-	-	-	<2	-	-
1,2,4-trichlorobenzene	µg/L	54	540		-	-	-	-	-	-	-	<2	-	-
1,2-dibromoethane	µg/L	-	-		-	-	-	-	-	-	-	<0.2	-	-
1,2-dichlorobenzene	µg/L	420	4200		-	-	-	-	-	-	-	<0.5	-	-
1,2-dichloroethane	µg/L	1000	10,000		-	-	-	-	-	-	-	<0.5	-	-
1,2-dichloropropane	µg/L	-	-		-	-	-	-	-	-	-	<0.5	-	-
1,3-Butadiene	µg/L	-	-		-	-	-	-	-	-	-	<5	-	-
1,3-dichlorobenzene	µg/L	1500	15,000		-	-	-	-	-	-	-	<0.5	-	-
1,4-dichlorobenzene	µg/L	260	2600		-	-	-	-	-	-	-	<0.5	-	-
Bromobenzene	µg/L	-	-		-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	µg/L	-	-		-	-	-	-	-	-	-	<1	-	-
Bromoform	µg/L	-	-		-	-	-	-	-	-	-	<1	-	-
Bromomethane	µg/L	-	-		-	-	-	-	-	-	-	<1	-	-
Carbon tetrachloride	µg/L	130	1300		-	-	-	-	-	-	-	<0.5	-	-
Chlorobenzene	µg/L	120	1200		-	-	-	-	-	-	-	<0.5	-	-
Chloroethane	µg/L	-	-		-	-	-	-	-	-	-	<1	-	-
Chloroform	µg/L	20	200		-	-	-	-	-	-	-	<1	-	-
Chloromethane	µg/L	-	-		-	-	-	-	-	-	-	<1	-	-
cis-1,2-dichloroethene	µg/L	-	-		-	-	-	-	-	-	-	<1	-	-
cis-1,3-dichloropropene	µg/L	-	-		-	-	-	-	-	-	-	<1	-	-
Dibromochloromethane	µg/L	-	-		-	-	-	-	-	-	-	-	-	-
Dibromomethane	µg/L	-	-		-	-	-	-	-	-	-	-	-	-
Dichlorodifluoromethane	µg/L	-	-		-	-	-	-	-	-	-	-	-	-
Dichloromethane	µg/L	980	9800		-	-	-	-	-	-	-	-	-	-
Freon 113	µg/L	-	-		-	-	-	-	-	-	-	<2	-	-
Hexachlorobutadiene	µg/L	1	10		-	-	-	-	-	-	-	<0.5	-	-
MTBE	µg/L	4400	44,000		-	-	-	-	<4.0	-	-	<4	<4.0	<4.0
Tetrachloroethene	µg/L	1100	11,000		-	-	-	-	-	-	-	<0.5	-	-
trans-1,2-dichloroethene	µg/L	-	-		-	-	-	-	-	-	-	<1	-	-
trans-1,3-dichloropropene	µg/L	-	-		-	-	-	-	-	-	-	<1.1	-	-
Trichloroethene	µg/L	200	2000		-	-	-	-	-	-	-	<0.5	-	-
Trichlorofluoromethane	µg/L	-	-		-	-	-	-	-	-	-	<4.0	-	-
Vinyl chloride	µg/L	-	-		-	-	-	-	-	-	-	<0.5	-	-
Phenols														
2,3- Dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	<0.10	<0.10
2,3,4,5-tetrachlorophenol	µg/L	2 - 180 [#1]	20 - 1800 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	<20	<20
2,3,4,6-tetrachlorophenol	µg/L	2 - 180 [#1]	20 - 1800 [#1]		<0.1	<0.10	<0.1	<0.10	-	4.2	-	-	**760** [#2]	**850** [#2]
2,3,4-Trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	0.91	0.85
2,3,5,6-Tetrachlorophenol	µg/L	2 - 180 [#1]	20 - 1800 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	1.4	1.3
2,3,5-Trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	0.12	0.12
2,3,6-Trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	0.26	0.23
2,4,5-trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	-	-	-	**35** [#2]	**38** [#2]
2,4,6-trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	0.75	0.72
2,4-dimethylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-
2,4-dinitrophenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-
2,6-dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	<0.10	<0.10
2,6-Dimethylphenol	µg/L	-	-		<0.5	<0.50	<0.5	<0.50	-	-	-	-	<0.50	<0.50
2.4 & 2.5-Dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.13	-	-	2.8 [#2]	2.9 [#2]
2-chlorophenol	µg/L	8.5 - 650 [#1]	85 - 6500 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	<0.10	<0.10
2-methylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-
2-nitrophenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-
3 & 4 -Chlorophenol	µg/L	8.5 - 650 [#1]	85 - 6500 [#1]		<0.1	<0.10	<0.1	<0.10	-	3.8	-	-	<21	<27
3-&4-methylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-
3,4 Dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	5.1	-	-	**85** [#2]	**100** [#2]
3,4,5-Trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	**5.4** [#2]	**5.2** [#2]
3,4-Dimethylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-
3,5-Dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	-	-	0.55	0.54
4,6-Dinitro-2-methylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-
4-nitrophenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-
Pentachlorophenol	µg/L	1 - 27.5 [#1]	10 - 275 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.89	0.91	-	**390**	**450**
Phenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-

APEC	AEC 3		AEC 3						AEC 4						APEC 8	APEC 9	AEC12
Date	24-Sep-2014	8-Apr-2015	24-Sep-2014	8-Apr-2015	25-Sep-2014	8-Apr-2015	20-Nov-2014	1-Apr-2015	25-Sep-2014	8-Apr-2015	25-Sep-2014	6-Apr-2015	25-Sep-2014	1-Apr-2015	25-Sep-2014	25-Sep-2014	7-Apr-2015
Location	14MW11	14MW11	14MW12	14MW12	14MW13	14MW13	14MW35	14MW35	14MW14	14MW14	14MW15	14MW15	14MW16	14MW16	14MW21	14MW23	SNC09-03
General																	
pH (field)	7.14	7.09	7.12	7.07	7.16	7.10	6.45	-	6.98	7.13	6.41	6.77	6.71	6.75	6.32	6.44	6.60
Temperature (field)	15	12.5	15.9	12.0	14.5	12.8	14.32	-	13.6	12.8	13.3	12.0	15.6	14.0	15.5	17.7	13.7
BTEXS																	
Benzene	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.40	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.4	<0.40
Toluene	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.40	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.4	<0.40
Ethylbenzene	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.40	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.4	<0.40
Xylene (o)	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.40	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.4	<0.40
Xylenes (m & p)	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.40	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.4	<0.40
Xylenes Total	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.40	-	<0.40	-	<0.40	-	<0.40	<0.4	<0.4	<0.40
Styrene	-	<0.40	-	<0.40	-	<0.40	<0.5	<0.40	-	<0.40	-	<0.40	-	<0.40	<0.5	<0.5	<0.40
Volatile Organic Compounds (VOCs)																	
1,1,2,2-tetrachloroethane	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
1,1,2-trichloroethane	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
1,1-dichloroethane	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
1,1-dichloroethene	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
1,2,3-trichlorobenzene	-	-	-	-	-	-	<2	-	-	-	-	-	-	-	<2	<2	-
1,2,4-trichlorobenzene	-	-	-	-	-	-	<2	-	-	-	-	-	-	-	<2	<2	-
1,2-dibromoethane	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	<0.2	<0.2	-
1,2-dichlorobenzene	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
1,2-dichloroethane	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
1,2-dichloropropane	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<1.6	<0.5	-
1,3-Butadiene	-	-	-	-	-	-	<5	-	-	-	-	-	-	-	<5	<5	-
1,3-dichlorobenzene	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
1,4-dichlorobenzene	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
Bromobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	-
Bromodichloromethane	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
Bromoform	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
Bromomethane	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
Carbon tetrachloride	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
Chlorobenzene	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
Chloroethane	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
Chloroform	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
Chloromethane	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<5.3	<3.6	-
cis-1,2-dichloroethene	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
cis-1,3-dichloropropene	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	-
Dibromomethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.9	<0.9	-
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	-
Dichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2	<2	-
Freon 113	-	-	-	-	-	-	<2	-	-	-	-	-	-	-	<2	<2	-
Hexachlorobutadiene	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
MTBE	-	<4.0	-	<4.0	-	<4.0	<4	<4.0	-	<4.0	-	<4.0	-	<4.0	<4	<4	<4.0
Tetrachloroethene	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
trans-1,2-dichloroethene	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
trans-1,3-dichloropropene	-	-	-	-	-	-	<1	-	-	-	-	-	-	-	<1	<1	-
Trichloroethene	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
Trichlorofluoromethane	-	-	-	-	-	-	<4.0	-	-	-	-	-	-	-	<4	<4	-
Vinyl chloride	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	<0.5	<0.5	-
Phenols																	
2,3- Dichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,3,4,5-tetrachlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,3,4,6-tetrachlorophenol	0.24	0.19	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,3,4-Trichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	<0.10	<0.1	<0.10	-	-	-
2,3,5,6-Tetrachlorophenol	<0.1	0.12	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,3,5-Trichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,3,6-Trichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,4,5-trichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,4,6-trichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,4-dimethylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-dinitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,6-dichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2,6-Dimethylphenol	-	<0.50	-	<0.50	-	<0.50	-	<0.50	-	<0.50	-	<0.50	-	<0.50	-	-	-
2.4 & 2.5-Dichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2-chlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
2-methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 & 4 -Chlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
3-&4-methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3,4 Dichlorophenol	<0.1	0.19	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
3,4,5-Trichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
3,4-Dimethylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3,5-Dichlorophenol	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
4,6-Dinitro-2-methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	0.46	0.15	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	-	-
Phenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Standard varies with pH, temperature and substance isomer. Range shown
#2	Value within CSR standard range. Sample specific standard used based off pH of 6.97 and temperature of 12.5 °C. See Technical Guidance on Contaminated Sites 9, Chlorophenol Aquatic Life Water Quality Standards.
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes and Styrene.
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 6 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014) Table 5.
AW	Marine Aquatic Life Water Use
Bold and Underlined	Bold and underled indicates an exceedence of the applicable CSR AW standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentration.

Table 9: Sediment Analytical Results - PAHs and Metals

Parameters	Unit	CSR - Marine Sediment - Sensitive	CSR - Marine Sediment - Typical	Protocol 11 - Typical	Location	14SED01	14SED-DUP1	14SED02	14SED03	14SED04	14SED05	14SED06	14SED07	14SED08	14SED09	14SED10	14SED11	14SED12	14SED13
					Date	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014
Physical Parameters																			
pH (Lab)	pH Units	-	-	-		7.67	7.79	8.2	-	8.22	-	7.86	-	8.26	-	-	7.99	-	-
Moisture	%	-	-	-		27	26	33	21	23	29	18	24	30	31	23	27	39	28
pH (aqueous extract)	pH Units	-	-	-		7.67	7.79	8.2	-	8.22	-	7.86	-	8.26	-	-	7.99	-	-
IARC Cancer		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
TEQ Total		-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																			
Benzo(b+j)fluoranthene	ug/g	-	-	-		0.45	0.48	0.47	0.065	1.1	1.9	0.076	0.39	0.76	0.39	0.14	0.18	0.6	0.37
2-methylnaphthalene	ug/g	0.12	0.24	2.4		**1.4**	**1.3**	**1.8**	**0.45**	**2.3**	**0.92**	**0.56**	**1**	**0.81**	**0.59**	**1.2**	**0.8**	**0.97**	**1.2**
Acenaphthene	ug/g	0.055	0.11	1.1		**0.44**	**0.39**	**0.68**	**0.12**	**1.1**	**0.98**	**0.16**	**0.31**	**0.53**	**0.29**	**0.29**	**0.27**	**0.39**	**0.5**
Acenaphthylene	ug/g	0.079	0.15	1.5		<0.05	<0.05	<0.05	<0.05	**0.16**	**0.15**	<0.05	<0.05	0.057	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	ug/g	0.15	0.29	2.9		**0.44**	**0.37**	**0.35**	0.082	**0.95**	**0.63**	0.1	**0.25**	**1.7**	**0.25**	**0.18**	**0.23**	**0.39**	**0.31**
Benz(a)anthracene	ug/g	0.43	0.83	8.3		0.42	0.37	**0.45**	0.073	**1.1**	**1.2**	0.089	0.33	**0.85**	**0.45**	0.16	0.19	**0.53**	0.31
Benzo(a) pyrene	ug/g	0.47	0.92	9.2		0.22	0.23	0.22	<0.05	0.41	**0.62**	<0.05	0.19	0.33	0.19	0.067	0.086	0.29	0.18
Benzo(b)fluoranthene	ug/g	-	-	-		0.28	0.31	0.31	<0.05	0.72	1.3	<0.05	0.26	0.5	0.25	0.09	0.12	0.4	0.24
Benzo(g,h,i)perylene	ug/g	-	-	-		0.081	0.093	0.073	<0.05	0.13	0.21	<0.05	0.091	0.099	0.051	<0.05	<0.05	0.097	0.054
Benzo(k)fluoranthene	ug/g	-	-	-		0.13	0.14	0.13	<0.05	0.36	0.56	<0.05	0.13	0.24	0.11	<0.05	0.054	0.18	0.11
Chrysene	ug/g	0.52	1	10		**0.53**	0.51	**0.58**	0.07	**1.9**	**2.4**	0.092	0.4	**1.1**	0.45	0.16	0.22	**0.69**	0.36
Dibenz(a,h)anthracene	ug/g	0.084	0.16	1.6		<0.05	<0.05	<0.05	<0.05	<0.05	0.061	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	ug/g	0.93	1.8	18		**1.7**	**1.4**	**2.6**	0.29	**11**	**17**	0.37	**1.3**	**4.7**	**2.2**	0.7	0.84	**1.5**	**1.4**
Fluorene	ug/g	0.089	0.17	1.7		**0.39**	**0.35**	**0.55**	**0.1**	**1.1**	**0.94**	**0.13**	**0.36**	**0.55**	**0.26**	**0.24**	**0.25**	**0.37**	**0.4**
Indeno(1,2,3-c,d)pyrene	ug/g	-	-	-		0.073	0.082	0.07	<0.05	0.13	0.23	<0.05	0.064	0.1	0.052	<0.05	<0.05	0.092	<0.05
Naphthalene	ug/g	0.24	0.47	4.7		**1.1**	**0.94**	**1.7**	**0.33**	**1.6**	**1**	**0.47**	**0.68**	**0.8**	**0.59**	**0.77**	**0.58**	**0.72**	**0.96**
Phenanthrene	ug/g	0.34	0.65	6.5		**1**	**0.99**	**1.6**	0.24	**7.4**	**5.4**	0.32	**0.86**	**2.6**	**0.73**	**0.62**	**0.66**	**1.1**	**0.97**
Pyrene	ug/g	0.87	1.7	17		**1.7**	**1.5**	**1.9**	0.32	**6.4**	**9.1**	0.38	**1.2**	**3**	**0.99**	0.7	0.81	**1.3**	**2**
PAHs (Sum of total)	ug/g	10	20	200		9.3	8.3	**12**	2.1	**35**	**41**	2.7	6.9	**17**	7	5	4.9	8.2	8.5
Metals																			
Aluminium	µg/g	-	-	-		13,000	12,400	14,800	-	13,600	-	12,900	-	12,800	-	-	11,300	-	-
Antimony	µg/g	-	-	-		0.12	0.38	0.16	-	0.19	-	0.1	-	0.2	-	-	0.13	-	-
Arsenic	µg/g	26	50	-		4.1	3.92	4.07	-	4.04	-	3.3	-	4.29	-	-	3.48	-	-
Barium	µg/g	-	-	-		40.7	40.2	41.8	-	41.9	-	31.5	-	42.1	-	-	38.3	-	-
Beryllium	µg/g	-	-	-		<0.4	<0.4	<0.4	-	<0.4	-	<0.4	-	<0.4	-	-	<0.4	-	-
Bismuth	µg/g	-	-	-		<0.1	<0.1	<0.1	-	<0.1	-	<0.1	-	<0.1	-	-	<0.1	-	-
Cadmium	µg/g	2.6	5	-		0.42	0.495	0.719	-	0.378	-	0.294	-	0.538	-	-	0.376	-	-
Calcium	µg/g	-	-	-		7740	7730	17,200	-	11,200	-	7880	-	56,500	-	-	7560	-	-
Chromium	µg/g	99	190	-		18.9	20.4	23.8	-	22.6	-	17.2	-	20.6	-	-	18.4	-	-
Cobalt	µg/g	-	-	-		6.46	6.57	6.98	-	6.62	-	6.37	-	6.33	-	-	6.21	-	-
Copper	µg/g	67	130	-		40.3	30.7	39.8	-	47.5	-	23	-	32.5	-	-	28	-	-
Iron	µg/g	-	-	-		16,100	15,800	18,800	-	17,000	-	15,600	-	18,000	-	-	15,100	-	-
Lead	µg/g	69	130	-		15.8	4.38	6.97	-	6.86	-	3.61	-	6.11	-	-	4.65	-	-
Lithium	µg/g	-	-	-		17.2	17.2	19.5	-	17	-	15.4	-	18.8	-	-	17.4	-	-
Magnesium	µg/g	-	-	-		6040	5780	6740	-	6170	-	5960	-	6670	-	-	5480	-	-
Manganese	µg/g	-	-	-		209	212	232	-	220	-	217	-	214	-	-	214	-	-
Mercury	µg/g	0.43	0.84	-		0.065	0.059	0.071	-	0.069	-	<0.05	-	0.069	-	-	<0.05	-	-
Molybdenum	µg/g	-	-	-		1.04	1	1.61	-	1	-	0.76	-	1.68	-	-	0.8	-	-
Nickel	µg/g	-	-	-		18.3	18.8	20.7	-	25.8	-	16.2	-	19.5	-	-	18.2	-	-
Phosphorus (P)	µg/g	-	-	-		455	465	537	-	443	-	425	-	481	-	-	423	-	-
Potassium	µg/g	-	-	-		926	853	1160	-	939	-	729	-	1110	-	-	790	-	-
Selenium	µg/g	-	-	-		<0.5	<0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	-	-	<0.5	-	-
Silver	µg/g	-	-	-		<0.05	0.07	0.084	-	0.06	-	<0.05	-	0.075	-	-	<0.05	-	-
Sodium	µg/g	-	-	-		2990	2740	3600	-	2710	-	2390	-	5460	-	-	2450	-	-
Strontium	µg/g	-	-	-		47.7	44	84.8	-	59.8	-	37.5	-	291	-	-	46.5	-	-
Thallium	µg/g	-	-	-		0.22	0.221	0.217	-	0.22	-	0.187	-	0.182	-	-	0.214	-	-
Tin	µg/g	-	-	-		0.56	0.71	0.73	-	0.56	-	0.29	-	0.7	-	-	0.39	-	-
Titanium	µg/g	-	-	-		1190	1170	1270	-	1100	-	1300	-	1030	-	-	1220	-	-
Uranium	µg/g	-	-	-		0.507	0.916	0.77	-	0.492	-	0.602	-	0.761	-	-	0.511	-	-
Vanadium	µg/g	-	-	-		45	45.9	52.8	-	45.9	-	43.9	-	45	-	-	44.6	-	-
Zinc	µg/g	170	330	-		40.5	42.1	53.2	-	44.7	-	32.7	-	50.7	-	-	39.2	-	-
Zirconium	µg/g	-	-	-		4.34	4.3	4.62	-	4.23	-	4.19	-	3.98	-	-	4.66	-	-

NOTES:

-	Not analyzed or no applicable CSR standard
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 324/04, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 9).
CSR - Sediment	CSR Quality Criteria for the protection of sensitive marine sediment.
Bold	Bold indicates an exceedance of the CSR Marine Sediment - Sensitive standard.
Red and Underlined	Red and underlined indicates an exceedance of the CSR Marine Sediment - Typical standard.
Bold and Shaded	Bold and shaded indicates an exceedance of applicable Protocol 11 Upper Cap concentrations for Typical sediments.

Table 9: Sediment Analytical Results - PAHs and Metals

Parameters	Unit	CSR - Marine Sediment - Sensitive	CSR - Marine Sediment - Typical	Protocol 11 - Typical	Location	14SED14	14SED-DUP2	14SED15	14SED16	14SED17	14SED18	14SED019@1.1	14SED020@1.0	14SED021@1.5	14SED022@1.5	14SED023@1.8	DUP1	14SED023-A	14SED023-B	14SED023-C	14SED023-D	14SED024@1.3
					Date	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014	11/6/2014	11/6/2014	11/6/2014	11/6/2014	11/6/2014	11/6/2014	11/6/2014	11/6/2014	11/6/2014	11/6/2014	11/6/2014
Physical Parameters																						
pH (Lab)	pH Units	-	-	-		8.1	8.09	-	7.79	8	7.84	-	-	-	-	-	-	-	-	-	-	-
Moisture	%	-	-	-		31	33	26	33	33	43	31	7.1	10	20	15	16	29	30	25	29	19
pH (aqueous extract)	pH Units	-	-	-		8.1	8.09	-	7.79	8	7.84	-	-	-	-	-	-	-	-	-	-	-
IARC Cancer		-	-	-		-	-	-	-	-	-	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.26	0.27	1	0.29	<0.1
TEQ Total		-	-	-		-	-	-	-	-	-	0.11	<0.1	<0.1	0.11	0.11	0.11	4	4.3	13	4.3	0.11
Polycyclic Aromatic Hydrocarbons (PAHs)																						
Benzo(b+j)fluoranthene	ug/g	-	-	-		0.83	0.93	0.26	0.79	0.41	0.97	<0.01	<0.001	0.0026	<0.01	<0.01	<0.01	0.17	0.18	0.5	0.18	<0.01
2-methylnaphthalene	ug/g	0.12	0.24	2.4		**1.3**	**1.5**	**1.6**	**1.9**	**0.94**	**1.2**	0.01	0.0017	0.029	0.045	0.058	0.057	**5.3**	**3.4**	**2.7**	**5.9**	0.092
Acenaphthene	ug/g	0.055	0.11	1.1		**0.48**	**0.57**	**0.47**	**0.68**	**0.54**	**0.51**	<0.005	<0.0005	0.0075	0.0057	0.011	0.008	**0.83**	**0.66**	**0.49**	**0.86**	<0.0081
Acenaphthylene	ug/g	0.079	0.15	1.5		0.053	0.061	<0.05	0.064	<0.05	0.061	<0.005	<0.0005	<0.0005	<0.005	<0.005	<0.005	0.035	0.034	**0.15**	0.042	<0.005
Anthracene	ug/g	0.15	0.29	2.9		**0.5**	**0.57**	**0.31**	**0.71**	**0.4**	**0.64**	<0.01	<0.001	0.0037	<0.01	<0.01	<0.01	**0.55**	**0.55**	**1.3**	**0.64**	<0.01
Benz(a)anthracene	ug/g	0.43	0.83	8.3		**0.63**	**0.69**	0.31	**0.66**	**0.44**	**0.74**	<0.01	<0.001	0.0041	<0.01	<0.01	<0.01	0.38	**0.43**	**0.94**	0.41	<0.01
Benzo(a) pyrene	ug/g	0.47	0.92	9.2		0.38	0.4	0.13	0.39	0.19	0.44	<0.01	<0.001	0.0026	<0.01	<0.01	<0.01	0.15	0.16	**0.67**	0.17	<0.01
Benzo(b)fluoranthene	ug/g	-	-	-		0.54	0.62	0.17	0.52	0.27	0.64	<0.01	<0.001	0.0037	<0.01	<0.01	<0.01	0.27	0.28	0.83	0.28	<0.01
Benzo(g,h,i)perylene	ug/g	-	-	-		0.13	0.12	<0.05	0.13	0.067	0.16	<0.02	<0.002	0.0029	<0.02	<0.02	<0.02	0.07	0.067	0.28	0.081	<0.02
Benzo(k)fluoranthene	ug/g	-	-	-		0.25	0.27	0.076	0.24	0.12	0.28	<0.01	<0.001	<0.001	<0.01	<0.01	<0.01	0.069	0.079	0.31	0.073	<0.01
Chrysene	ug/g	0.52	1	10		**0.96**	**1.1**	0.38	**0.89**	0.49	**1.1**	<0.01	<0.001	0.0058	<0.01	<0.01	<0.01	0.38	0.47	**0.91**	0.41	<0.01
Dibenz(a,h)anthracene	ug/g	0.084	0.16	1.6		<0.05	<0.05	<0.05	<0.05	<0.05	0.051	<0.005	<0.0005	<0.0005	<0.005	<0.005	<0.005	0.027	0.025	**0.1**	0.03	<0.005
Fluoranthene	ug/g	0.93	1.8	18		**2.9**	**3**	**1**	**2.3**	**2**	**2.4**	<0.01	0.0016	0.0061	0.018	0.021	0.02	**1.1**	**1.5**	**2.6**	**1.1**	<0.01
Fluorene	ug/g	0.089	0.17	1.7		**0.44**	**0.54**	**0.37**	**0.63**	**0.54**	**0.51**	<0.01	<0.001	0.0041	<0.01	<0.01	<0.01	**0.61**	**0.63**	**0.68**	**0.65**	<0.01
Indeno(1,2,3-c,d)pyrene	ug/g	-	-	-		0.12	0.12	<0.05	0.13	0.061	0.15	<0.02	<0.002	<0.002	<0.02	<0.02	<0.02	0.038	0.044	0.26	0.047	<0.02
Naphthalene	ug/g	0.24	0.47	4.7		**1**	**1.2**	**1.1**	**1.4**	**0.77**	**0.97**	<0.01	0.0013	0.014	0.023	0.034	0.036	**3.3**	**2.2**	**1.7**	**3.6**	0.062
Phenanthrene	ug/g	0.34	0.65	6.5		**1.2**	**1.7**	**0.99**	**1.6**	**1.7**	**1.2**	0.011	0.0016	0.02	0.023	0.022	0.024	**1.7**	**1.4**	**3**	**1.8**	0.023
Pyrene	ug/g	0.87	1.7	17		**3**	**3**	**1.2**	**2.5**	**1.7**	**2.8**	<0.01	0.0014	0.0066	0.014	0.026	0.021	**1**	**1.2**	**2.6**	**1.1**	<0.01
PAHs (Sum of total)	ug/g	10	20	200		**13**	**14**	7.9	**14**	9.7	**13**	0.021	0.0076	0.1	0.13	0.17	0.17	**15**	**13**	**18**	**17**	0.18
Metals																						
Aluminium	µg/g	-	-	-		13,400	13,200	-	10,700	13,900	13,400	-	-	-	-	-	-	-	-	-	-	-
Antimony	µg/g	-	-	-		0.2	0.2	-	0.19	0.13	0.3	-	-	-	-	-	-	-	-	-	-	-
Arsenic	µg/g	26	50	-		4.13	4.85	-	5.1	4.05	5.52	-	-	-	-	-	-	-	-	-	-	-
Barium	µg/g	-	-	-		45.1	48.5	-	46.6	42.6	46.4	-	-	-	-	-	-	-	-	-	-	-
Beryllium	µg/g	-	-	-		<0.4	<0.4	-	<0.4	<0.4	<0.4	-	-	-	-	-	-	-	-	-	-	-
Bismuth	µg/g	-	-	-		<0.1	<0.1	-	<0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	-
Cadmium	µg/g	2.6	5	-		0.51	0.754	-	0.714	0.517	0.735	-	-	-	-	-	-	-	-	-	-	-
Calcium	µg/g	-	-	-		10,100	11,600	-	8350	10,000	11,200	-	-	-	-	-	-	-	-	-	-	-
Chromium	µg/g	99	190	-		21.2	22.6	-	23.8	21	25.1	-	-	-	-	-	-	-	-	-	-	-
Cobalt	µg/g	-	-	-		6.47	6.78	-	6.26	6.84	6.53	-	-	-	-	-	-	-	-	-	-	-
Copper	µg/g	67	130	-		30.2	41.9	-	41.4	44.7	41.5	-	-	-	-	-	-	-	-	-	-	-
Iron	µg/g	-	-	-		16,800	17,400	-	16,100	17,800	18,800	-	-	-	-	-	-	-	-	-	-	-
Lead	µg/g	69	130	-		7.79	10	-	9.46	7.01	11.7	-	-	-	-	-	-	-	-	-	-	-
Lithium	µg/g	-	-	-		18.3	19.5	-	18.8	18.6	18.3	-	-	-	-	-	-	-	-	-	-	-
Magnesium	µg/g	-	-	-		6220	6470	-	5850	6510	6730	-	-	-	-	-	-	-	-	-	-	-
Manganese	µg/g	-	-	-		209	226	-	204	222	211	-	-	-	-	-	-	-	-	-	-	-
Mercury	µg/g	0.43	0.84	-		0.077	0.084	-	0.081	0.063	0.123	-	-	-	-	-	-	-	-	-	-	-
Molybdenum	µg/g	-	-	-		1.46	1.86	-	1.94	1.29	2.46	-	-	-	-	-	-	-	-	-	-	-
Nickel	µg/g	-	-	-		19.3	20.8	-	24.7	18.5	20.4	-	-	-	-	-	-	-	-	-	-	-
Phosphorus (P)	µg/g	-	-	-		521	499	-	447	498	518	-	-	-	-	-	-	-	-	-	-	-
Potassium	µg/g	-	-	-		1010	1110	-	940	1060	1200	-	-	-	-	-	-	-	-	-	-	-
Selenium	µg/g	-	-	-		<0.5	<0.5	-	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-
Silver	µg/g	-	-	-		0.083	0.13	-	0.101	0.072	0.093	-	-	-	-	-	-	-	-	-	-	-
Sodium	µg/g	-	-	-		3550	4370	-	4350	4270	6430	-	-	-	-	-	-	-	-	-	-	-
Strontium	µg/g	-	-	-		57.1	75.4	-	71.1	52.4	68	-	-	-	-	-	-	-	-	-	-	-
Thallium	µg/g	-	-	-		0.246	0.241	-	0.189	0.202	0.232	-	-	-	-	-	-	-	-	-	-	-
Tin	µg/g	-	-	-		0.65	0.74	-	0.99	0.72	1.48	-	-	-	-	-	-	-	-	-	-	-
Titanium	µg/g	-	-	-		1140	1200	-	910	1260	1120	-	-	-	-	-	-	-	-	-	-	-
Uranium	µg/g	-	-	-		0.8	0.87	-	0.669	0.758	0.83	-	-	-	-	-	-	-	-	-	-	-
Vanadium	µg/g	-	-	-		47.3	48.3	-	42.6	48.7	46.5	-	-	-	-	-	-	-	-	-	-	-
Zinc	µg/g	170	330	-		45.6	51.6	-	53.9	46.1	63.1	-	-	-	-	-	-	-	-	-	-	-
Zirconium	µg/g	-	-	-		4.22	4.65	-	4.26	4.39	4.62	-	-	-	-	-	-	-	-	-	-	-

NOTES:

-	Not analyzed or no applicable CSR standard
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 324/04, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 9).
CSR - Sediment	CSR Quality Criteria for the protection of sensitive marine sediment.
Bold	Bold indicates an exceedance of the CSR Marine Sediment - Sensitive standard.
Red and Underlined	Red and underlined indicates an exceedance of the CSR Marine Sediment - Typical standard.
Bold and Shaded	Bold and shaded indicates an exceedance of applicable Protocol 11 Upper Cap concentrations for Ty

Table 10: Soil Vapour Analytical Results – Volatile Organic Compounds

Location:	UNITS	CSR - CL	CSR - IL	Protocol 11 - CL	Protocol 11 - IL	14VP01								
Date Sampled:						19-Nov-14			8-Apr-15			8-Apr-15 (15VP DUP1)		
Exposure:						C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$
Depth of sand pack (m):						1.98	N/A	N/A	1.98	N/A	N/A	1.98	N/A	N/A
Attenuation Factor						N/A	0.0000012	0.00034	N/A	0.0000012	0.00034	N/A	0.0000012	0.00034
Volatile Organic Compounds														
Naphthalene	µg/m3	9	25	90	2,500	<13	0.000016	0.0044	<2.6	0.0000031	0.00088	<2.6	0.0000031	0.00088
Benzene	µg/m3	4	10	40	1,000	32.3	0.0000388	0.0110	<0.58	0.00000070	0.00020	<0.58	0.00000070	0.00020
1,1,1,2-Tetrachloroethane	µg/m3	4	10	40	1,000	-	-	-	-	-	-	-	-	-
Ethylbenzene	µg/m3	3,000	9,000	30,000	450,000	57.8	0.0000694	0.0197	2.27	0.00000272	0.000772	2.24	0.00000269	0.000762
MTBE	µg/m3	9,000	27,000	90,000	200,000	<3.6	0.0000043	0.0012	<0.72	0.00000086	0.00024	<0.72	0.00000086	0.00024
Toluene	µg/m3	15,000	45,000	75,500	75,500	65.5	0.0000786	0.0223	4.11	0.00000493	0.00140	3.73	0.00000448	0.00127
Xylenes Total	µg/m3	300	900	3,000	90,000	502	0.000602	0.171	42.7	0.0000512	0.0145	42.9	0.0000515	0.0146
1,2,4-Trimethylbenzene	µg/m3	20	55	200	5,500	2270	0.002724	0.7718	228	0.000274	0.0775	239	0.000287	0.0813
1,2-Dibromoethane	µg/m3	1	1	10	100	<1.9	0.0000023	0.00065	<0.38	0.00000046	0.00013	<0.38	0.00000046	0.00013
1,2-Dichloroethane	µg/m3	1	4	10	350	<2	0.000002	0.0007	<0.40	0.00000048	0.00014	<0.40	0.00000048	0.00014
1,3,5-Trimethylbenzene	µg/m3	20	55	200	5,500	441	0.000529	0.150	58.5	0.0000702	0.0199	60.9	0.0000731	0.0207
1,3-Butadiene	µg/m3	6	20	60	2,000	<5.5	0.000007	0.0019	<1.1	0.0000013	0.00037	<1.1	0.0000013	0.00037
Decane	µg/m3	8,000	25,000	80,000	2,500,000	2510	0.003012	0.8534	214	0.000257	0.0728	222	0.000266	0.0755
Hexane	µg/m3	2,000	6,500	20,000	70,500	195	0.000234	0.0663	<1.1	0.0000013	0.00037	<1.1	0.0000013	0.00037
Isopropylbenzene	µg/m3	1,000	4,000	10,000	100,000	37	0.000044	0.013	<2.5	0.0000030	0.00085	<2.5	0.0000030	0.00085
Methylcyclohexane	µg/m3	9,000	27,000	90,000	1,500,000	539	0.000647	0.183	<2.0	0.0000024	0.00068	<2.0	0.0000024	0.00068
VPH (C6-C13)	µg/m3	3,000	11,500	30,000	1,150,000	41,900	0.0503	14.2	9110	0.01093	3.097	9520	0.01142	3.237
1,2,3-Trimethylbenzene	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-
2,2,4-Trimethylpentane	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-
2-propanol	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-
4-ethyltoluene	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-
Cyclohexane	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-
Heptane	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	µg/m3	3,000	9,000	30,000	200,000	-	-	-	-	-	-	-	-	-
Laboratory Work Order Number						YO5541			B565545			B565545		
Laboratory Identification Number						R3244500			ACJ178			ACJ182		

Location:	14VP02						14VP03					
Date Sampled:	19-Nov-14			8-Apr-15			19-Nov-14			7-Apr-15		
Exposure:	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$
Depth of sand pack (m):	1.0	N/A	N/A	1.0	N/A	N/A	1.7	N/A	N/A	1.7	N/A	N/A
Attenuation Factor	N/A	0.0000015	0.00037	N/A	0.0000015	0.00037	N/A	0.0000012	0.00034	N/A	0.0000012	0.00034
Volatile Organic Compounds												
Naphthalene	<13	0.000020	0.0048	<10	0.000015	0.0037	<26	0.000031	0.0088	<2.6	0.0000031	0.00088
Benzene	<2.9	0.0000044	0.0011	<2.3	0.0000035	0.00085	7.6	0.0000091	0.0026	<0.58	0.00000070	0.00020
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	65.2	0.0000978	0.0241	11.6	0.0000174	0.00429	122	0.000146	0.0415	<0.87	0.0000010	0.00030
MTBE	<3.6	0.0000054	0.0013	<2.9	0.0000044	0.0011	<7.2	0.0000086	0.0024	<0.72	0.00000086	0.00024
Toluene	11.7	0.0000176	0.00433	<3.0	0.0000045	0.0011	18.4	0.0000221	0.00626	5.90	0.00000708	0.00201
Xylenes Total	570	0.000855	0.211	221	0.000332	0.0818	1110	0.001332	0.3774	2.8	0.0000034	0.0010
1,2,4-Trimethylbenzene	2480	0.003720	0.9176	803	0.00120	0.297	5120	0.006144	1.741	8.4	0.000010	0.0029
1,2-Dibromoethane	<1.9	0.0000029	0.0007	<1.5	0.0000023	0.00056	<3.8	0.0000046	0.0013	<0.38	0.00000046	0.00013
1,2-Dichloroethane	<2	0.000003	0.001	<1.6	0.0000024	0.00059	<4	0.000005	0.001	<0.40	0.00000048	0.00014
1,3,5-Trimethylbenzene	480	0.000720	0.178	213	0.000320	0.0788	956	0.00115	0.325	<2.5	0.0000030	0.00085
1,3-Butadiene	<5.5	0.0000083	0.0020	<4.4	0.0000066	0.0016	<11	0.000013	0.0037	<1.1	0.0000013	0.00037
Decane	2730	0.004095	1.010	<12	0.000018	0.0044	9320	0.01118	3.169	3.2	0.0000038	0.0011
Hexane	<5.3	0.0000080	0.0020	<4.2	0.0000063	0.0016	16	0.000019	0.0054	<1.1	0.0000013	0.00037
Isopropylbenzene	41	0.000062	0.015	<9.8	0.000015	0.0036	73	0.000088	0.025	<2.5	0.0000030	0.00085
Methylcyclohexane	<10	0.000015	0.0037	<8.0	0.000012	0.0030	33	0.000040	0.011	<2.0	0.0000024	0.00068
VPH (C6-C13)	43,400	0.06510	16.06	26400	0.03960	9.768	124,000	0.1488	42.16	558	0.000670	0.190
1,2,3-Trimethylbenzene	-	-	-	-	-	-	-	-	-	4.2	0.0000050	0.0014
2,2,4-Trimethylpentane	-	-	-	-	-	-	-	-	-	<0.93	0.0000011	0.00032
2-propanol	-	-	-	-	-	-	-	-	-	<7.4	0.0000089	0.0025
4-ethyltoluene	-	-	-	-	-	-	-	-	-	<11	0.000013	0.0037
Cyclohexane	-	-	-	-	-	-	-	-	-	<0.69	0.00000083	0.00023
Heptane	-	-	-	-	-	-	-	-	-	<1.2	0.0000014	0.00041
Styrene	-	-	-	-	-	-	-	-	-	<0.85	0.0000010	0.00029
Laboratory Work Order Number	YO5542			B565545			YO5543			B528142		
Laboratory Identification Number	R3244500			ACJ179			R3244500			MA1884		

NOTES:

Units	All results are in µg/m^3
<	Concentration is less than the laboratory detection limit indicated. For attenuation purposes, concentration was assumed to be equal to the detection limit.
-	Not Analyzed
VPHv	Volatile Petroleum Hydrocarbons
MTBE	Methyl Tert-Butyl Ether
*	Indoor and Outdoor concentrations have been multiplied by an applicable BC Ministry of Environment attenuation factor based on the depth to determine final concentrations.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedule 11)
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014)
CL	Commercial Land Use
IL	Industrial Land Use
C_{vapour}	Vapour concentration without attenuation are not compared to applicable standards.
Bold and Underlined	Bold indicates an exceedance of the CSR CL Schedule 11 standards.
Red Text	Red text indicates an exceedance of the CSR IL Schedule 11 standards.
SHADED	Shaded indicates an exceedance of the Protocol 11 Upper Cap concentrations (CL or IL).

Vapour Attenuation Factors have been taken from Table 2 - Default vapour attenuation factors of BC Ministry of Environment Technical Guidance 4 on Contaminated Sites "*Vapour Investigation and Remediation*" Version 1, Sept. 2010.

Table 10: Soil Vapour Analytical Results – Volatile Organic Compounds

Location:	**UNITS**	**CSR - CL**	**CSR - IL**	**Protocol 11 - CL**	**Protocol 11 - IL**	**14VP04**						**14VP05**			**14VP06**											
Date Sampled:						19-Nov-14			8-Apr-15			19-Nov-14			19-Nov-14			19-Nov-14 (DUP1)			8-Apr-15			7-Apr-15		
Exposure:						C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$
Depth of sand pack (m):						0.76	N/A	N/A	0.76	N/A	N/A	0.27	N/A	N/A	1.0	N/A	N/A	1.0	N/A	N/A	1.0	N/A	N/A	0.7	N/A	N/A
Attenuation Factor						N/A	0.0001	0.02	N/A	0.0001	0.02	N/A	0.0001	0.02	N/A	0.0000015	0.00037	N/A	0.0000015	0.00037	N/A	0.0000015	0.00037	N/A	0.0001	0.02
Volatile Organic Compounds																										
Naphthalene	µg/m3	9	25	90	2,500	6.8	0.00068	0.14	**<u><10</u>**	0.0010	0.20	<2.6	0.000260	0.052	<840	0.00126	0.311	<840	0.00126	0.311	<240	0.000360	0.0888	<2.6	0.00026	0.052
Benzene	µg/m3	4	10	40	1,000	-	-	-	-	-	-	2.9	0.00029	0.058	<180	0.000270	0.0666	<180	0.000270	0.0666	<52	0.000078	0.019	2.00	0.000200	0.0400
1,1,1,2-Tetrachloroethane	µg/m3	4	10	40	1,000	-	-	-	-	-	-	<3.4	0.00034	0.068	<1100	0.001650	0.4070	<1100	0.001650	0.4070	<62	0.000093	0.023	-	-	-
Ethylbenzene	µg/m3	3,000	9,000	30,000	450,000	-	-	-	-	-	-	1.6	0.00016	0.032	3020	0.004530	1.117	3320	0.004980	1.228	830	0.00125	0.307	2.21	0.000221	0.0442
MTBE	µg/m3	9,000	27,000	90,000	200,000	-	-	-	-	-	-	<0.72	0.000072	0.014	<230	0.000345	0.0851	<230	0.000345	0.0851	<65	0.00010	0.024	<0.72	0.000072	0.014
Toluene	µg/m3	15,000	45,000	75,500	75,500	-	-	-	-	-	-	24.4	0.00244	0.488	<600	0.000900	0.222	<600	0.000900	0.222	<130	0.000195	0.0481	43.1	0.00431	0.862
Xylenes Total	µg/m3	300	900	3,000	90,000	-	-	-	-	-	-	9	0.001	0.2	20,100	0.03015	7.437	22,000	0.03300	8.140	12,300	0.01845	4.551	12.5	0.00125	0.250
1,2,4-Trimethylbenzene	µg/m3	20	55	200	5,500	-	-	-	-	-	-	3.2	0.00032	0.064	25,500	0.03825	9.435	27,600	0.04140	10.21	16,800	0.02520	6.216	14.0	0.00140	0.280
1,2-Dibromoethane	µg/m3	1	1	10	100	-	-	-	-	-	-	<0.38	0.000038	0.0076	<120	0.000180	0.0444	<120	0.000180	0.0444	<35	0.000053	0.013	<0.38	0.000038	0.008
1,2-Dichloroethane	µg/m3	1	4	10	350	-	-	-	-	-	-	<0.4	0.00004	0.008	<130	0.000195	0.0481	<130	0.000195	0.0481	<36	0.000054	0.013	<0.40	0.000040	0.0080
1,3,5-Trimethylbenzene	µg/m3	20	55	200	5,500	-	-	-	-	-	-	<2.5	0.00025	0.050	7130	0.01070	2.638	7700	0.01155	2.849	5400	0.008100	1.998	3.3	0.00033	0.066
1,3-Butadiene	µg/m3	6	20	60	2,000	-	-	-	-	-	-	<1.1	0.00011	0.022	<350	0.000525	0.130	<350	0.000525	0.130	<100	0.000150	0.0370	<1.1	0.00011	0.022
Decane	µg/m3	8,000	25,000	80,000	2,500,000	-	-	-	-	-	-	24	0.0024	0.48	41,000	0.06150	15.17	44,500	0.06675	16.47	19,400	0.02910	7.178	5.6	0.00056	0.11
Hexane	µg/m3	2,000	6,500	20,000	70,500	-	-	-	-	-	-	7.9	0.00079	0.16	<390	0.000585	0.144	<390	0.000585	0.144	<95	0.00014	0.035	2.4	0.00024	0.048
Isopropylbenzene	µg/m3	1,000	4,000	10,000	100,000	-	-	-	-	-	-	<2.5	0.00025	0.050	1410	0.002115	0.5217	1550	0.002325	0.5735	307	0.000461	0.114	<2.5	0.00025	0.050
Methylcyclohexane	µg/m3	9,000	27,000	90,000	1,500,000	-	-	-	-	-	-	14.1	0.00141	0.282	<640	0.000960	0.237	<640	0.000960	0.237	<180	0.000270	0.0666	10.6	0.00106	0.212
VPH (C6-C13)	µg/m3	3,000	11,500	30,000	1,150,000	-	-	-	-	-	-	1120	0.1120	22.40	959,000	1.439	354.8	1,040,000	1.560	384.8	702,000	1.053	259.7	696	0.0696	13.9
1,2,3-Trimethylbenzene	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.6	0.00066	0.13
2,2,4-Trimethylpentane	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.93	0.000093	0.019
2-propanol	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<7.4	0.00074	0.15
4-ethyltoluene	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<11	0.0011	0.22
Cyclohexane	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.3	0.00143	0.286
Heptane	µg/m3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	0.00042	0.084
Styrene	µg/m3	3,000	9,000	30,000	200,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.85	0.000085	0.017
Laboratory Work Order Number						YO5544			B528750			YO5545			YO5546			YO5547			B528750			B528142		
Laboratory Identification Number						R3244500			ACJ180			R3244500			R3244500			R3244500			ACJ181			MA1885		

NOTES:

Units	All results are in µg/m^3
<	Concentration is less than the laboratory detection limit indicated. For attenuation purposes, concentration was assumed to be equal to the detection limit.
-	Not Analyzed
VPHv	Volatile Petroleum Hydrocarbons
MTBE	Methyl Tert-Butyl Ether
*	Indoor and Outdoor concentrations have been multiplied by an applicable BC Ministry of Environment attenuation factor based on the depth to determine final concentrations.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedule 11)
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014)
CL	Commercial Land Use
IL	Industrial Land Use
C_{vapour}	Vapour concentration without attenuation are not compared to applicable standards.
<u>Bold and Underlined</u>	Bold indicates an exceedance of the CSR CL Schedule 11 standards.
Red Text	Red text indicates an exceedance of the CSR IL Schedule 11 standards.
SHADED	Shaded indicates an exceedance of the Protocol 11 Upper Cap concentrations (CL or IL).

Vapour Attenuation Factors have been taken from Table 2 - Default vapour attenuation factors of BC Ministry of Environment Technical Guidance 4 on Contaminated Sites "*Vapour Investigation and Remediation*" Version 1, Sept. 2010.

Table 10: Soil Vapour Analytical Results – Volatile Organic Compounds

Location:	UNITS	CSR - CL	CSR - IL	Protocol 11 - CL	Protocol 11 - IL	15VP07						15VP08					
Date Sampled:						11-Sep-15			11-Sept-15 (DUP2)			7-Apr-15			11-Sep-15		
Exposure:						C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$
Depth of sand pack (m):						0.7	N/A	N/A	0.7	N/A	N/A	0.7	N/A	N/A	0.7	N/A	N/A
Attenuation Factor						N/A	0.0001	0.02	N/A	0.0001	0.02	N/A	0.0001	0.02	N/A	0.0001	0.02
Volatile Organic Compounds																	
Naphthalene	µg/m3	9	25	90	2,500	<2.6	0.00026	0.052	<2.6	0.00026	0.052	<2.6	0.00026	0.052	<2.6	0.00026	0.052
Benzene	µg/m3	4	10	40	1,000	<0.58	0.000058	0.0116	<0.58	0.000058	0.0116	10.1	0.00101	0.202	<0.58	0.00006	0.012
1,1,1,2-Tetrachloroethane	µg/m3	4	10	40	1,000	<0.69	0.000069	0.0138	<0.69	0.000069	0.0138	-	-	-	<0.69	0.00007	0.014
Ethylbenzene	µg/m3	3,000	9,000	30,000	450,000	<0.87	0.000087	0.0174	<0.87	0.000087	0.0174	2.71	0.000271	0.0542	<0.87	0.000087	0.0174
MTBE	µg/m3	9,000	27,000	90,000	200,000	<0.72	0.000072	0.014	<0.72	0.000072	0.014	<0.72	0.000072	0.014	<0.72	0.000072	0.014
Toluene	µg/m3	15,000	45,000	75,500	75,500	1.66	0.00017	0.033	4.99	0.00050	0.100	30.4	0.00304	0.608	0.99	0.00010	0.020
Xylenes Total	µg/m3	300	900	3,000	90,000	<2.6	0.00026	0.052	<2.6	0.00026	0.052	18.0	0.00180	0.360	<2.6	0.00026	0.052
1,2,4-Trimethylbenzene	µg/m3	20	55	200	5,500	<2.5	0.00025	0.050	<2.5	0.00025	0.050	9.8	0.00098	0.20	<2.5	0.00025	0.05
1,2-Dibromoethane	µg/m3	1	1	10	100	<0.38	0.000038	0.008	<0.38	0.000038	0.008	<0.38	0.000038	0.0076	<0.38	0.000038	0.0076
1,2-Dichloroethane	µg/m3	1	4	10	350	<0.40	0.000040	0.0080	<0.40	0.000040	0.0080	<0.40	0.000040	0.0080	<0.40	0.000040	0.0080
1,3,5-Trimethylbenzene	µg/m3	20	55	200	5,500	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050
1,3-Butadiene	µg/m3	6	20	60	2,000	<1.1	0.00011	0.022	<1.1	0.00011	0.022	<1.1	0.00011	0.022	<1.1	0.00011	0.022
Decane	µg/m3	8,000	25,000	80,000	2,500,000	<2.9	0.00029	0.06	<2.9	0.00029	0.06	5.5	0.00055	0.11	<2.9	0.00029	0.06
Hexane	µg/m3	2,000	6,500	20,000	70,500	<1.1	0.00011	0.022	<1.1	0.00011	0.022	16.0	0.00160	0.320	<1.1	0.00011	0.022
Isopropylbenzene	µg/m3	1,000	4,000	10,000	100,000	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050
Methylcyclohexane	µg/m3	9,000	27,000	90,000	1,500,000	<2.0	0.00020	0.040	<2.0	0.00020	0.040	28.8	0.00288	0.576	<2.0	0.00020	0.040
VPH (C6-C13)	µg/m3	3,000	11,500	30,000	1,150,000	57	0.0057	1.1	36	0.0036	0.7	842	0.0842	16.8	37	0.0037	0.7
1,2,3-Trimethylbenzene	µg/m3	-	-	-	-	-	-	-	-	-	-	4.6	0.00046	0.092	-	-	-
2,2,4-Trimethylpentane	µg/m3	-	-	-	-	-	-	-	-	-	-	<0.93	0.000093	0.019	-	-	-
2-propanol	µg/m3	-	-	-	-	-	-	-	-	-	-	<7.4	0.00074	0.15	-	-	-
4-ethyltoluene	µg/m3	-	-	-	-	-	-	-	-	-	-	<11	0.0011	0.22	-	-	-
Cyclohexane	µg/m3	-	-	-	-	-	-	-	-	-	-	49.4	0.00494	0.988	-	-	-
Heptane	µg/m3	-	-	-	-	-	-	-	-	-	-	10.4	0.00104	0.208	-	-	-
Styrene	µg/m3	3,000	9,000	30,000	200,000	<0.43	0.000043	0.009	<0.43	0.000043	0.009	<0.85	0.000085	0.017	<0.43	0.000043	0.009
Laboratory Work Order Number						B517114			B517114			B528142			B517114		
Laboratory Identification Number						ND0054			ND0056			MA1886			ND0055		

NOTES:

Units	All results are in µg/m^3
<	Concentration is less than the laboratory detection limit indicated. For attenuation purposes, concentration was assumed to be equal to the detection limit.
-	Not Analyzed
VPHv	Volatile Petroleum Hydrocarbons
MTBE	Methyl Tert-Butyl Ether
*	Indoor and Outdoor concentrations have been multiplied by an applicable BC Ministry of Environment attenuation factor based on the depth to determine final concentrations.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedule 11)
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SHADED	Shaded indicates an exceedance of the Protocol 11 Upper Cap concentrations (CL or IL).

Vapour Attenuation Factors have been taken from Table 2 - Default vapour attenuation factors of BC Ministry of Environment Technical Guidance 4 on Contaminated Sites "*Vapour Investigation and Remediation*" Version 1, Sept. 2010.

Table 11: Summary of Chromium Concentrations Throughout the Property

Sample ID	Depth(m)	Test Location	Soil Type	Chromium Concentration
14BH01-1 (Dup 2) *	0.5-0.9	AEC 1	Coal Waste Fill	Cr (130 ug/g)
14BH01-2	1.5-1.7		Coal Waste Fill	Cr (83.6 ug/g)
14BH01-3	2.4-2.6		Coal Waste Fill	Cr (86.4 ug/g)
14BH02-1	0.65-0.75		Coal Waste Fill	Cr (124 ug/g)
14BH02-2 *	1.1–1.3		Coal Waste Fill	Cr (125 ug/g)
14BH02-3	2.1-2.3		Coal Waste Fill	Cr (82 ug/g)
14BH02-4	2.5-2.7		Native	Cr (19.4 ug/g)
14BH03-1	0.55-0.7		Coal Waste Fill	Cr (71.5 ug/g)
14BH03-2	1.35 - 1.45		Coal Waste Fill	Cr (77.1 ug/g)
SNC09-2-2	0.8-0.9		Coal Waste Fill	Cr (140 ug/g)
SNC09-2-5	2.3-2.4		Coal Waste Fill	Cr (68 ug/g)
14BH04-2*	0.95 - 1.05	AEC 7	Coal Waste Fill	Cr (138 ug/g)
14BH04-3	2.29 - 2.44		Coal Waste Fill	Cr (52.6 ug/g)
14BH04-4	3.53 - 3.70		Native	Cr (18.9 ug/g)
14BH17-2	1.05 - 1.2		Coal Waste Fill	Cr (22.7 ug/g)
14BH17-3	2.34 - 2.49		Native	Cr (78.1 ug/g)
14BH18-2	1.68 - 1.8		Coal Waste Fill	Cr (86.5 ug/g
14BH18-3	2.57 - 2.74		Fill	Cr (57.4 ug/g)
14BH19-1	0.66 - 0.78		Coal Waste Fill	Cr (15.4 ug/g)
14BH19-3 (Dup 1)	1.9 - 2.05		Coal Waste Fill	Cr (95 ug/g)
14BH19-4	3.96 - 4.11		Native	Cr (81.9 ug/g)
14BH20-1	0.62 - 0.75		Coal Waste Fill	Cr (109 ug/g)
14BH20-2*	1.8 - 1.98		Coal Waste Fill	Cr (115 ug/g)
14BH20-3	2.82 - 3.0		Coal Waste Fill	Cr (81.6 ug/g)
14BH20-4*	3.86 - 4.04		Coal Waste Fill	Cr (96.8 ug/g)
14BH20-5	5.33 - 5.49		Native	Cr (77.1 ug/g)
SNC09-17-1	0.3-0.5		Fill	Cr (54 ug/g)
SNC09-17-4	1.7-1.8		Fill	Cr (33 ug/g)
14BH05-2	1.67-1.83	AEC 2	Coal Waste Fill	Cr (32.7 ug/g)
14BH05-6	5.64-6.1		Fill	Cr (12.9 ug/g)
14BH06-2	2.12-2.22		Coal Waste Fill	Cr (69.2 ug/g)
14BH06-6	3.91-4.11		Native	Cr (14.3 ug/g)
14BH07-1	1.22-1.35		Coal Waste Fill	Cr (42.6 ug/g)
14BH07-3	3.81-3.96		Coal Waste Fill	Cr (29.3 ug/g)
14BH08-2	2.1-2.25		Coal Waste Fill	Cr (75 ug/g)
14BH08-4 (Dup 3)	4.57-4.88		Native	Cr (66.5 ug/g)
14BH09-2	2.13-2.29		Coal Waste Fill	Cr (56.2 ug/g)
14BH09-3	4.04-4.17		Coal Waste Fill	Cr (56.3 ug/g)

Sample ID	Depth(m)	Test Location	Soil Type	Chromium Concentration
14BH09-5	5.18-5.44	AEC 2	Coal Waste Fill	Cr (43.9 ug/g)
14BH09-6*	6.86-7.01		Coal Waste Fill	Cr (116 ug/g)
14BH09-7	8.31-8.46		Native	Cr (24.1 ug/g)
14BH26-7	6.88-7.01		Fill	Cr (93.1 ug/g)
15BH37	5.1 m		Coal Waste	Cr (48.5 ug/g)
SNC09-52-1	0.2-0.3		Coal Waste Fill	Cr (35 ug/g)
SNC09-53-3	1.1-1.2		Coal Waste Fill	Cr 57 ug/g)
SNC09-21-1	0.3-0.5		Coal Waste Fill	Cr (23 ug/g)
14BH10-2	1.12-1.35	AEC 3	Fill	Cr (19.9 ug/g)
14BH11-4	3.56-3.71		Fill	Cr (14.2 ug/g)
14BH12-1	0.56-0.71		Fill	Cr (17.3 ug/g)
14BH13-2	1.0-1.2		Fill	Cr (15.7 ug/g)
SNC09-22-1	0.3-0.5	AEC 3	Coal	Cr (28 ug/g)
SNC09-22-6	1.2-1.4	AEC 3	Native	Cr (15 ug/g)
SNC09-10-2	0.8-0.9	AEC 3	Fill	Cr (15 ug/g)
SNC09-10-3	1.2-1.4	AEC 3	Native	Cr (17 ug/g)
SNC09-4-1	0.3-0.5	AEC 3 and AEC 7	Fill	Cr (27 ug/g)
SNC09-4-3	1.2-1.4		Fill	Cr (15 ug/g)
SNC09-4-8	4.3-4.6		Coal Waste Fill	Cr (16 ug/g)
SNC09-4-1	0.3-0.5	AEC 2 and AEC 3	Fill	Cr (27 ug/g)
SNC09-4-3	1.2-1.4		Fill	Cr (15 ug/g)
SNC09-4-8 (Dup)	4.3-4.6		Coal Waste Fill	Cr (24ug/g)
14BH14-1	0.3-0.43	AEC 4	Coal Waste Fill	Cr (26.4 ug/g)
14BH15-2	2.5-2.64		Coal Waste Fill	Cr (20.1 ug/g)
14BH16-1 (DUP 10)	0.74-0.9		Coal Waste Fill	Cr (39.4 ug/g)
SNC09-23-2	0.8-0.9		Fill	Cr (54 ug/g)
SNC09-23-5	2.3-2.4		Coal Waste Fill	Cr (29 ug/g)
14BH21-2	1.25-1.5	APEC 8	Coal Waste Fill	Cr (78.3 ug/g)
14BH21-3	2.08-2.24		Coal Waste Fill	Cr (75.8 ug/g)
14BH22-3	2.08-2.24		Coal Waste Fill	Cr (75.3 ug/g)
14BH22-4	4.88-5.28		Coal Waste Fill	Cr (75.5 ug/g)
98-02	0-0.8		Coal Waste Fill	Cr (60 ug/g)
14BH23-2	2.44-2.74	APEC 9	Coal Waste Fill	Cr (66.8 ug/g)
14BH23-3 (DUP 13)	3.78-3.96		Fill	Cr (62 ug/g)
SNC09-17-1	0.3-0.5		Coal Waste Fill	Cr (54 ug/g)
SNC09-17-4	1.7-1.8		Coal Waste Fill	Cr (33 ug/g)
SNC09-18-2	0.8-0.9		Coal Waste Fill	Cr (48 ug/g)
SNC09-18-3	1.2-1.4		Coal Waste Fill	Cr (29 ug/g)
14BH24-1	0.63-0.75	APEC 10	Coal Waste Fill	Cr (54.8 ug/g)
14BH25-2	1.85-2.1		Coal Waste Fill	Cr (46.7 ug/g)

Sample ID	Depth(m)	Test Location	Soil Type	Chromium Concentration
14BH25-4*	3.73-3.85	APEC 10	Suspect Fill	Cr (123 ug/g)
14BH25-5	5.75-5.9		Suspect Fill	Cr (99.7 ug/g)
14BH32-3	2.5-2.67		Coal Waste Fill	Cr (44.6 ug/g)
14BH32-5	4.27-4.42		Native	Cr (17.8 ug/g)
14BH33-5	4.27-4.42		Fill	Cr (91.6 ug/g)
14BH33-6	5.74-6.02		Fill	Cr (63.4 ug/g)
SNC09-20-2	0.8-0.9		Coal Waste Fill	Cr (35 ug/g)
SNC09-20-3	1.2-104		Coal Waste Fill	Cr (25 ug/g)
98-01	0.8-1.5	APEC 11	Coal Waste Fill	Cr (52 ug/g)
SNC09-6-2	0.8-0.9		Coal Waste Fill	Cr (65 ug/g)
SNC09-6-4	1.7-1.8		Coal Waste Fill	Cr (10 ug/g)
98-04	2.0-3.0		Coal Waste Fill	Cr (55 ug/g)
98-05	2.0-3.0	APEC 8 and APEC 11	Coal Waste Fill	Cr (47 ug/g)
14BH28-2	0.8-0.95	APEC 12	Coal Waste Fill	Cr (39.2 ug/g)
14BH28-4	3.88-4.0		Fill	Cr (92.9 ug/g)
14BH29-1	0.4-0.5		Coal Waste Fill	Cr (48.7 ug/g)
14BH29-3	2.35-2.49		Fill	Cr (73 ug/g)
14BH30-2	1.98-2.13		Coal Waste Fill	Cr (81 ug/g)
98-03	2.0-3.0		Coal Waste Fill	Cr (75 ug/g)
SNC09-3-2	0.8-0.9		Coal Waste Fill	Cr (42 ug/g)
SNC09-3-4	1.7-1.8		Coal Waste Fill	Cr (74 ug/g)
14BH31-1*	0.5-0.7	APEC 13	Coal Waste Fill	Cr (109 ug/g)
14BH31-4	3.35-3.51		Native	Cr (15.2 ug/g)

<CSR CL- Less than the CSR soil standards for CL/IL uses and Protocol 4 Regional Background.

<CSR CL- Greater than the CSR soil standards for CL/IL uses and Less than the Protocol 4 Regional Background.

>CSR CL- Greater than the CSR soil standards for CL/IL uses and Protocol 4 Regional Background.

* Sample submitted for SPLP testing

Table 12: Quality Assurance and Quality Control - Soil Analytical Results

Parameter	Units	RDL	Field ID	14BH01-1	DUP 2	RPD	14BH06-3	DUP 6	RPD	14BH08-4	DUP 3	RPD	14BH09-5	DUP5	RPD	14BH27-4	DUPA	RPD	14BH12-2	DUP 8	RPD
			Date	15-Sep-2014			17-Sep-2014			16-Sep-2014			16-Sep-2014			12-Nov-2014	12-Nov-2014		17-Sep-2014		
Routine																					
pH (Lab)	pH Units	-		7.39	7.42	0%	-	-	-	7.81	7.95	2%	6.54	-	-	-	-	-	-	-	-
Calcium	mg/kg	100		14,600	14,100	3%	-	-	-	22,100	25,600	15%	-	-	-	-	-	-	-	-	-
Magnesium	mg/kg	100		12,800	12,200	5%	-	-	-	6910	6880	0%	-	-	-	-	-	-	-	-	-
Potassium	mg/kg	100		1180	1040	13%	-	-	-	1280	1150	11%	-	-	-	-	-	-	-	-	-
Sodium	mg/kg	100		358	395	-	-	-	-	570	538	6%	-	-	-	-	-	-	-	-	-
Hydrocarbons																					
Volatile Hydrocarbons (VH6-10)	mg/kg	10		-	-	-	-	-	-	-	-	-	110	73	40%	-	-	-	-	-	-
Benzene	mg/kg	0.005		-	-	-	-	-	-	-	-	-	0.08	0.26	**106%**	-	-	-	-	-	-
Toluene	mg/kg	0.02		-	-	-	-	-	-	-	-	-	0.22	0.81	**115%**	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.01		-	-	-	-	-	-	-	-	-	0.17	0.51	**100%**	-	-	-	-	-	-
Xylenes Total	mg/kg	0.04		-	-	-	-	-	-	-	-	-	0.72	2.1	**98%**	-	-	-	-	-	-
EPH C10-C19	mg/kg	100		-	-	-	1320	1400	6%	166	151	-	10,100	10,400	3%	1240	1280	3%	-	-	-
EPH C19-C32	mg/kg	100		-	-	-	950	1020	7%	209	182	-	3090	3330	7%	1130	1070	5%	-	-	-
HEPH	mg/kg	100		-	-	-	-	-	-	209	181	-	3090	3330	7%	-	-	-	-	-	-
LEPH	mg/kg	100		-	-	-	-	-	-	164	149	-	10,100	10,400	3%	-	-	-	-	-	-
VPH C6-C10	mg/kg	10		-	-	-	-	-	-	-	-	-	110	70	44%	-	-	-	-	-	-
Metals																					
Aluminium	mg/kg	100		23,400	21,900	7%	-	-	-	22,200	21,700	2%	-	-	-	-	-	-	-	-	-
Antimony	mg/kg	0.1		0.57	0.64	12%	-	-	-	0.34	0.47	-	-	-	-	-	-	-	-	-	-
Arsenic	mg/kg	0.5		8.13	8.06	1%	-	-	-	5.14	5.85	13%	-	-	-	-	-	-	-	-	-
Barium	mg/kg	0.1		108	112	4%	-	-	-	198	212	7%	-	-	-	-	-	-	-	-	-
Beryllium	mg/kg	0.4		0.6	0.52	-	-	-	-	0.44	0.49	-	-	-	-	-	-	-	-	-	-
Bismuth	mg/kg	0.1		0.12	0.11	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	0.05		0.375	0.357	5%	-	-	-	0.417	0.428	3%	-	-	-	-	-	-	-	-	-
Chromium	mg/kg	1		130	116	11%	-	-	-	64	66.5	4%	43.9	-	-	-	-	-	-	-	-
Cobalt	mg/kg	0.3		26.4	26.3	0%	-	-	-	11.8	12.5	6%	-	-	-	-	-	-	-	-	-
Copper	mg/kg	0.5		74	73.5	1%	-	-	-	65.6	121	**59%**	-	-	-	-	-	-	-	-	-
Iron	mg/kg	100		38,000	33,500	13%	-	-	-	29,200	27,600	6%	-	-	-	-	-	-	-	-	-
Lead	mg/kg	0.1		8.97	8.81	2%	-	-	-	4.83	5.79	18%	-	-	-	-	-	-	-	-	-
Lithium	mg/kg	5		25.4	22.9	-	-	-	-	29.9	29	3%	-	-	-	-	-	-	-	-	-
Manganese	mg/kg	0.2		559	567	1%	-	-	-	463	540	15%	-	-	-	-	-	-	-	-	-
Mercury	mg/kg	0.05		0.364	0.379	4%	-	-	-	0.333	0.317	5%	-	-	-	-	-	-	-	-	-
Molybdenum	mg/kg	0.1		3.13	3.05	3%	-	-	-	2.41	2.68	11%	-	-	-	-	-	-	-	-	-
Nickel	mg/kg	0.8		200	188	6%	-	-	-	97.9	103	5%	-	-	-	-	-	-	-	-	-
Phosphorus (P)	mg/kg	10		303	290	4%	-	-	-	521	539	3%	-	-	-	-	-	-	-	-	-
Selenium	mg/kg	0.5		0.92	0.94	-	-	-	-	1.28	1.14	12%	-	-	-	-	-	-	-	-	-
Silver	mg/kg	0.05		0.154	0.144	-	-	-	-	0.104	0.117	-	-	-	-	-	-	-	-	-	-
Strontium	mg/kg	0.1		92.6	96.4	4%	-	-	-	312	336	7%	-	-	-	-	-	-	-	-	-
Thallium	mg/kg	0.05		0.152	0.13	-	-	-	-	0.088	0.094	-	-	-	-	-	-	-	-	-	-
Tin	mg/kg	0.1		0.85	0.97	13%	-	-	-	0.49	0.62	-	-	-	-	-	-	-	-	-	-
Titanium	mg/kg	1		247	224	10%	-	-	-	640	595	7%	-	-	-	-	-	-	-	-	-
Uranium	mg/kg	0.05		0.37	0.362	2%	-	-	-	0.628	0.609	3%	-	-	-	-	-	-	-	-	-
Vanadium	mg/kg	2		92.3	86.1	7%	-	-	-	67.5	70.6	4%	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	1		87.7	82.7	6%	-	-	-	41	42.7	4%	-	-	-	-	-	-	-	-	-
Zirconium	mg/kg	0.5		8.12	7	15%	-	-	-	13.2	13.3	1%	-	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																					
Benzo(b+j)fluoranthene	mg/kg	0.05		-	-	-	-	-	-	<0.05	<0.05	-	0.099	<0.5	-	-	-	-	-	-	-
2-methylnaphthalene	mg/kg	0.05		-	-	-	-	-	-	2.5	2.7	8%	18	18	0%	-	-	-	-	-	-
Acenaphthene	mg/kg	0.05		-	-	-	-	-	-	<0.06	<0.09	-	3.6	4.9	31%	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.05		-	-	-	-	-	-	<0.05	<0.05	-	<1.5	<0.5	-	-	-	-	-	-	-
Anthracene	mg/kg	0.05		-	-	-	-	-	-	0.11	0.1	-	<0.23	1	-	-	-	-	-	-	-
Benz(a)anthracene	mg/kg	0.05		-	-	-	-	-	-	0.064	0.06	-	0.19	<0.5	-	-	-	-	-	-	-
Benzo(a) pyrene	mg/kg	0.05		-	-	-	-	-	-	<0.05	<0.05	-	0.054	<0.5	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05		-	-	-	-	-	-	<0.05	<0.05	-	0.066	<0.5	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	0.05		-	-	-	-	-	-	<0.07	<0.07	-	<0.17	<0.5	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05		-	-	-	-	-	-	<0.05	<0.05	-	<0.05	<0.5	-	-	-	-	-	-	-
Chrysene	mg/kg	0.05		-	-	-	-	-	-	0.056	<0.05	-	0.22	<0.5	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05		-	-	-	-	-	-	<0.05	<0.05	-	<0.05	<0.5	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.05		-	-	-	-	-	-	0.059	0.052	-	0.4	0.57	35%	-	-	-	-	-	-
Fluorene	mg/kg	0.05		-	-	-	-	-	-	<0.05	<0.05	-	8.1	10	21%	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	0.05		-	-	-	-	-	-	<0.05	<0.05	-	<0.05	<0.5	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.05		-	-	-	-	-	-	1.8	1.9	5%	4.9	7.2	38%	-	-	-	-	-	-
Phenanthrene	mg/kg	0.05		-	-	-	-	-	-	0.4	0.39	3%	5	4.9	2%	-	-	-	-	-	-
Pyrene	mg/kg	0.05		-	-	-	-	-	-	0.086	0.085	-	0.69	0.77	11%	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)																					
1,1,1,2-Tetrachloroethane	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,1,1-Trichloroethane	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,1,2-Trichloroethane	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,1-Dichloroethane	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,1-Dichloroethene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	mg/kg	0.2		-	-	-	-	-	-	-	-	-	2.3	-	-	-	-	-	-	-	-
1,2-Dibromoethane	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,2-Dichloroethane	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,2-Dichloropropane	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	mg/kg	0.2		-	-	-	-	-	-	-	-	-	0.32	-	-	-	-	-	-	-	-
1,3-Butadiene	mg/kg	0.1		-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
Bromobenzene	mg/kg	0.2		-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
Bromodichloromethane	mg/kg	0.05		-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-	-	-	-	-	-
Bromoform	mg/kg	0.05		-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-	-	-	-	-	-
Bromomethane	mg/kg	0.3		-	-	-	-	-	-	-	-	-	<0.3	<0.3	-	-	-	-	-	-	-
Carbon tetrachloride	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
Chlorobenzene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
Dibromochloromethane	mg/kg	0.05		-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-	-	-	-	-	-
Chloroethane	mg/kg	0.1		-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-
Chloroform	mg/kg	0.05		-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-	-	-	-	-	-
Chloromethane	mg/kg	0.1		-	-	-	-	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-
cis-1,2-dichloroethene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
cis-1,3-dichloropropene	mg/kg	0.05		-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-	-	-	-	-	-
Decane	mg/kg	2		-	-	-	-	-	-	-	-	-	<3.5	-	-	-	-	-	-	-	-
Dibromomethane	mg/kg	0.2		-	-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-
Dichloromethane	mg/kg	0.1		-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.2		-	-	-	-	-	-	-	-	-	<0.2	-	-	-	-	-	-	-	-
Hexane	mg/kg	0.5		-	-	-	-	-	-	-	-	-	<0.5	-	-	-	-	-	-	-	-
Isopropylbenzene	mg/kg	0.2		-	-	-	-	-	-	-	-	-	0.38	-	-	-	-	-	-	-	-
Methylcyclohexane	mg/kg	0.2		-	-	-	-	-	-	-	-	-	0.28	-	-	-	-	-	-	-	-
MTBE	mg/kg	0.1		-	-	-	-	-	-	-	-	-	<0.1	<0.1	-	-	-	-	-	-	-
Styrene	mg/kg	0.03		-	-	-	-	-	-	-	-	-	<0.03	<0.03	-	-	-	-	-	-	-
Trichloroethene	mg/kg	0.009		-	-	-	-	-	-	-	-	-	<0.009	<0.009	-	-	-	-	-	-	-
Tetrachloroethene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
trans-1,2-dichloroethene	mg/kg	0.025		-	-	-	-	-	-	-	-	-	<0.025	<0.025	-	-	-	-	-	-	-
trans-1,3-dichloropropene	mg/kg	0.05		-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	-	-	-	-	-	-
Trichlorofluoromethane	mg/kg	0.2		-	-	-	-	-	-	-	-	-	<0.2	<0.2	-	-	-	-	-	-	-
Vinyl chloride	mg/kg	0.06		-	-	-	-	-	-	-	-	-	<0.06	<0.06	-	-	-	-	-	-	-
Phenols																					
2,3- Dichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2,3,4,5-tetrachlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2,3,4,6-tetrachlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.55	0.81	38%
2,3,4-Trichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2,3,5,6-Tetrachlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2,3,5-Trichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2,3,6-Trichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2,4,5-trichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.015	0.029	**64%**
2,4,6-trichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2,4-dimethylphenol	mg/kg	0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-dinitrophenol	mg/kg	0.08		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2,6-dichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2,6-Dimethylphenol	mg/kg	0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-
2.4 & 2.5-Dichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2-chlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
2-methylphenol	mg/kg	0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-nitrophenol	mg/kg	0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3 & 4 -Chlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
3-&4-methylphenol	mg/kg	0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3,4 Dichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
3,4-Dimethylphenol	mg/kg	0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3,5-Dichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
4,6-Dinitro-2-methylphenol	mg/kg	0.08		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4-nitrophenol	mg/kg	0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3,4,5-Trichlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.005	<0.005	-
dichlorophenols	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
monochlorophenols	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01	0.012	-
trichlorophenols	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachlorophenol	mg/kg	0.005		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	mg/kg	0.05		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Parameter	Units	RDL	14BH16-1	DUP 10	RPD	14BH19-3	DUP1	RPD	14BH23-3	DUP 13	RPD	14BH25-2	DUP 11	RPD	14BH33-2	DUPD	RPD	14BH19-3	DUP1	RPD	14BH31-1	DUPC	RPD
			18-Sep-2014			15-Sep-2014			19-Sep-2014			18-Sep-2014			13-Nov-2014	13-Nov-2014		15-Sep-2014			13-Nov-2014	13-Nov-2014	
Routine																							
pH (Lab)	pH Units	-	6.83	6.79	1%	7.18	7.06	2%	7.33	7.53	3%	6.84	6.86	0%	7.85	7.9	1%	-	-	-	7.48	7.53	1%
Calcium	mg/kg	100	8270	8720	5%	2340	2410	3%	12,800	12,100	6%	15,200	14,900	2%	-	-	-	-	-	-	23,000	15,600	38%
Magnesium	mg/kg	100	4220	4160	1%	7120	8000	12%	7720	7580	2%	3580	3920	9%	-	-	-	-	-	-	9070	8770	3%
Potassium	mg/kg	100	1150	1220	6%	1290	1360	5%	1290	1250	3%	1080	1060	2%	-	-	-	-	-	-	905	847	7%
Sodium	mg/kg	100	536	572	6%	3820	4040	6%	3730	3410	9%	619	597	4%	-	-	-	-	-	-	516	494	-
Hydrocarbons																							
Volatile Hydrocarbons (VH6-10)	mg/kg	10	-	-	-	-	-	-	70	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Benzene	mg/kg	0.005	-	-	-	-	-	-	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	mg/kg	0.02	-	-	-	-	-	-	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	mg/kg	0.01	-	-	-	-	-	-	0.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Xylenes Total	mg/kg	0.04	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPH C10-C19	mg/kg	100	-	-	-	993	1190	18%	425	403	-	-	-	-	-	-	-	-	-	-	-	-	-
EPH C19-C32	mg/kg	100	-	-	-	1280	1920	40%	498	502	-	-	-	-	-	-	-	-	-	-	-	-	-
HEPH	mg/kg	100	-	-	-	1280	1920	40%	498	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LEPH	mg/kg	100	-	-	-	983	1170	17%	417	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VPH C6-C10	mg/kg	10	-	-	-	-	-	-	59	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Metals																							
Aluminium	mg/kg	100	20,400	20,800	2%	13,900	15,300	10%	20,300	19,200	6%	16,600	16,400	1%	-	-	-	-	-	-	17,800	17,000	5%
Antimony	mg/kg	0.1	0.62	0.64	3%	0.38	0.36	-	0.32	0.3	-	9.24	8.97	3%	-	-	-	-	-	-	2.35	0.95	85%
Arsenic	mg/kg	0.5	20.5	20.3	1%	5.16	5.02	3%	5.38	5.27	2%	3.72	3.7	1%	-	-	-	-	-	-	9.52	8.32	13%
Barium	mg/kg	0.1	215	227	5%	84.3	105	22%	220	215	2%	337	343	2%	-	-	-	-	-	-	129	116	11%
Beryllium	mg/kg	0.4	0.45	0.47	-	0.51	0.57	-	0.57	0.51	-	0.42	0.47	-	-	-	-	-	-	-	0.51	0.47	-
Bismuth	mg/kg	0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	<0.1	-	-	-	-	-	-	-	0.11	0.11	-
Cadmium	mg/kg	0.05	0.468	0.449	4%	0.187	0.145	-	0.36	0.339	6%	4.77	4.11	15%	0.2	0.164	-	-	-	-	0.352	0.393	11%
Chromium	mg/kg	1	38.9	39.4	1%	85.9	95	10%	61.3	62	1%	46.7	49.3	5%	-	-	-	-	-	-	109	102	7%
Cobalt	mg/kg	0.3	11.9	12.3	3%	10.9	11.2	3%	15	14.7	2%	9.3	9.1	2%	-	-	-	-	-	-	24.5	22.3	9%
Copper	mg/kg	0.5	52	55.1	6%	89.8	90.1	0%	50.2	48.6	3%	92.6	83.7	10%	-	-	-	-	-	-	84.4	79.7	6%
Iron	mg/kg	100	21,300	21,700	2%	16,600	18,500	11%	26,600	25,200	5%	17,400	17,500	1%	-	-	-	-	-	-	28,000	26,500	6%
Lead	mg/kg	0.1	12.1	13.6	12%	5.74	5.82	1%	9.11	9.36	3%	43.2	40.8	6%	-	-	-	-	-	-	23.6	14.3	49%
Lithium	mg/kg	5	25.8	25.5	1%	23.6	26.2	-	32	31.4	2%	22.1	22.8	-	-	-	-	-	-	-	24.4	24.2	-
Manganese	mg/kg	0.2	340	378	11%	386	412	7%	485	521	7%	294	281	5%	-	-	-	-	-	-	451	386	16%
Mercury	mg/kg	0.05	0.265	0.205	-	0.38	0.387	2%	0.173	0.16	-	0.164	0.191	-	-	-	-	-	-	-	0.568	0.52	9%
Molybdenum	mg/kg	0.1	2.25	2.13	5%	2.97	3.2	7%	2.43	2.25	8%	2.1	2.26	7%	-	-	-	-	-	-	3.69	3.37	9%
Nickel	mg/kg	0.8	57	57.1	0%	101	101	0%	108	106	2%	115	113	2%	-	-	-	-	-	-	182	171	6%
Phosphorus (P)	mg/kg	10	445	441	1%	245	274	11%	638	663	4%	556	524	6%	-	-	-	-	-	-	301	280	7%
Selenium	mg/kg	0.5	<0.5	<0.5	-	0.69	0.58	-	0.74	0.64	-	<0.5	<0.5	-	-	-	-	-	-	-	1.13	1.17	-
Silver	mg/kg	0.05	0.1	0.083	-	0.085	0.096	-	0.147	0.17	-	0.14	0.151	-	-	-	-	-	-	-	0.309	0.162	-
Strontium	mg/kg	0.1	178	191	7%	82.3	89.8	9%	321	345	7%	288	310	7%	-	-	-	-	-	-	161	141	13%
Thallium	mg/kg	0.05	0.143	0.138	4%	0.066	0.073	-	0.111	0.112	-	0.06	0.063	-	-	-	-	-	-	-	0.164	0.15	-
Tin	mg/kg	0.1	0.95	0.98	3%	0.42	0.43	-	0.69	0.91	28%	4.33	5.03	15%	-	-	-	-	-	-	4.16	1.43	**98%**
Titanium	mg/kg	1	811	768	5%	516	519	1%	495	469	5%	1070	1040	3%	-	-	-	-	-	-	278	239	15%
Uranium	mg/kg	0.05	0.597	0.58	3%	0.487	0.531	9%	2.79	2.74	2%	0.508	0.517	2%	-	-	-	-	-	-	0.415	0.399	4%
Vanadium	mg/kg	2	76.8	78.8	3%	74	82.4	11%	57	57.6	1%	65.2	63.3	3%	-	-	-	-	-	-	87.6	81	8%
Zinc	mg/kg	1	50.2	51.5	3%	47.9	48.6	1%	53.7	52.6	2%	1950	1750	11%	39.8	37.8	5%	-	-	-	108	100	8%
Zirconium	mg/kg	0.5	9.7	9.54	2%	5.13	5.93	14%	10.2	9.92	3%	13.1	13.7	4%	-	-	-	-	-	-	7.48	7	7%
Polycyclic Aromatic Hydrocarbons (PAHs)																							
Benzo(b+j)fluoranthene	mg/kg	0.05	0.069	-	-	<0.075	0.23	-	0.054	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
2-methylnaphthalene	mg/kg	0.05	1.6	-	-	11	15	31%	8.3	-	-	1.3	1.4	7%	-	-	-	-	-	-	-	-	-
Acenaphthene	mg/kg	0.05	<0.17	-	-	1.3	1.4	7%	<0.11	-	-	<0.14	<0.13	-	-	-	-	-	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	<0.05	-	-	<0.05	<0.05	-	<0.05	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Anthracene	mg/kg	0.05	0.069	-	-	0.44	0.84	63%	0.2	-	-	0.052	0.056	-	-	-	-	-	-	-	-	-	-
Benz(a)anthracene	mg/kg	0.05	0.092	-	-	0.22	0.56	**87%**	0.14	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Benzo(a) pyrene	mg/kg	0.05	<0.05	-	-	<0.05	0.17	-	<0.05	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	<0.05	-	-	<0.05	0.15	-	<0.05	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	mg/kg	0.05	<0.05	-	-	<0.05	0.088	-	<0.11	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	<0.05	-	-	<0.05	<0.05	-	<0.05	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Chrysene	mg/kg	0.05	0.097	-	-	0.15	0.37	-	0.12	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	<0.05	-	-	<0.05	<0.05	-	<0.05	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Fluoranthene	mg/kg	0.05	0.16	-	-	0.31	0.63	68%	0.16	-	-	0.054	0.057	-	-	-	-	-	-	-	-	-	-
Fluorene	mg/kg	0.05	<0.05	-	-	0.14	0.2	-	<0.05	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	mg/kg	0.05	<0.05	-	-	<0.05	0.06	-	<0.05	-	-	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-
Naphthalene	mg/kg	0.05	1	-	-	7.6	11	37%	6.8	-	-	0.83	0.91	9%	-	-	-	-	-	-	-	-	-
Phenanthrene	mg/kg	0.05	0.5	-	-	1.9	2.9	42%	1.2	-	-	0.3	0.31	3%	-	-	-	-	-	-	-	-	-
Pyrene	mg/kg	0.05	0.17	-	-	0.4	0.85	72%	0.2	-	-	0.076	0.079	-	-	-	-	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)																							
1,1,1,2-Tetrachloroethane	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,3-Trichlorobenzene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2,4-Trimethylbenzene	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dibromoethane	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3,5-Trimethylbenzene	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Butadiene	mg/kg	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromobenzene	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	mg/kg	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	mg/kg	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	mg/kg	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	mg/kg	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	mg/kg	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	mg/kg	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloromethane	mg/kg	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,2-dichloroethene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-dichloropropene	mg/kg	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decane	mg/kg	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromomethane	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dichloromethane	mg/kg	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hexane	mg/kg	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Isopropylbenzene	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylcyclohexane	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MTBE	mg/kg	0.1	-	-	-	-	-	-	<0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Styrene	mg/kg	0.03	-	-	-	-	-	-	<0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	mg/kg	0.009	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-dichloroethene	mg/kg	0.025	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-dichloropropene	mg/kg	0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	mg/kg	0.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vinyl chloride	mg/kg	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenols																							
2,3- Dichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,3,4,5-tetrachlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,3,4,6-tetrachlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,3,4-Trichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,3,5,6-Tetrachlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,3,5-Trichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,3,6-Trichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,4,5-trichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,4,6-trichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,4-dimethylphenol	mg/kg	0.05	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-
2,4-dinitrophenol	mg/kg	0.08	<0.8	<0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.8	<0.8	-	-	-	-
2,6-dichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2,6-Dimethylphenol	mg/kg	0.05	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-
2.4 & 2.5-Dichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2-chlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
2-methylphenol	mg/kg	0.05	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-
2-nitrophenol	mg/kg	0.05	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-
3 & 4 -Chlorophenol	mg/kg	0.005	0.073	0.084	14%	-	-	-	-	-	-	-	-	-	-	-	-	<0.22	<0.22	-	<0.025	<0.025	-
3-&4-methylphenol	mg/kg	0.05	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-
3,4 Dichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
3,4-Dimethylphenol	mg/kg	0.05	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-
3,5-Dichlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
4,6-Dinitro-2-methylphenol	mg/kg	0.08	<0.8	<0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.8	<0.8	-	-	-	-
4-nitrophenol	mg/kg	0.05	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-
3,4,5-Trichlorophenol	mg/kg	0.005	<0.054	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
dichlorophenols	mg/kg	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.025	<0.025	-
monochlorophenols	mg/kg	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.025	<0.025	-
Pentachlorophenol	mg/kg	0.005	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05	-	<0.025	<0.025	-
trichlorophenols	mg/kg	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.025	<0.025	-
Tetrachlorophenol	mg/kg	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.025	<0.025	-
Phenol	mg/kg	0.05	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	-	-	-	-

NOTES:

- Not analyzed or RPD not calculated

< Concentration is less than the laboratory detection limit indicated.

RDL Laboratory Reportable Detection Limit

* RPD is Relative Percentage Difference calculated as RPD=[C2-C1]/[(C1+C2)/2] where C1,C2 = concentrations of parameters in 1st and 2nd sample respectively.

RPDs have only been considered where a concentration is greater than 5 times the RDL

High RPDs are shaded and in bold (acceptable RPD is 45% for metals in soil [60% for high variability metals******] 75% for PAHs in soil, and 60% for EPH and other organics in soil as recommended by BC Ministry of Environment Q&A, and BC Field Sampling Manual).

High variability metals include: Ag, Al, Ba, Hg, K, Mo, Na, Pb, Sn, Sr, and Ti

Table 13: Quality Assurance and Quality Control - Groundwater Analytical Results

Parameter	Unit	APEC	AEC 1			AEC 2						AEC 3			AEC 3			APEC 10		
		Date	24-Sep-2014		RPD	24-Sep-2014		RPD	20-Nov-2014		RPD	25-Sep-2014		RPD	1-Apr-2015		RPD	6-Apr-2015		RPD
		Location	14MW02	DUP1		14MW05	DUP2		14MW27	DUP4		14MW10	DUP3		14MW25	DUP6		14MW10	DUP5	
		RDL																		
Physical Parameters																				
Dissolved Hardness	µg/L	500	1,580,000	1,560,000	1%	-	-	-	-	-	-	-	-	-	1,660,000	1,680,000	1%	-	-	-
Sodium	µg/L	50	1,060,000	1,040,000	2%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	µg/L	0.1	<0.1	-	-	-	-	-	-	-	-	0.89	0.91	2%	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)																				
2-methylnaphthalene	µg/L	0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	-	-	-	-	-	<0.10	<0.10	-	-	-	-
Acenaphthene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.15	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Acenaphthylene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Acridine	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.02	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Anthracene	µg/L	0.01	<0.01	<0.01	-	<0.01	<0.01	-	<0.05	-	-	-	-	-	<0.010	<0.010	-	-	-	-
Benz(a)anthracene	µg/L	0.01	<0.01	<0.01	-	<0.01	<0.01	-	<0.01	-	-	-	-	-	<0.010	<0.010	-	-	-	-
Benzo(a) pyrene	µg/L	0.009	<0.009	<0.009	-	<0.009	<0.009	-	<0.009	-	-	-	-	-	<0.0090	<0.0090	-	-	-	-
Benzo(b+j)fluoranthene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Benzo(g,h,i)perylene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Benzo(k)fluoranthene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Chrysene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Dibenz(a,h)anthracene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Fluoranthene	µg/L	0.02	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	-	-	-	-	-	<0.020	<0.020	-	-	-	-
Fluorene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Heavy Molecular Wt. PAH Sum	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Indeno(1,2,3-c,d)pyrene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Light Molecular Wt. PAH Sum	µg/L	0.5	<0.24	<0.1	-	<0.24	<0.24	-	<0.4	-	-	-	-	-	<0.24	<0.24	-	-	-	-
Naphthalene	µg/L	0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1	-	-	-	-	-	<0.10	<0.10	-	-	-	-
PAHs (Sum of total)	µg/L	0.5	<0.24	<0.1	-	<0.24	<0.24	-	<0.4	-	-	-	-	-	<0.24	<0.24	-	-	-	-
Phenanthrene	µg/L	0.05	<0.05	<0.05	-	<0.05	<0.05	-	<0.05	-	-	-	-	-	<0.050	<0.050	-	-	-	-
Pyrene	µg/L	0.02	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	-	-	-	-	-	<0.020	<0.020	-	-	-	-
Quinoline	µg/L	0.24	<0.24	<0.24	-	<0.24	<0.24	-	<0.4	-	-	-	-	-	<0.24	<0.24	-	-	-	-
Dissolved Metals																				
Aluminium	µg/L	3	<3	<3	-	-	-	-	-	-	-	-	-	-	<12	<12	-	-	-	-
Antimony	µg/L	0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	<2.0	<2.0	-	-	-	-
Arsenic	µg/L	0.1	0.34	0.32	-	-	-	-	-	-	-	-	-	-	<0.40	<0.40	-	-	-	-
Barium	µg/L	1	66.7	65.3	2%	-	-	-	-	-	-	-	-	-	26.6	26.1	2%	-	-	-
Beryllium	µg/L	0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	<0.40	<0.40	-	-	-	-
Bismuth	µg/L	1	<1	<1	-	-	-	-	-	-	-	-	-	-	<4.0	<4.0	-	-	-	-
Boron	µg/L	50	1,450	1,560	7%	-	-	-	-	-	-	-	-	-	1600	1730	8%	-	-	-
Cadmium	µg/L	0.01	<0.01	0.01	-	-	-	-	-	-	-	-	-	-	<0.040	<0.040	-	-	-	-
Calcium	µg/L	50	333,000	325,000	2%	-	-	-	-	-	-	-	-	-	186,000	184,000	1%	-	-	-
Chromium	µg/L	1	<1	<1	-	-	-	-	-	-	-	-	-	-	<4.0	<4.0	-	-	-	-
Cobalt	µg/L	0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	<2.0	<2.0	-	-	-	-
Copper	µg/L	0.2	<0.2	0.65	-	-	-	-	-	-	-	-	-	-	0.84	0.98	-	-	-	-
Iron	µg/L	5	669	656	2%	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-
Lead	µg/L	0.2	<0.2	<0.2	-	-	-	-	-	-	-	-	-	-	<0.80	<0.80	-	-	-	-
Lithium	µg/L	5	48	49.8	4%	-	-	-	-	-	-	-	-	-	62	65	5%	-	-	-
Magnesium	µg/L	50	182,000	181,000	1%	-	-	-	-	-	-	-	-	-	290,000	296,000	2%	-	-	-
Manganese	µg/L	1	371	359	3%	-	-	-	-	-	-	-	-	-	5.5	5.3	4%	-	-	-
Mercury	µg/L	0.01	<0.01	<0.01	-	-	-	-	-	-	-	-	-	-	<0.010	<0.010	-	-	-	-
Molybdenum	µg/L	1	1.3	1.4	-	-	-	-	-	-	-	-	-	-	<4.0	<4.0	-	-	-	-
Nickel	µg/L	1	2.1	2.1	-	-	-	-	-	-	-	-	-	-	5.0	5.1	2%	-	-	-
Potassium	µg/L	50	45,600	44,500	2%	-	-	-	-	-	-	-	-	-	99,000	99,800	1%	-	-	-
Selenium	µg/L	0.1	<0.1	<0.1	-	-	-	-	-	-	-	-	-	-	<0.40	<0.40	-	-	-	-
Silicon	µg/L	100	13,600	14000	3%	-	-	-	-	-	-	-	-	-	7230	7020	3%	-	-	-
Silver	µg/L	0.02	<0.02	<0.02	-	-	-	-	-	-	-	-	-	-	<0.080	<0.080	-	-	-	-
Strontium	µg/L	1	2970	2930	1%	-	-	-	-	-	-	-	-	-	2360	2330	1%	-	-	-
Sulphur	µg/L	3000	158,000	158,000	0%	-	-	-	-	-	-	-	-	-	296,000	265,000	11%	-	-	-
Thallium	µg/L	0.05	<0.05	<0.05	-	-	-	-	-	-	-	-	-	-	<0.20	<0.20	-	-	-	-
Tin	µg/L	5	<5	<5	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-
Titanium	µg/L	5	<5	<5	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-
Uranium	µg/L	0.1	1.06	1.07	1%	-	-	-	-	-	-	-	-	-	0.50	0.55	10%	-	-	-
Vanadium	µg/L	5	<5	<5	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-
Zinc	µg/L	5	<5	<5	-	-	-	-	-	-	-	-	-	-	<20	<20	-	-	-	-
Zirconium	µg/L	0.5	<0.5	<0.5	-	-	-	-	-	-	-	-	-	-	<2.0	<2.0	-	-	-	-
Hydrocarbons																				
EPH C_{10}-C_{19}	µg/L	200	<200	-	-	<200	<200	-	<200	<200	-	-	-	-	<200	<200	-	-	-	-
EPH C_{19}-C_{32}	µg/L	200	<200	-	-	<200	<200	-	<200	<200	-	-	-	-	<200	<200	-	-	-	-
LEPH	µg/L	200	<200	-	-	<200	<200	-	<200	-	-	-	-	-	<200	<200	-	-	-	-
HEPH	µg/L	200	<200	-	-	<200	<200	-	<200	-	-	-	-	-	<200	<200	-	-	-	-
Volatile Hydrocarbons (VH_{6-10})	µg/L	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	660	790	18%
VPH C_6-C_{10}	µg/L	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	500	610	20%
BTEXS																				
Benzene	µg/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.40	<0.40	-
Toluene	µg/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.68	0.77	-
Ethylbenzene	µg/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	21	22	5%
Xylene (o)	µg/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	50	52	4%
Xylenes (m & p)	µg/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95	98	3%
Xylenes Total	µg/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	150	150	0%
Styrene	µg/L	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.40	<0.40	-
MTBE	µg/L	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<4.0	<4.0	-
Phenols																				
2,3- Dichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	-
2,3,4,5-tetrachlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<20	<20	-
2,3,4,6-tetrachlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	760	850	11%
2,3,4-Trichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.91	0.85	7%
2,3,5,6-Tetrachlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4	1.3	7%
2,3,5-Trichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.12	0.12	-
2,3,6-Trichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.26	0.23	-
2,4,5-trichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	35	38	8%
2,4,6-trichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.75	0.72	4%
2,6-dichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	-
2,6-Dimethylphenol	ug/L	0.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.50	<0.50	-
2.4 & 2.5-Dichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8	2.9	4%
2-chlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	<0.10	-
3 & 4 -Chlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<21	<27	-
3,4 Dichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	85	100	16%
3,5-Dichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.55	0.54	2%
3,4,5-Trichlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4	5.2	4%
Pentachlorophenol	µg/L	0.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	390	450	14%

NOTES:

-	Not analyzed or RPD not calculated.
<	Concentration is less than the laboratory detection limit indicated.
RDL	Laboratory Reportable Detection Limit
*	RPD is Relative Percentage Difference calculated as RPD=[C2-C1]/[(C1+C2)/2] where C1,C2 = concentrations of parameters in 1st and 2nd sample respectively.
	RPDs have only been considered where a concentration is greater than 5 times the RDL
BOLD	High RPDs are shaded and in bold (groundwater metals were compared against a 30% screening threshold and groundwater VOCs and other organics were compared to a 45% screening threshold. as recommended by BC Ministry of Environment Q&A, and BC Field Sampling Manual).

Table 14: Quality Assurance and Quality Control - Sediment Analytical Results

Parameters	Unit	RDL	Location	14SED01	14SED-DUP1	RPD	14SED14	14SED-DUP2	RPD	14SED023@1.8	DUP1	RPD
			Date	9/18/2014	9/18/2014		9/18/2014	9/18/2014		11/6/2014	11/6/2014	
Physical Parameters												
pH (Lab)	pH Units	-		7.67	7.79	2%	8.1	8.09	0%	-	-	-
Moisture	%	0.3		27	26	4%	31	33	6%	15	16	6%
pH (aqueous extract)	pH Units	-		7.67	7.79	2%	8.1	8.09	0%	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)												
Benzo(b+j)fluoranthene	ug/g	0.05		0.45	0.48	6%	0.83	0.93	11%	<0.01	<0.01	-
2-methylnaphthalene	ug/g	0.05		1.4	1.3	7%	1.3	1.5	14%	0.058	0.057	-
Acenaphthene	ug/g	0.05		0.44	0.39	12%	0.48	0.57	17%	0.011	0.008	-
Acenaphthylene	ug/g	0.05		<0.05	<0.05	-	0.053	0.061	14%	<0.005	<0.005	-
Anthracene	ug/g	0.05		0.44	0.37	17%	0.5	0.57	13%	<0.01	<0.01	-
Benz(a)anthracene	ug/g	0.05		0.42	0.37	13%	0.63	0.69	9%	<0.01	<0.01	-
Benzo(a) pyrene	ug/g	0.05		0.22	0.23	-	0.38	0.4	5%	<0.01	<0.01	-
Benzo(b)fluoranthene	ug/g	0.05		0.28	0.31	10%	0.54	0.62	14%	<0.01	<0.01	-
Benzo(g,h,i)perylene	ug/g	0.05		0.081	0.093	-	0.13	0.12	-	<0.02	<0.02	-
Benzo(k)fluoranthene	ug/g	0.05		0.13	0.14	-	0.25	0.27	8%	<0.01	<0.01	-
Chrysene	ug/g	0.05		0.53	0.51	4%	0.96	1.1	14%	<0.01	<0.01	-
Dibenz(a,h)anthracene	ug/g	0.05		<0.05	<0.05	-	<0.05	<0.05	-	<0.005	<0.005	-
Fluoranthene	ug/g	0.05		1.7	1.4	19%	2.9	3	3%	0.021	0.02	-
Fluorene	ug/g	0.05		0.39	0.35	11%	0.44	0.54	20%	<0.01	<0.01	-
Indeno(1,2,3-c,d)pyrene	ug/g	0.05		0.073	0.082	-	0.12	0.12	-	<0.02	<0.02	-
Naphthalene	ug/g	0.05		1.1	0.94	16%	1	1.2	18%	0.034	0.036	-
Heavy Molecular Wt. PAH Sum	ug/g	0.02		4.6	4	14%	7.9	8.2	4%	0.047	0.041	-
PAHs (Sum of total)	ug/g	0.02		9.3	8.3	11%	13	14	7%	0.17	0.17	0%
Phenanthrene	ug/g	0.05		1	0.99	1%	1.2	1.7	34%	0.022	0.024	-
Light Molecular Wt. PAH Sum	ug/g	0.01		4.8	4.3	11%	5	6.1	20%	0.12	0.12	0%
Pyrene	ug/g	0.05		1.7	1.5	13%	3	3	0%	0.026	0.021	-
Metals												
Aluminium	µg/g	100		13,000	12,400	5%	13,400	13,200	2%	-	-	-
Antimony	µg/g	0.1		0.12	0.38	-	0.2	0.2	-	-	-	-
Arsenic	µg/g	0.5		4.1	3.92	4%	4.13	4.85	16%	-	-	-
Barium	µg/g	0.1		40.7	40.2	1%	45.1	48.5	7%	-	-	-
Beryllium	µg/g	0.4		<0.4	<0.4	-	<0.4	<0.4	-	-	-	-
Bismuth	µg/g	0.1		<0.1	<0.1	-	<0.1	<0.1	-	-	-	-
Cadmium	µg/g	0.05		0.42	0.495	16%	0.51	0.754	39%	-	-	-
Calcium	µg/g	100		7740	7730	0%	10,100	11,600	14%	-	-	-
Chromium	µg/g	1		18.9	20.4	8%	21.2	22.6	6%	-	-	-
Cobalt	µg/g	0.3		6.46	6.57	2%	6.47	6.78	5%	-	-	-
Copper	µg/g	0.5		40.3	30.7	27%	30.2	41.9	32%	-	-	-
Iron	µg/g	100		16,100	15,800	2%	16,800	17,400	4%	-	-	-
Lead	µg/g	0.1		15.8	4.38	**113%**	7.79	10	25%	-	-	-
Lithium	µg/g	5		17.2	17.2	-	18.3	19.5	-	-	-	-
Magnesium	µg/g	100		6040	5780	4%	6220	6470	4%	-	-	-
Manganese	µg/g	0.2		209	212	1%	209	226	8%	-	-	-
Mercury	µg/g	0.05		0.065	0.059	-	0.077	0.084	-	-	-	-
Molybdenum	µg/g	0.1		1.04	1	4%	1.46	1.86	24%	-	-	-
Nickel	µg/g	0.8		18.3	18.8	3%	19.3	20.8	7%	-	-	-
Phosphorus (P)	µg/g	10		455	465	2%	521	499	4%	-	-	-
Potassium	µg/g	100		926	853	8%	1010	1110	9%	-	-	-
Selenium	µg/g	0.5		<0.5	<0.5	-	<0.5	<0.5	-	-	-	-
Silver	µg/g	0.05		<0.05	0.07	-	0.083	0.13	-	-	-	-
Sodium	µg/g	100		2990	2740	9%	3550	4370	21%	-	-	-
Strontium	µg/g	0.1		47.7	44	8%	57.1	75.4	28%	-	-	-
Thallium	µg/g	0.05		0.22	0.221	-	0.246	0.241	-	-	-	-
Tin	µg/g	0.1		0.56	0.71	24%	0.65	0.74	13%	-	-	-
Titanium	µg/g	1		1190	1170	2%	1140	1200	5%	-	-	-
Uranium	µg/g	0.05		0.507	0.916	**57%**	0.8	0.87	8%	-	-	-
Vanadium	µg/g	2		45	45.9	2%	47.3	48.3	2%	-	-	-
Zinc	µg/g	1		40.5	42.1	4%	45.6	51.6	12%	-	-	-
Zirconium	µg/g	0.5		4.34	4.3	1%	4.22	4.65	10%	-	-	-

NOTES:

- Not analyzed or RPD not calculated

< Concentration is less than the laboratory detection limit indicated.

RDL Laboratory Reportable Detection Limit

* RPD is Relative Percentage Difference calculated as RPD=[C2-C1]/[(C1+C2)/2] where C1,C2 = concentrations of parameters in 1st and 2nd sample respectively.

RPDs have only been considered where a concentration is greater than 5 times the RDL

High RPDs are shaded and in bold (acceptable RPD is 45% for metals in soil [60% for high variability metals******] 75% for PAHs in soil and other organics in soil as recommended by BC Ministry of Environment Q&A, and BC Field Sampling Manual).

High variability metals include: Ag, Al, Ba, Hg, K, Mo, Na, Pb, Sn, Sr, and Ti

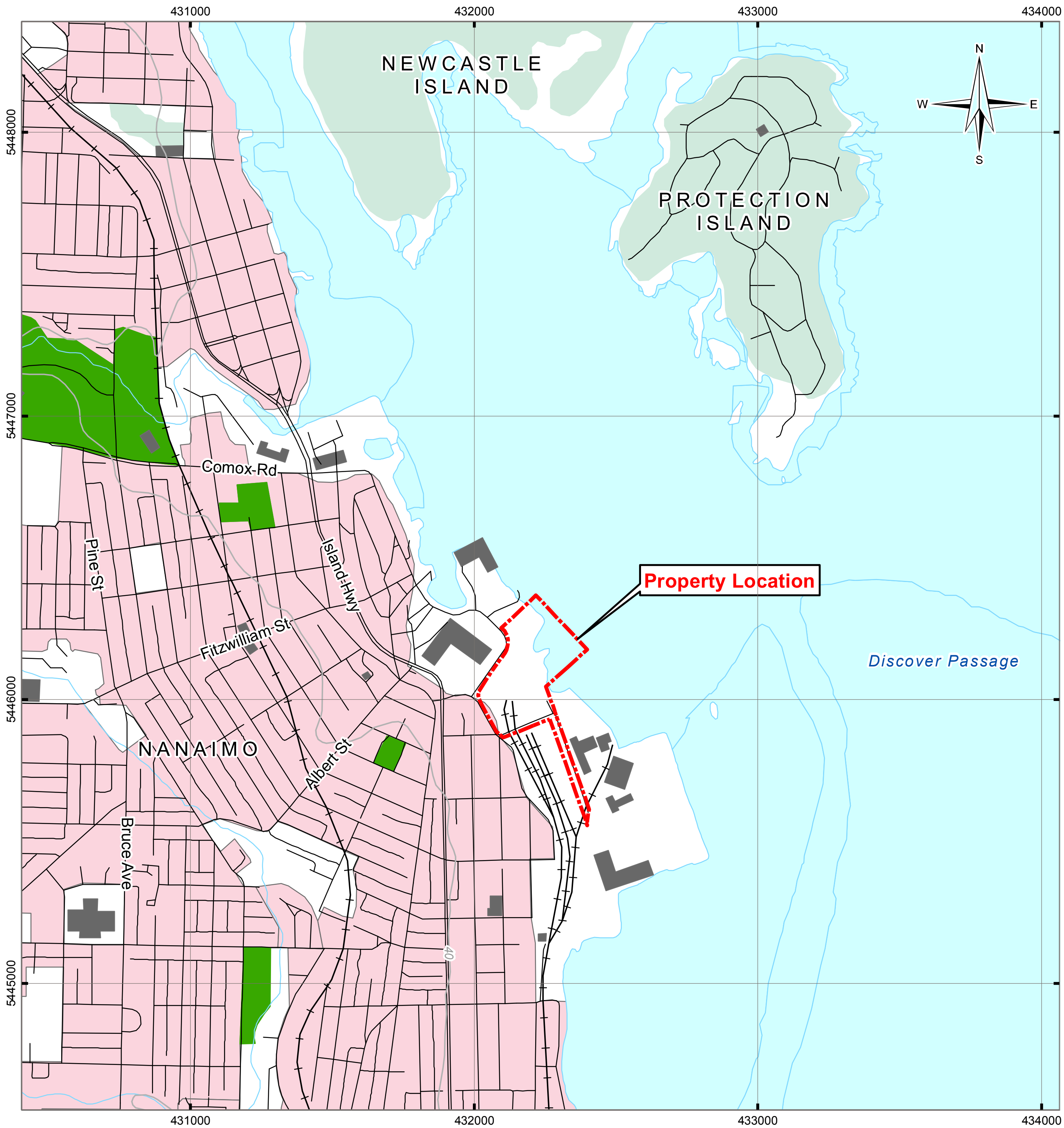
Table 15: Quality Assurance and Quality Control - Soil Vapour Analytical Results

Parameter	Unit	RDL	14SVP06	DUP01	RPD (%)	14VP01	15VP DUP1	RPD (%)	15VP07	15VP DUP2	RPD (%)
			19-Nov-14			8-Apr-15			11-Sep-15		
Volatile Organic Compounds											
Naphthalene	$\mu g/m^3$	2.6	<840	<840	-	<2.6	<2.6	-	<2.6	<2.6	-
Benzene	$\mu g/m^3$	0.58	<180	<180	-	<0.58	<0.58	-	<0.58	<0.58	-
1,1,1,2-tetrachloroethane	$\mu g/m^3$	1100	<1100	<1100	-	-	-	-	<0.69	<0.69	-
Ethylbenzene	$\mu g/m^3$	0.87	3020	3320	9%	2.27	2.24	-	<0.87	<0.87	-
MTBE	$\mu g/m^3$	0.72	<230	<230	-	<0.72	<0.72	-	<0.72	<0.72	-
Toluene	$\mu g/m^3$	0.75	<600	<600	-	4.11	3.73	10%	1.66	4.99	100%
Xylenes Total	$\mu g/m^3$	2.6	20,100	22,000	9%	42.7	42.9	0.5%	<2.6	<2.6	-
1,2,4-trimethylbenzene	$\mu g/m^3$	2.5	25,500	27,600	8%	228	239	5%	<2.5	<2.5	-
1,2-dibromoethane	$\mu g/m^3$	0.38	<120	<120	-	<0.38	<0.38	-	<0.38	<0.38	-
1,2-dichloroethane	$\mu g/m^3$	0.4	<130	<130	-	<0.40	<0.40	-	<0.4	<0.4	-
1,3,5-trimethylbenzene	$\mu g/m^3$	2.5	7130	7700	8%	58.5	60.9	4%	<2.5	<2.5	-
1,3-Butadiene	$\mu g/m^3$	1.1	<350	<350	-	<1.1	<1.1	-	<1.1	<1.1	-
Decane	$\mu g/m^3$	2.9	41,000	44,500	8%	214	222	4%	<2.9	<2.9	-
Hexane	$\mu g/m^3$	1.1	<390	<390	-	<1.1	<1.1	-	<1.1	<1.1	-
Isopropylbenzene	$\mu g/m^3$	2.5	1410	1550	9%	<2.5	<2.5	-	<2.5	<2.5	-
Methylcyclohexane	$\mu g/m^3$	2	<640	<640	-	<2.0	<2.0	-	<2.0	<2.0	-
VPH (C6-C13)	$\mu g/m^3$	10	959,000	1,040,000	8%	9110	9520	4%	57	36	45%

NOTES:

-	RPD not calculated.
<	Concentration is less than the laboratory detection limit indicated.
VPHv	Volatile Petroleum Hydrocarbons
MTBE	Methyl Tert-Butyl Ether
RDL	Laboratory Reportable Detection Limit. RDL values shown from April 2015 sampling period.
*	RPD is Relative Percentage Difference calculated as RPD=[C2-C1]/[(C1+C2)/2] where C1,C2 = concentrations of parameters in 1st and 2nd sample respectively.
	RPDs have only been considered where a concentration is greater than 5 times the RDL
BOLD	High RPDs are in bold (acceptable RPD is 60% for organic vapours as recommended by BC Ministry of Environment Q&A, and BC Field Sampling Manual).

FIGURES



LEGEND

- Subject Property
- Road
- Railway
- Building
- Residential Area
- Park
- Contour (40 m)
- Watercourse
- Waterbody
- Vegetation

NOTES
Property boundaries are approximate.
Base data source:
CanVec 1:50,000 (Sheet 092G04).

STATUS
ISSUED FOR USE

STAGE 1 PSI
1 PORT DRIVE, NANAIMO, BC

Property Location Plan

PROJECTION	DATUM	CLIENT
UTM Zone 10	NAD83	CITY OF NANAIMO

Scale: 1:20,000
400 200 0 400
Metres

FILE NO.
IND03511-01_Figure01_SiteLocation.mxd

TETRA TECH EBA

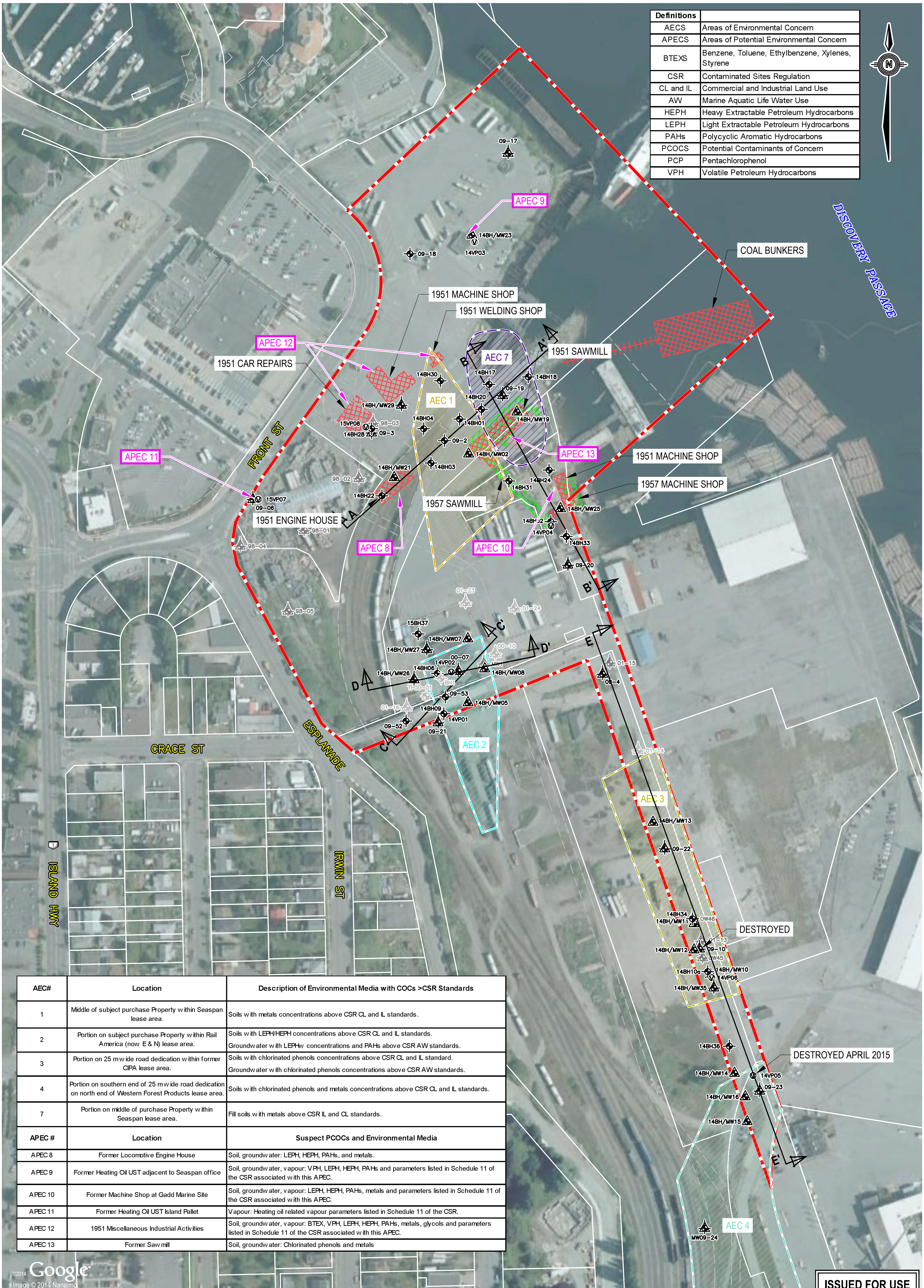
PROJECT NO.	DWN	CKD	APVD	REV
ENVIND03511-01	SL	MEZ	KG	0

OFFICE	DATE
Tt EBA-VANC	October 16, 2015

Figure 1

Q:\Vancouver\GIS\ENVIRONMENTAL\IND\IND03511-01\Maps\IND03511-01_Figure01_SiteLocation.mxd modified 10/16/2015 by morgan.zondervan

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17-_R0 - DSI.dwg [FIGURE 2] November 25, 2015 - 10:52:00 am (BY: FOURNIER, SAMUEL)



Definitions	
AECS	Areas of Environmental Concern
APECS	Areas of Potential Environmental Concern
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrene
CSR	Contaminated Sites Regulation
CL and IL	Commercial and Industrial Land Use
AW	Marine Aquatic Life Water Use
HEPH	Heavy Extractable Petroleum Hydrocarbons
LEPH	Light Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
PCOCS	Potential Contaminants of Concern
PCP	Pentachlorophenol
VPH	Volatile Petroleum Hydrocarbons

AEC#	Location	Description of Environmental Media with COCs >CSR Standards
1	Middle of subject purchase Property within Seaspan lease area.	Soils with metals concentrations above CSR CL and IL standards.
2	Portion on subject purchase Property within Rail America (now E & N) lease area.	Soils with LEPH/HEPH concentrations above CSR CL and IL standards. Groundwater with LEPHw concentrations and PAHs above CSR AW standards.
3	Portion on 25 mwide road dedication within former CIPA lease area.	Soils with chlorinated phenols concentrations above CSR CL and IL standard. Groundwater with chlorinated phenols concentrations above CSR AW standards.
4	Portion on southern end of 25 mwide road dedication on north end of Western Forest Products lease area.	Soils with chlorinated phenols and metals concentrations above CSR CL and IL standards.
7	Portion on middle of purchase Property within Seaspan lease area.	Fill soils with metals above CSR IL and CL standards.
APEC #	**Location**	**Suspect PCOCs and Environmental Media**
APEC 8	Former Locomotive Engine House	Soil, groundwater: LEPH, HEPH, PAHs, and metals.
APEC 9	Former Heating Oil UST adjacent to Seaspan office	Soil, groundwater, vapour: VPH, LEPH, HEPH, PAHs and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 10	Former Machine Shop at Gadd Marine Site	Soil, groundwater, vapour: LEPH, HEPH, PAHs, metals and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 11	Former Heating Oil UST Island Pallet	Vapour: Heating oil related vapour parameters listed in Schedule 11 of the CSR.
APEC 12	1951 Miscellaneous Industrial Activities	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals, glycols and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 13	Former Saw mill	Soil, groundwater: Chlorinated phenols and metals

LEGEND

- Subject Property
- 1951 Historical Buildings (Approximate)
- Borehole
- 1957 Historical Buildings (Approximate)
- Monitoring Well Installed by others
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Test Pit Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- SNC AEC Boundary
- Vapour Probe
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

TEST LOCATION PLAN - UPLAND

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0
OFFICE	DATE		
VANC	November 25, 2015		

Figure 2

NOTES
- LOCATIONS SHOWN ARE APPROXIMATE.

ISSUED FOR USE

LEGEND
- Subject Property
- 1951 Historical Buildings (Approximate)
- Borehole
- Monitoring Well Installed by others
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Test Pit Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- SNC AEC Boundary
- Surface Sediment Sample
- Deeper Drilled location to 2 m
- GREY Location Installed by others prior to 2009

HORIZONTAL SCALE 1:1000
10 0 10 20 40m

CLIENT
CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

TEST LOCATION PLAN - MARINE

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0

OFFICE	DATE
VANC	November 25, 2015

Figure 3

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17-_R0 - DSI.dwg [FIGURE 4] November 25, 2015 - 10:51:40 am (BY: FOURNIER, SAMUEL)

LEGEND

- Subject Property
- Groundwater Flow Direction
- Borehole & Monitoring Well
- 0.35 Groundwater Elevations (m-asl)
- Borehole & Monitoring Well not used for Interpretation
- Groundwater Contours
- Destroyed Monitoring Well
- Monitoring Well Installed by others
- Test Pit Installed by Tetra Tech EBA
- Vapour Probe
- Borehole
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE
LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

GROUNDWATER FLOW DIRECTION - LOW TIDE
SEPTEMBER 22, 2014

PROJECT NO.	DWN	CKD	REV	
ENVIND03511-01	SF	KG	0	**Figure 4**
OFFICE	DATE			
VANC	November 25, 2015			

LEGEND

- Subject Property
- Groundwater Flow Direction
- Borehole & Monitoring Well Used for Interpretation
- 0.35 Groundwater Elevations (m-asl)
- Borehole & Monitoring Well not used for Interpretation
- Groundwater Contours
- Destroyed Monitoring Well
- Monitoring Well Installed by others
- Test Pit Installed by Tetra Tech EBA
- Vapour Probe
- Borehole
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE
LOCATIONS SHOWN ARE APPROXIMATE.

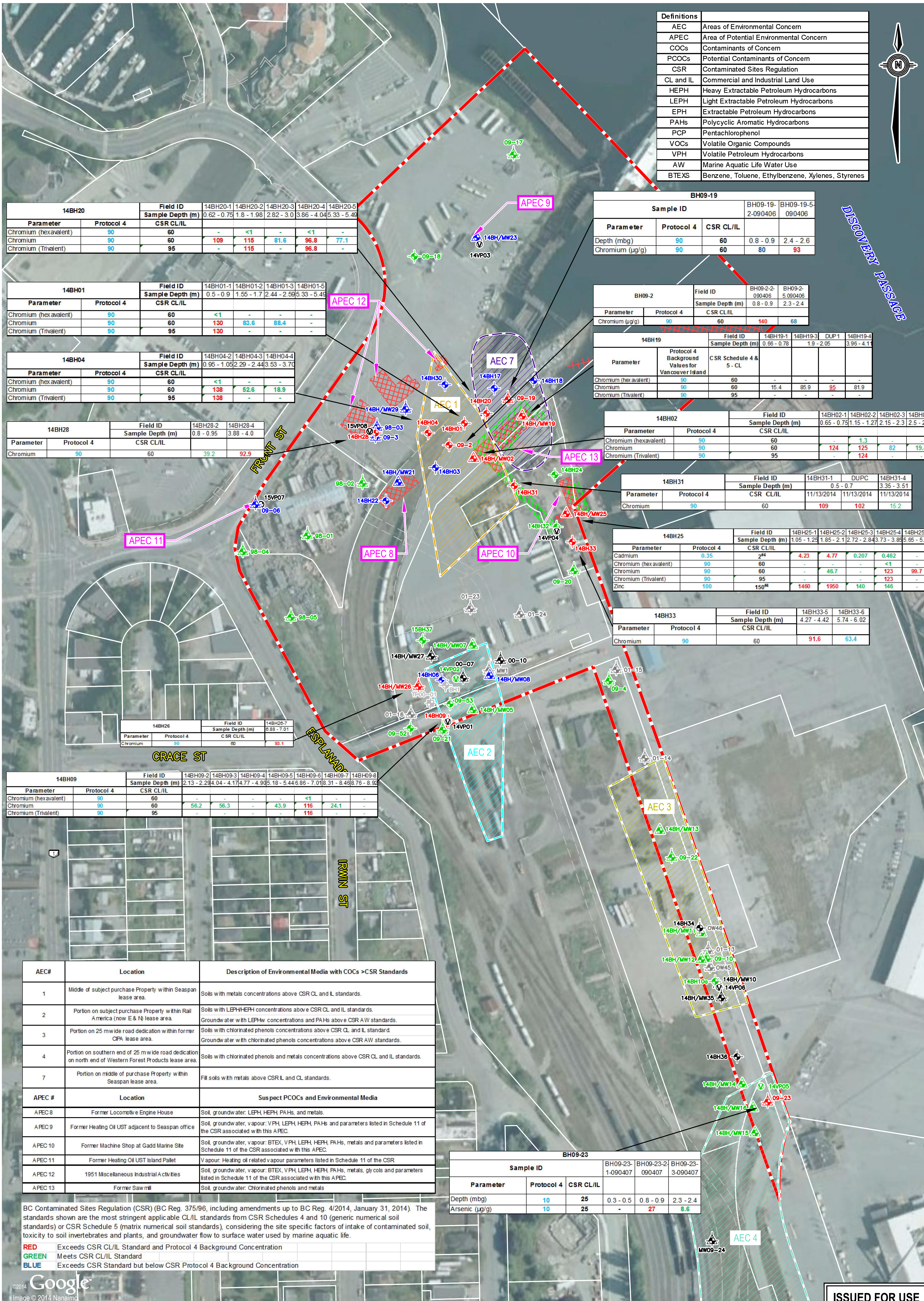
CLIENT
CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

GROUNDWATER FLOW DIRECTION - HIGH TIDE
SEPTEMBER 22, 2014

PROJECT NO.	DWN	CKD	REV	
ENVIND03511-01	SF	KG	0	Figure 5
OFFICE	DATE			
VANC	November 25, 2015			



Definitions	
AEC	Areas of Environmental Concern
APEC	Area of Potential Environmental Concern
COCs	Contaminants of Concern
PCOCs	Potential Contaminants of Concern
CSR	Contaminated Sites Regulation
CL and IL	Commercial and Industrial Land Use
HEPH	Heavy Extractable Petroleum Hydrocarbons
LEPH	Light Extractable Petroleum Hydrocarbons
EPH	Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
PCP	Pentachlorophenol
VOCs	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
AW	Marine Aquatic Life Water Use
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrenes

14BH20		Field ID	14BH20-1	14BH20-2	14BH20-3	14BH20-4	14BH20-5
		Sample Depth (m)	0.62 - 0.75	1.8 - 1.98	2.82 - 3.0	3.86 - 4.04	5.33 - 5.49
Parameter	Protocol 4	CSR CL/IL					
Chromium (hexavalent)	90	60	-	<1	-	<1	-
Chromium	90	60	109	115	81.6	96.8	77.1
Chromium (Trivalent)	90	95	-	115	-	96.8	-

14BH01		Field ID	14BH01-1	14BH01-2	14BH01-3	14BH01-5
		Sample Depth (m)	0.5 - 0.9	1.55 - 1.7	2.44 - 2.59	5.33 - 5.49
Parameter	Protocol 4	CSR CL/IL				
Chromium (hexavalent)	90	60	<1	-	-	-
Chromium	90	60	130	83.6	88.4	-
Chromium (Trivalent)	90	95	130	-	-	-

14BH04		Field ID	14BH04-2	14BH04-3	14BH04-4
		Sample Depth (m)	0.95 - 1.05	2.29 - 2.44	3.53 - 3.70
Parameter	Protocol 4	CSR CL/IL			
Chromium (hexavalent)	90	60	<1	-	-
Chromium	90	60	138	52.6	18.9
Chromium (Trivalent)	90	95	138	-	-

14BH28		Field ID	14BH28-2	14BH28-4
		Sample Depth (m)	0.8 - 0.95	3.88 - 4.0
Parameter	Protocol 4	CSR CL/IL		
Chromium	90	60	39.2	92.9

BH09-19				
Sample ID			BH09-19-2-090406	BH09-19-5-090406
Parameter	Protocol 4	CSR CL/IL		
Depth (mbg)	90	60	0.8 - 0.9	2.4 - 2.6
Chromium (µg/g)	90	60	80	93

BH09-2		Field ID	BH09-2-2-090406	BH09-2-5.090406
		Sample Depth (m)	0.8 - 0.9	2.3 - 2.4
Parameter	Protocol 4	CSR CL/IL		
Chromium (µg/g)	90	60	140	68

14BH19		Field ID	14BH19-1	14BH19-3	DUP1	14BH19-4
		Sample Depth (m)	0.66 - 0.78	1.9 - 2.05		3.96 - 4.11
Parameter	Protocol 4 Background Values for Vancouver Island	CSR Schedule 4 & 5 - CL				
Chromium (hexavalent)	90	60	-	-	-	-
Chromium	90	60	15.4	85.9	95	81.9
Chromium (Trivalent)	90	95	-	-	-	-

14BH02		Field ID	14BH02-1	14BH02-2	14BH02-3	14BH02-4
		Sample Depth (m)	0.65 - 0.75	1.15 - 1.27	2.15 - 2.3	2.5 - 2.67
Parameter	Protocol 4	CSR CL/IL				
Chromium (hexavalent)	90	60	-	1.3	-	-
Chromium	90	60	124	125	82	19.4
Chromium (Trivalent)	90	95	-	124	-	-

14BH31		Field ID	14BH31-1	DUPC	14BH31-4
		Sample Depth (m)	0.5 - 0.7		3.35 - 3.51
Parameter	Protocol 4	CSR CL/IL	11/13/2014	11/13/2014	11/13/2014
Chromium	90	60	109	102	15.2

14BH25		Field ID	14BH25-1	14BH25-2	14BH25-3	14BH25-4	14BH25-5
		Sample Depth (m)	1.05 - 1.25	1.85 - 2.1	2.72 - 2.84	3.73 - 3.85	5.65 - 5.80
Parameter	Protocol 4	CSR CL/IL					
Cadmium	0.35	2[#4]	4.23	4.77	0.207	0.462	-
Chromium (hexavalent)	90	60	-	-	-	<1	-
Chromium	90	60	-	46.7	-	123	99.7
Chromium (Trivalent)	90	95	-	-	-	123	-
Zinc	100	150[#4]	1460	1950	140	146	-

14BH33		Field ID	14BH33-5	14BH33-6
		Sample Depth (m)	4.27 - 4.42	5.74 - 6.02
Parameter	Protocol 4	CSR CL/IL		
Chromium	90	60	91.6	63.4

14BH26		Field ID	14BH26-7
		Sample Depth (m)	6.88 - 7.01
Parameter	Protocol 4	CSR CL/IL	
Chromium	90	60	93.1

14BH09		Field ID	14BH09-2	14BH09-3	14BH09-4	14BH09-5	14BH09-6	14BH09-7	14BH09-8
		Sample Depth (m)	2.13 - 2.29	4.04 - 4.17	4.77 - 4.90	5.18 - 5.44	6.86 - 7.01	8.31 - 8.46	8.76 - 8.92
Parameter	Protocol 4	CSR CL/IL							
Chromium (hexavalent)	90	60	-	-	-	-	<1	-	-
Chromium	90	60	56.2	56.3	-	43.9	116	24.1	-
Chromium (Trivalent)	90	95	-	-	-	-	116	-	-

AEC#	Location	Description of Environmental Media with COCs >CSR Standards
1	Middle of subject purchase Property within Seaspan lease area.	Soils with metals concentrations above CSR CL and IL standards.
2	Portion on subject purchase Property within Rail America (now E & N) lease area.	Soils with LEPH/HEPH concentrations above CSR CL and IL standards. Groundwater with LEPHw concentrations and PAHs above CSR AW standards.
3	Portion on 25 m wide road dedication within former CIPA lease area.	Soils with chlorinated phenols concentrations above CSR CL and IL standard. Groundwater with chlorinated phenols concentrations above CSR AW standards.
4	Portion on southern end of 25 m wide road dedication on north end of Western Forest Products lease area.	Soils with chlorinated phenols and metals concentrations above CSR CL and IL standards.
7	Portion on middle of purchase Property within Seaspan lease area.	Fill soils with metals above CSR IL and CL standards.
APEC #	**Location**	**Suspect PCOCs and Environmental Media**
APEC 8	Former Locomotive Engine House	Soil, groundwater: LEPH, HEPH, PAHs, and metals.
APEC 9	Former Heating Oil UST adjacent to Seaspan office	Soil, groundwater, vapour: VPH, LEPH, HEPH, PAHs and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 10	Former Machine Shop at Gadd Marine Site	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 11	Former Heating Oil UST Island Pallet	Vapour: Heating oil related vapour parameters listed in Schedule 11 of the CSR
APEC 12	1951 Miscellaneous Industrial Activities	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals, glycols and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 13	Former Sawmill	Soil, groundwater: Chlorinated phenols and metals

BH09-23					
Sample ID			BH09-23-1-090407	BH09-23-2-090407	BH09-23-3-090407
Parameter	Protocol 4	CSR CL/IL			
Depth (mbg)	10	25	0.3 - 0.5	0.8 - 0.9	2.3 - 2.4
Arsenic (µg/g)	10	25	-	27	8.6

BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96, including amendments up to BC Reg. 4/2014, January 31, 2014). The standards shown are the most stringent applicable CL/IL standards from CSR Schedules 4 and 10 (generic numerical soil standards) or CSR Schedule 5 (matrix numerical soil standards), considering the site specific factors of intake of contaminated soil, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by marine aquatic life.

RED	Exceeds CSR CL/IL Standard and Protocol 4 Background Concentration
GREEN	Meets CSR CL/IL Standard
BLUE	Exceeds CSR Standard but below CSR Protocol 4 Background Concentration

ISSUED FOR USE

LEGEND

- Subject Property
- Borehole
- 1951 Historical Buildings (Approximate)
- 1957 Historical Buildings (Approximate)
- Monitoring Well Installed by others
- Test Pit Installed by Tetra Tech EBA
- SNC AEC Boundary
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- Vapour Probe
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO THE HARBOUR CITY

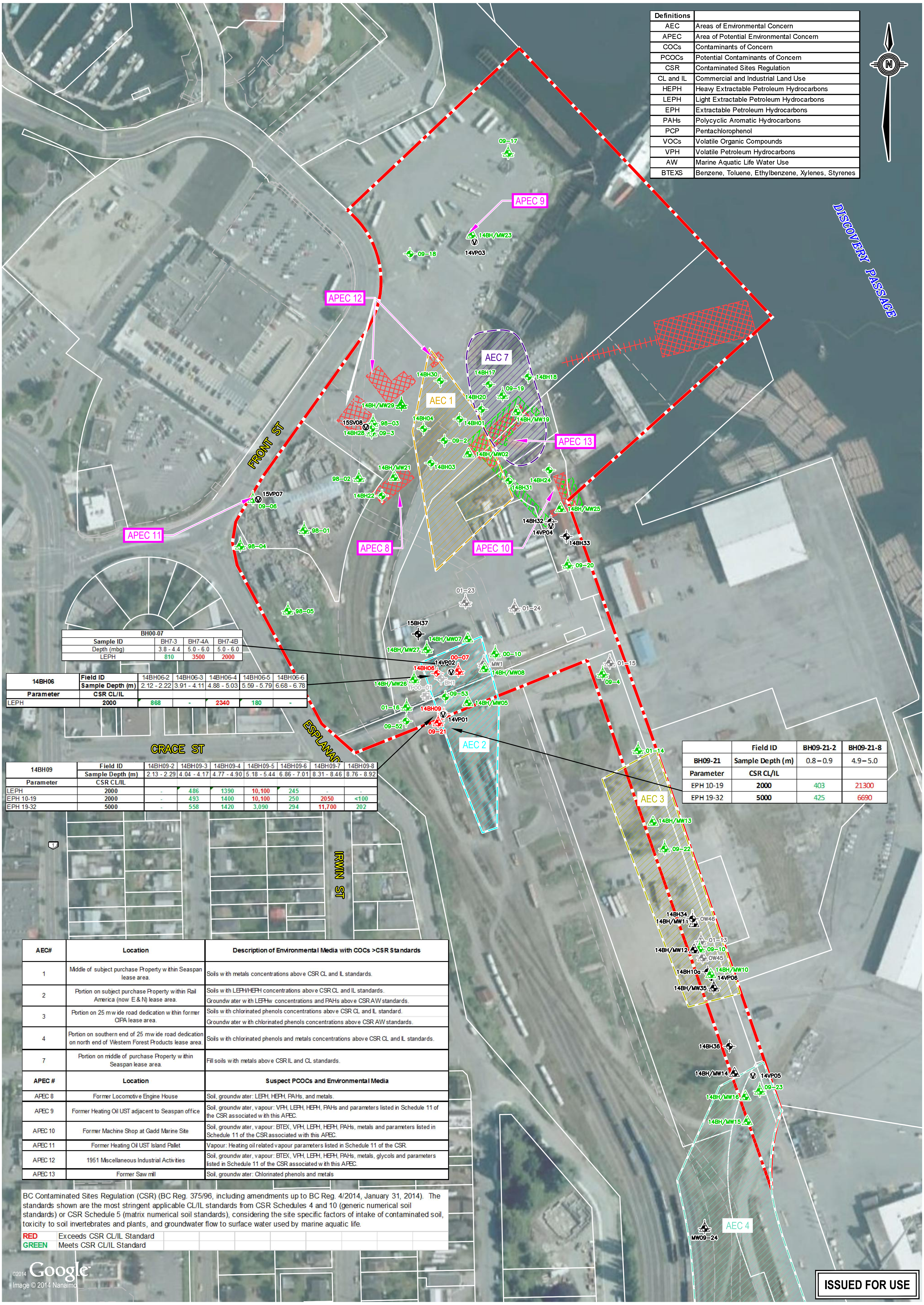
DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

SUMMARY OF SOIL ANALYTICAL RESULTS - METALS

TETRA TECH EBA

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0
OFFICE	DATE		
VANC	November 25, 2015		

Figure 6a



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PAHs	Polycyclic Aromatic Hydrocarbons
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VPH	Volatile Petroleum Hydrocarbons
AW	Marine Aquatic Life Water Use
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrenes

BH00-07			
Sample ID	BH7-3	BH7-4A	BH7-4B
Depth (mbg)	3.8 - 4.4	5.0 - 6.0	5.0 - 6.0
LEPH	810	3500	2000

14BH06	Field ID	14BH06-2	14BH06-3	14BH06-4	14BH06-5	14BH06-6
	Sample Depth (m)	2.12 - 2.22	3.91 - 4.11	4.88 - 5.03	5.59 - 5.79	6.68 - 6.78
Parameter	CSR CL/IL					
LEPH	2000	868	-	2340	180	-

14BH09	Field ID	14BH09-2	14BH09-3	14BH09-4	14BH09-5	14BH09-6	14BH09-7	14BH09-8
	Sample Depth (m)	2.13 - 2.29	4.04 - 4.17	4.77 - 4.90	5.18 - 5.44	6.86 - 7.01	8.31 - 8.46	8.76 - 8.92
Parameter	CSR CL/IL							
LEPH	2000	-	486	1390	10,100	245	-	-
EPH 10-19	2000	-	493	1400	10,100	250	2050	<100
EPH 19-32	5000	-	558	1420	3,090	294	11,700	202

BH09-21	Field ID	BH09-21-2	BH09-21-8
	Sample Depth (m)	0.8 – 0.9	4.9 – 5.0
Parameter	CSR CL/IL		
EPH 10-19	2000	403	21300
EPH 19-32	5000	425	6690

AEC#	Location	Description of Environmental Media with COCs >CSR Standards
1	Middle of subject purchase Property within Seaspan lease area.	Soils with metals concentrations above CSR CL and IL standards.
2	Portion on subject purchase Property within Rail America (now E & N) lease area.	Soils with LEPH/HEPH concentrations above CSR CL and IL standards.
		Groundwater with LEPHw concentrations and PAHs above CSR AW standards.
3	Portion on 25 m wide road dedication within former CIPA lease area.	Soils with chlorinated phenols concentrations above CSR CL and IL standard.
		Groundwater with chlorinated phenols concentrations above CSR AW standards.
4	Portion on southern end of 25 m wide road dedication on north end of Western Forest Products lease area.	Soils with chlorinated phenols and metals concentrations above CSR CL and IL standards.
7	Portion on middle of purchase Property within Seaspan lease area.	Fill soils with metals above CSR IL and CL standards.
APEC #	**Location**	**Suspect PCOCs and Environmental Media**
APEC 8	Former Locomotive Engine House	Soil, groundwater: LEPH, HEPH, PAHs, and metals.
APEC 9	Former Heating Oil UST adjacent to Seaspan office	Soil, groundwater, vapour: VPH, LEPH, HEPH, PAHs and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 10	Former Machine Shop at Gadd Marine Site	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 11	Former Heating Oil UST Island Pallet	Vapour: Heating oil related vapour parameters listed in Schedule 11 of the CSR.
APEC 12	1951 Miscellaneous Industrial Activities	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals, glycols and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 13	Former Saw mill	Soil, groundwater: Chlorinated phenols and metals

BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96, including amendments up to BC Reg. 4/2014, January 31, 2014). The standards shown are the most stringent applicable CL/IL standards from CSR Schedules 4 and 10 (generic numerical soil standards) or CSR Schedule 5 (matrix numerical soil standards), considering the site specific factors of intake of contaminated soil, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by marine aquatic life.

RED	Exceeds CSR CL/IL Standard
GREEN	Meets CSR CL/IL Standard

LEGEND

- Subject Property
- Borehole
- 1951 Historical Buildings (Approximate)
- 1957 Historical Buildings (Approximate)
- Monitoring Well Installed by others
- Test Pit Installed by Tetra Tech EBA
- SNC AEC Boundary
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- Vapour Probe
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

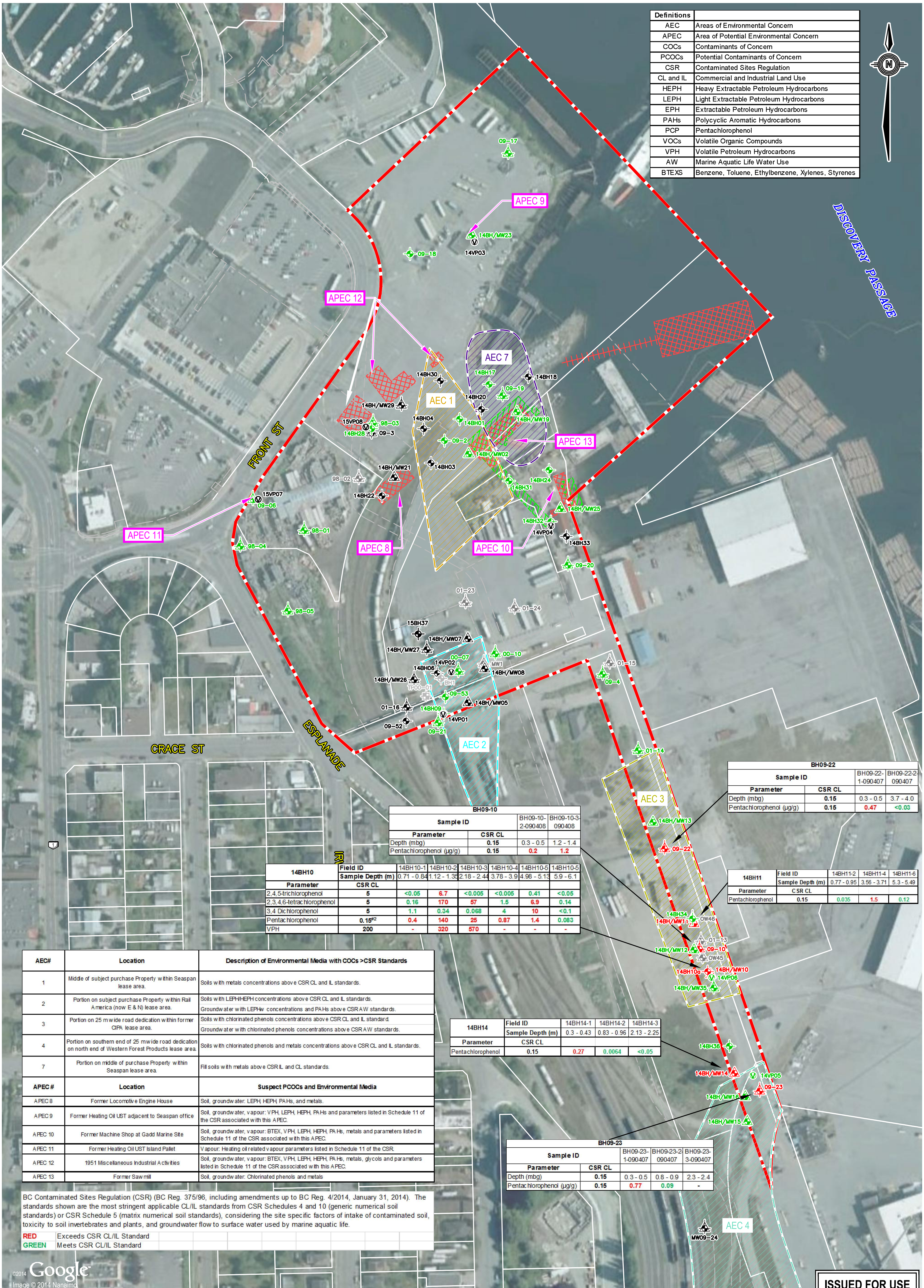
SUMMARY OF SOIL ANALYTICAL RESULTS - LEPH, HEPH, AND/OR PAHs

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0

OFFICE	DATE
VANC	November 25, 2015

Figure 6b

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17-_R0 - DSI.dwg [FIGURE 6C] November 25, 2015 - 10:51:01 am (BY: FOURNIER, SAMUEL)



Definitions	
AEC	Areas of Environmental Concern
APEC	Area of Potential Environmental Concern
COCs	Contaminants of Concern
PCOCs	Potential Contaminants of Concern
CSR	Contaminated Sites Regulation
CL and IL	Commercial and Industrial Land Use
HEPH	Heavy Extractable Petroleum Hydrocarbons
LEPH	Light Extractable Petroleum Hydrocarbons
EPH	Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
PCP	Pentachlorophenol
VOCs	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
AW	Marine Aquatic Life Water Use
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrenes

BH09-22			
Sample ID		BH09-22-1-090407	BH09-22-2-090407
Parameter	CSR CL		
Depth (mbg)	0.15	0.3 - 0.5	3.7 - 4.0
Pentachlorophenol (µg/g)	0.15	0.47	<0.03

BH09-10			
Sample ID		BH09-10-2-090408	BH09-10-3-090408
Parameter	CSR CL		
Depth (mbg)	0.15	0.3 - 0.5	1.2 - 1.4
Pentachlorophenol (µg/g)	0.15	0.2	1.2

14BH10	Field ID	14BH10-1	14BH10-2	14BH10-3	14BH10-4	14BH10-5	14BH10-5
	Sample Depth (m)	0.71 - 0.84	1.12 - 1.35	2.18 - 2.44	3.78 - 3.9	4.98 - 5.13	5.9 - 6.1
Parameter	CSR CL						
2,4,5-trichlorophenol	5	<0.05	6.7	<0.005	<0.005	0.41	<0.05
2,3,4,6-tetrachlorophenol	5	0.16	170	57	1.5	6.9	0.14
3,4 Dichlorophenol	5	1.1	0.34	0.068	4	10	<0.1
Pentachlorophenol	0.15#2	0.4	140	25	0.87	1.4	0.083
VPH	200	-	320	570	-	-	-

14BH11	Field ID	14BH11-2	14BH11-4	14BH11-6
	Sample Depth (m)	0.77 - 0.95	3.56 - 3.71	5.3 - 5.49
Parameter	CSR CL			
Pentachlorophenol	0.15	0.035	1.5	0.12

AEC#	Location	Description of Environmental Media with COCs >CSR Standards
1	Middle of subject purchase Property within Seaspan lease area.	Soils with metals concentrations above CSR CL and IL standards.
2	Portion on subject purchase Property within Rail America (now E & N) lease area.	Soils with LEPH/HEPH concentrations above CSR CL and IL standards. Groundwater with LEPHw concentrations and PAHs above CSR AW standards.
3	Portion on 25 m wide road dedication within former CIPA lease area.	Soils with chlorinated phenols concentrations above CSR CL and IL standard. Groundwater with chlorinated phenols concentrations above CSR AW standards.
4	Portion on southern end of 25 m wide road dedication on north end of Western Forest Products lease area.	Soils with chlorinated phenols and metals concentrations above CSR CL and IL standards.
7	Portion on middle of purchase Property within Seaspan lease area.	Fill soils with metals above CSR IL and CL standards.
APEC #	**Location**	**Suspect PCOCs and Environmental Media**
APEC 8	Former Locomotive Engine House	Soil, groundwater: LEPH, HEPH, PAHs, and metals.
APEC 9	Former Heating Oil UST adjacent to Seaspan office	Soil, groundwater, vapour: VPH, LEPH, HEPH, PAHs and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 10	Former Machine Shop at Gadd Marine Site	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 11	Former Heating Oil UST Island Pallet	Vapour: Heating oil related vapour parameters listed in Schedule 11 of the CSR.
APEC 12	1951 Miscellaneous Industrial Activities	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals, glycols and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 13	Former Sawmill	Soil, groundwater: Chlorinated phenols and metals

14BH14	Field ID	14BH14-1	14BH14-2	14BH14-3
	Sample Depth (m)	0.3 - 0.43	0.83 - 0.96	2.13 - 2.25
Parameter	CSR CL			
Pentachlorophenol	0.15	0.27	0.0064	<0.05

BH09-23				
Sample ID		BH09-23-1-090407	BH09-23-2-090407	BH09-23-3-090407
Parameter	CSR CL			
Depth (mbg)	0.15	0.3 - 0.5	0.8 - 0.9	2.3 - 2.4
Pentachlorophenol (µg/g)	0.15	0.77	0.09	-

BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96, including amendments up to BC Reg. 4/2014, January 31, 2014). The standards shown are the most stringent applicable CL/IL standards from CSR Schedules 4 and 10 (generic numerical soil standards) or CSR Schedule 5 (matrix numerical soil standards), considering the site specific factors of intake of contaminated soil, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by marine aquatic life.

RED	Exceeds CSR CL/IL Standard
GREEN	Meets CSR CL/IL Standard

LEGEND

- Subject Property
- Borehole
- 1951 Historical Buildings (Approximate)
- 1957 Historical Buildings (Approximate)
- Monitoring Well Installed by others
- Test Pit Installed by Tetra Tech EBA
- SNC AEC Boundary
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- Vapour Probe
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

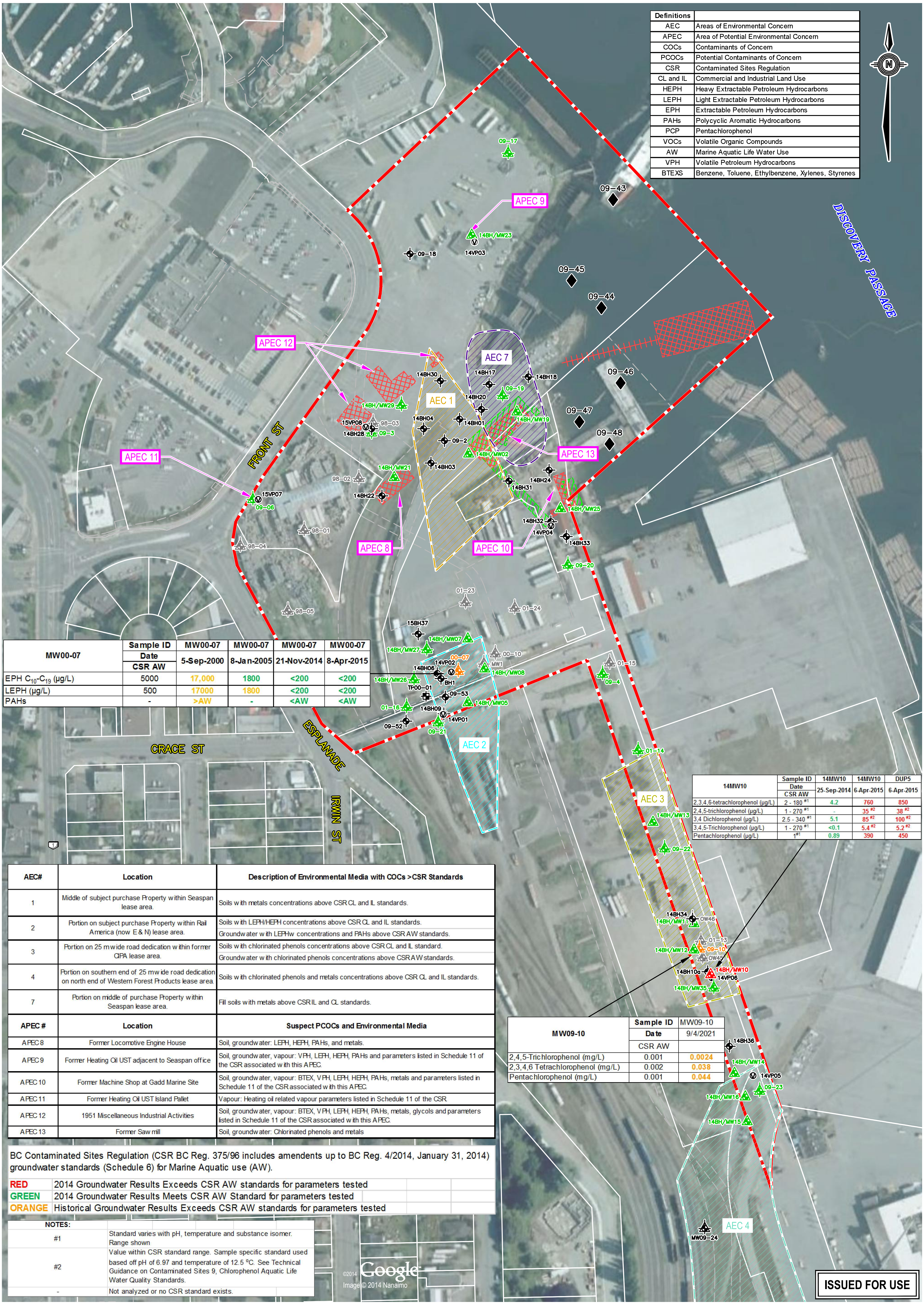
DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

SUMMARY OF SOIL ANALYTICAL RESULTS - BTEXS, VPH, VOCs AND/OR PHENOLS

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0
OFFICE	DATE		
VANC	November 25, 2015		

Figure 6c

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17-_R0 - DSI.dwg [FIGURE 7] November 25, 2015 - 10:50:53 am (BY: FOURNIER, SAMUEL)



Definitions	
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PCOCs	Potential Contaminants of Concern
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LEPH	Light Extractable Petroleum Hydrocarbons
EPH	Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
PCP	Pentachlorophenol
VOCs	Volatile Organic Compounds
AW	Marine Aquatic Life Water Use
VPH	Volatile Petroleum Hydrocarbons
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrenes

MW00-07	Sample ID	MW00-07	MW00-07	MW00-07	MW00-07
	Date	5-Sep-2000	8-Jan-2005	21-Nov-2014	8-Apr-2015
	CSR AW				
EPH C_{10}-C_{19} (µg/L)	5000	17,000	1800	<200	<200
LEPH (µg/L)	500	17000	1800	<200	<200
PAHs	-	>AW	-	<AW	<AW

14MW10	Sample ID	14MW10	14MW10	DUP5
	Date	25-Sep-2014	6-Apr-2015	6-Apr-2015
	CSR AW			
2,3,4,6-tetrachlorophenol (µg/L)	2 - 180 #1	4.2	760	850
2,4,5-trichlorophenol (µg/L)	1 - 270 #1	-	35 #2	38 #2
3,4 Dichlorophenol (µg/L)	2.5 - 340 #1	5.1	85 #2	100 #2
3,4,5-Trichlorophenol (µg/L)	1 - 270 #1	<0.1	5.4 #2	5.2 #2
Pentachlorophenol (µg/L)	1#1	0.89	390	450

MW09-10	Sample ID	MW09-10
	Date	9/4/2021
	CSR AW	
2,4,5-Trichlorophenol (mg/L)	0.001	0.0024
2,3,4,6 Tetrachlorophenol (mg/L)	0.002	0.038
Pentachlorophenol (mg/L)	0.001	0.044

AEC#	Location	Description of Environmental Media with COCs >CSR Standards
1	Middle of subject purchase Property within Seaspan lease area.	Soils with metals concentrations above CSR CL and IL standards.
2	Portion on subject purchase Property within Rail America (now E & N) lease area.	Soils with LEPH/HEPH concentrations above CSR CL and IL standards. Groundwater with LEPHw concentrations and PAHs above CSR AW standards.
3	Portion on 25 m wide road dedication within former CIPA lease area.	Soils with chlorinated phenols concentrations above CSR CL and IL standard. Groundwater with chlorinated phenols concentrations above CSR AW standards.
4	Portion on southern end of 25 m wide road dedication on north end of Western Forest Products lease area.	Soils with chlorinated phenols and metals concentrations above CSR CL and IL standards.
7	Portion on middle of purchase Property within Seaspan lease area.	Fill soils with metals above CSR IL and CL standards.
APEC #	**Location**	**Suspect PCOCs and Environmental Media**
APEC 8	Former Locomotive Engine House	Soil, groundwater: LEPH, HEPH, PAHs, and metals.
APEC 9	Former Heating Oil UST adjacent to Seaspan office	Soil, groundwater, vapour: VPH, LEPH, HEPH, PAHs and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 10	Former Machine Shop at Gadd Marine Site	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 11	Former Heating Oil UST Island Pallet	Vapour: Heating oil related vapour parameters listed in Schedule 11 of the CSR.
APEC 12	1951 Miscellaneous Industrial Activities	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals, glycols and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 13	Former Saw mill	Soil, groundwater: Chlorinated phenols and metals

BC Contaminated Sites Regulation (CSR BC Reg. 375/96 includes amendents up to BC Reg. 4/2014, January 31, 2014) groundwater standards (Schedule 6) for Marine Aquatic use (AW).

RED	2014 Groundwater Results Exceeds CSR AW standards for parameters tested
GREEN	2014 Groundwater Results Meets CSR AW Standard for parameters tested
ORANGE	Historical Groundwater Results Exceeds CSR AW standards for parameters tested

NOTES:	
#1	Standard varies with pH, temperature and substance isomer. Range shown
#2	Value within CSR standard range. Sample specific standard used based off pH of 6.97 and temperature of 12.5 °C. See Technical Guidance on Contaminated Sites 9, Chlorophenol Aquatic Life Water Quality Standards.
-	Not analyzed or no CSR standard exists.

ISSUED FOR USE

LEGEND

- Subject Property
- Borehole
- 1951 Historical Buildings (Approximate)
- 1957 Historical Buildings (Approximate)
- Monitoring Well Installed by others
- Sediment Sample
- Test Pit Installed by Tetra Tech EBA
- SNC AEC Boundary
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- GREY Location Installed by others prior to 2009
- Vapour Probe

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

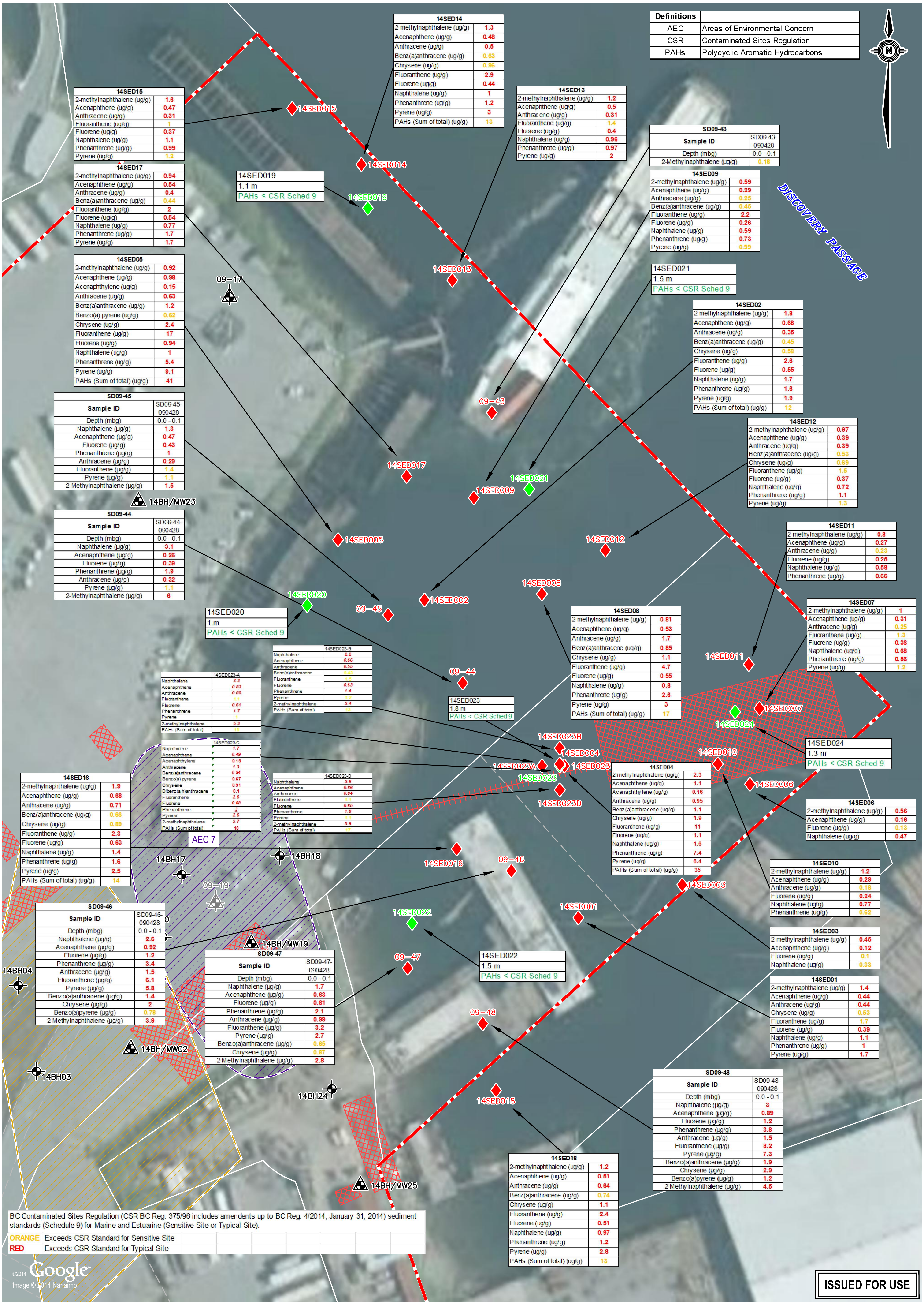
CITY OF NANAIMO THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

PROJECT NO.	DWN	CKD	REV	
ENVIND03511-01	SF	KG	0	Figure 7
OFFICE	DATE			
VANC	November 25, 2015			



Definitions	
AEC	Areas of Environmental Concern
CSR	Contaminated Sites Regulation
PAHs	Polycyclic Aromatic Hydrocarbons

14SED14	
2-methylnaphthalene (ug/g)	1.3
Acenaphthene (ug/g)	0.48
Anthracene (ug/g)	0.5
Benz(a)anthracene (ug/g)	0.63
Chrysene (ug/g)	0.96
Fluoranthene (ug/g)	2.9
Fluorene (ug/g)	0.44
Naphthalene (ug/g)	1
Phenanthrene (ug/g)	1.2
Pyrene (ug/g)	3
PAHs (Sum of total) (ug/g)	13

14SED15	
2-methylnaphthalene (ug/g)	1.6
Acenaphthene (ug/g)	0.47
Anthracene (ug/g)	0.31
Fluoranthene (ug/g)	1
Fluorene (ug/g)	0.37
Naphthalene (ug/g)	1.1
Phenanthrene (ug/g)	0.99
Pyrene (ug/g)	1.2

14SED13	
2-methylnaphthalene (ug/g)	1.2
Acenaphthene (ug/g)	0.5
Anthracene (ug/g)	0.31
Fluoranthene (ug/g)	1.4
Fluorene (ug/g)	0.4
Naphthalene (ug/g)	0.96
Phenanthrene (ug/g)	0.97
Pyrene (ug/g)	2

SD09-43	
Sample ID	SD09-43-090428
Depth (mbg)	0.0 - 0.1
2-Methylnaphthalene (µg/g)	0.18

14SED17	
2-methylnaphthalene (ug/g)	0.94
Acenaphthene (ug/g)	0.54
Anthracene (ug/g)	0.4
Benz(a)anthracene (ug/g)	0.44
Fluoranthene (ug/g)	2
Fluorene (ug/g)	0.54
Naphthalene (ug/g)	0.77
Phenanthrene (ug/g)	1.7
Pyrene (ug/g)	1.7

14SED019
1.1 m
PAHs < CSR Sched 9

14SED09	
2-methylnaphthalene (ug/g)	0.59
Acenaphthene (ug/g)	0.29
Anthracene (ug/g)	0.25
Benz(a)anthracene (ug/g)	0.45
Fluoranthene (ug/g)	2.2
Fluorene (ug/g)	0.26
Naphthalene (ug/g)	0.59
Phenanthrene (ug/g)	0.73
Pyrene (ug/g)	0.99

14SED05	
2-methylnaphthalene (ug/g)	0.92
Acenaphthene (ug/g)	0.98
Acenaphthylene (ug/g)	0.15
Anthracene (ug/g)	0.63
Benz(a)anthracene (ug/g)	1.2
Benzo(a) pyrene (ug/g)	0.62
Chrysene (ug/g)	2.4
Fluoranthene (ug/g)	17
Fluorene (ug/g)	0.94
Naphthalene (ug/g)	1
Phenanthrene (ug/g)	5.4
Pyrene (ug/g)	9.1
PAHs (Sum of total) (ug/g)	41

14SED021
1.5 m
PAHs < CSR Sched 9

14SED02	
2-methylnaphthalene (ug/g)	1.8
Acenaphthene (ug/g)	0.68
Anthracene (ug/g)	0.35
Benz(a)anthracene (ug/g)	0.45
Chrysene (ug/g)	0.58
Fluoranthene (ug/g)	2.6
Fluorene (ug/g)	0.55
Naphthalene (ug/g)	1.7
Phenanthrene (ug/g)	1.6
Pyrene (ug/g)	1.9
PAHs (Sum of total) (ug/g)	12

SD09-45	
Sample ID	SD09-45-090428
Depth (mbg)	0.0 - 0.1
Naphthalene (µg/g)	1.3
Acenaphthene (µg/g)	0.47
Fluorene (µg/g)	0.43
Phenanthrene (µg/g)	1
Anthracene (µg/g)	0.29
Fluoranthene (µg/g)	1.4
Pyrene (µg/g)	1.1
2-Methylnaphthalene (µg/g)	1.5

14SED12	
2-methylnaphthalene (ug/g)	0.97
Acenaphthene (ug/g)	0.39
Anthracene (ug/g)	0.39
Benz(a)anthracene (ug/g)	0.53
Chrysene (ug/g)	0.69
Fluoranthene (ug/g)	1.5
Fluorene (ug/g)	0.37
Naphthalene (ug/g)	0.72
Phenanthrene (ug/g)	1.1
Pyrene (ug/g)	1.3

SD09-44	
Sample ID	SD09-44-090428
Depth (mbg)	0.0 - 0.1
Naphthalene (µg/g)	3.1
Acenaphthene (µg/g)	0.26
Fluorene (µg/g)	0.39
Phenanthrene (µg/g)	1.9
Anthracene (µg/g)	0.32
Pyrene (µg/g)	1.1
2-Methylnaphthalene (µg/g)	6

14SED11	
2-methylnaphthalene (ug/g)	0.8
Acenaphthene (ug/g)	0.27
Anthracene (ug/g)	0.23
Fluorene (ug/g)	0.25
Naphthalene (ug/g)	0.58
Phenanthrene (ug/g)	0.66

14SED020
1 m
PAHs < CSR Sched 9

14SED08	
2-methylnaphthalene (ug/g)	0.81
Acenaphthene (ug/g)	0.53
Anthracene (ug/g)	1.7
Benz(a)anthracene (ug/g)	0.85
Chrysene (ug/g)	1.1
Fluoranthene (ug/g)	4.7
Fluorene (ug/g)	0.55
Naphthalene (ug/g)	0.8
Phenanthrene (ug/g)	2.6
Pyrene (ug/g)	3
PAHs (Sum of total) (ug/g)	17

14SED07	
2-methylnaphthalene (ug/g)	1
Acenaphthene (ug/g)	0.31
Anthracene (ug/g)	0.25
Fluoranthene (ug/g)	1.3
Fluorene (ug/g)	0.36
Naphthalene (ug/g)	0.68
Phenanthrene (ug/g)	0.86
Pyrene (ug/g)	1.2

	14SED023-B
Naphthalene	2.2
Acenaphthene	0.66
Anthracene	0.55
Benz(a)anthracene	0.43
Fluoranthene	1.5
Fluorene	0.63
Phenanthrene	1.4
Pyrene	1.2
2-methylnaphthalene	3.4
PAHs (Sum of total)	13

	14SED023-A
Naphthalene	3.3
Acenaphthene	0.83
Anthracene	0.55
Fluoranthene	1.1
Fluorene	0.61
Phenanthrene	1.7
Pyrene	1
2-methylnaphthalene	5.3
PAHs (Sum of total)	15

14SED023
1.8 m
PAHs < CSR Sched 9

14SED024
1.3 m
PAHs < CSR Sched 9

	14SED023-C
Naphthalene	1.7
Acenaphthene	0.49
Acenaphthylene	0.15
Anthracene	1.3
Benz(a)anthracene	0.94
Benzo(a) pyrene	0.67
Chrysene	0.91
Dibenz(a,h)anthracene	0.1
Fluoranthene	2.6
Fluorene	0.68
Phenanthrene	3
Pyrene	2.6
2-methylnaphthalene	2.7
PAHs (Sum of total)	18

14SED04	
2-methylnaphthalene (ug/g)	2.3
Acenaphthene (ug/g)	1.1
Acenaphthylene (ug/g)	0.16
Anthracene (ug/g)	0.95
Benz(a)anthracene (ug/g)	1.1
Chrysene (ug/g)	1.9
Fluoranthene (ug/g)	11
Fluorene (ug/g)	1.1
Naphthalene (ug/g)	1.6
Phenanthrene (ug/g)	7.4
Pyrene (ug/g)	6.4
PAHs (Sum of total) (ug/g)	35

14SED16	
2-methylnaphthalene (ug/g)	1.9
Acenaphthene (ug/g)	0.68
Anthracene (ug/g)	0.71
Benz(a)anthracene (ug/g)	0.66
Chrysene (ug/g)	0.89
Fluoranthene (ug/g)	2.3
Fluorene (ug/g)	0.63
Naphthalene (ug/g)	1.4
Phenanthrene (ug/g)	1.6
Pyrene (ug/g)	2.5
PAHs (Sum of total) (ug/g)	14

	14SED023-D
Naphthalene	3.6
Acenaphthene	0.86
Anthracene	0.64
Fluoranthene	1.1
Fluorene	0.65
Phenanthrene	1.8
Pyrene	1.1
2-methylnaphthalene	5.9
PAHs (Sum of total)	17

14SED06	
2-methylnaphthalene (ug/g)	0.56
Acenaphthene (ug/g)	0.16
Fluorene (ug/g)	0.13
Naphthalene (ug/g)	0.47

14SED10	
2-methylnaphthalene (ug/g)	1.2
Acenaphthene (ug/g)	0.29
Anthracene (ug/g)	0.18
Fluorene (ug/g)	0.24
Naphthalene (ug/g)	0.77
Phenanthrene (ug/g)	0.62

SD09-46	
Sample ID	SD09-46-090428
Depth (mbg)	0.0 - 0.1
Naphthalene (µg/g)	2.6
Acenaphthene (µg/g)	0.92
Fluorene (µg/g)	1.2
Phenanthrene (µg/g)	3.4
Anthracene (µg/g)	1.5
Fluoranthene (µg/g)	6.1
Pyrene (µg/g)	5.8
Benz(a)anthracene (µg/g)	1.4
Chrysene (µg/g)	2
Benzo(a)pyrene (µg/g)	0.78
2-Methylnaphthalene (µg/g)	3.9

14SED03	
2-methylnaphthalene (ug/g)	0.45
Acenaphthene (ug/g)	0.12
Fluorene (ug/g)	0.1
Naphthalene (ug/g)	0.33

SD09-47	
Sample ID	SD09-47-090428
Depth (mbg)	0.0 - 0.1
Naphthalene (µg/g)	1.7
Acenaphthene (µg/g)	0.63
Fluorene (µg/g)	0.81
Phenanthrene (µg/g)	2.1
Anthracene (µg/g)	0.99
Fluoranthene (µg/g)	3.2
Pyrene (µg/g)	2.7
Benzo(a)anthracene (µg/g)	0.65
Chrysene (µg/g)	0.87
2-Methylnaphthalene (µg/g)	2.8

14SED022
1.5 m
PAHs < CSR Sched 9

14SED01	
2-methylnaphthalene (ug/g)	1.4
Acenaphthene (ug/g)	0.44
Anthracene (ug/g)	0.44
Chrysene (ug/g)	0.53
Fluoranthene (ug/g)	1.7
Fluorene (ug/g)	0.39
Naphthalene (ug/g)	1.1
Phenanthrene (ug/g)	1
Pyrene (ug/g)	1.7

SD09-48	
Sample ID	SD09-48-090428
Depth (mbg)	0.0 - 0.1
Naphthalene (µg/g)	3
Acenaphthene (µg/g)	0.89
Fluorene (µg/g)	1.2
Phenanthrene (µg/g)	3.8
Anthracene (µg/g)	1.5
Fluoranthene (µg/g)	8.2
Pyrene (µg/g)	7.3
Benzo(a)anthracene (µg/g)	1.9
Chrysene (µg/g)	2.9
Benzo(a)pyrene (µg/g)	1.2
2-Methylnaphthalene (µg/g)	4.5

14SED18	
2-methylnaphthalene (ug/g)	1.2
Acenaphthene (ug/g)	0.61
Anthracene (ug/g)	0.64
Benz(a)anthracene (ug/g)	0.74
Chrysene (ug/g)	1.1
Fluoranthene (ug/g)	2.4
Fluorene (ug/g)	0.51
Naphthalene (ug/g)	0.97
Phenanthrene (ug/g)	1.2
Pyrene (ug/g)	2.8
PAHs (Sum of total) (ug/g)	13

BC Contaminated Sites Regulation (CSR BC Reg. 375/96 includes amendents up to BC Reg. 4/2014, January 31, 2014) sediment standards (Schedule 9) for Marine and Estuarine (Sensitive Site or Typical Site).

ORANGE	Exceeds CSR Standard for Sensitive Site
RED	Exceeds CSR Standard for Typical Site

LEGEND

- Subject Property
- Borehole
- Monitoring Well Installed by others
- Sediment Sample
- Test Pit Installed by Tetra Tech EBA
- SNC AEC Boundary
- Destroyed Monitoring Well installed prior to 2001

HORIZONTAL SCALE 1:1000

10 0 10 20 40m

NOTES

- LOCATIONS SHOWN ARE APPROXIMATE.
- LOCATIONS 14SED019 TO 14SED024 WERE DRILLED TO 2 m bgs.

CLIENT

CITY OF NANAIMO THE HARBOUR CITY

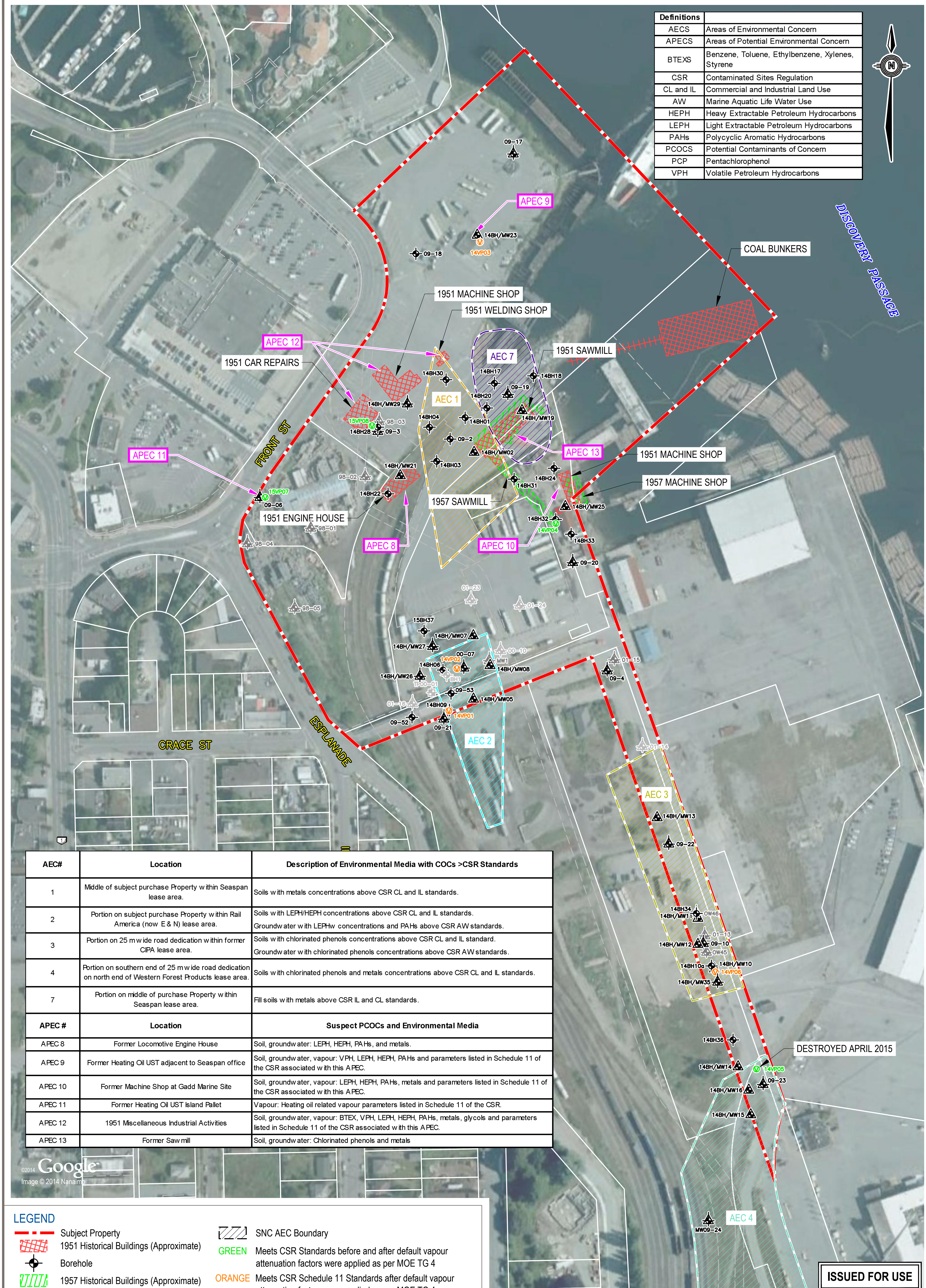
TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

SUMMARY OF SEDIMENT ANALYTICAL RESULTS

PROJECT NO.	DWN	CKD	REV	
ENVIND03511-01	SF	KG	0	Figure 8
OFFICE	DATE			
VANC	November 25, 2015			

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17-_R0 - DSI.dwg [FIGURE 9] November 25, 2015 - 10:50:35 am (BY: FOURNIER, SAMUEL)



Definitions	
AECS	Areas of Environmental Concern
APECS	Areas of Potential Environmental Concern
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrene
CSR	Contaminated Sites Regulation
CL and IL	Commercial and Industrial Land Use
AW	Marine Aquatic Life Water Use
HEPH	Heavy Extractable Petroleum Hydrocarbons
LEPH	Light Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
PCOCS	Potential Contaminants of Concern
PCP	Pentachlorophenol
VPH	Volatile Petroleum Hydrocarbons

AEC#	Location	Description of Environmental Media with COCs >CSR Standards
1	Middle of subject purchase Property within Seaspan lease area.	Soils with metals concentrations above CSR CL and IL standards.
2	Portion on subject purchase Property within Rail America (now E & N) lease area.	Soils with LEPH/HEPH concentrations above CSR CL and IL standards. Groundwater with LEPHw concentrations and PAHs above CSR AW standards.
3	Portion on 25 m wide road dedication within former CIPA lease area.	Soils with chlorinated phenols concentrations above CSR CL and IL standard. Groundwater with chlorinated phenols concentrations above CSR AW standards.
4	Portion on southern end of 25 m wide road dedication on north end of Western Forest Products lease area.	Soils with chlorinated phenols and metals concentrations above CSR CL and IL standards.
7	Portion on middle of purchase Property within Seaspan lease area.	Fill soils with metals above CSR IL and CL standards.
APEC #	**Location**	**Suspect PCOCs and Environmental Media**
APEC 8	Former Locomotive Engine House	Soil, groundwater: LEPH, HEPH, PAHs, and metals.
APEC 9	Former Heating Oil UST adjacent to Seaspan office	Soil, groundwater, vapour: VPH, LEPH, HEPH, PAHs and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 10	Former Machine Shop at Gadd Marine Site	Soil, groundwater, vapour: LEPH, HEPH, PAHs, metals and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 11	Former Heating Oil UST Island Pallet	Vapour: Heating oil related vapour parameters listed in Schedule 11 of the CSR.
APEC 12	1951 Miscellaneous Industrial Activities	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals, glycols and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 13	Former Sawmill	Soil, groundwater: Chlorinated phenols and metals

LEGEND

- Subject Property
- 1951 Historical Buildings (Approximate)
- Borehole
- 1957 Historical Buildings (Approximate)
- Vapour Probe
- Monitoring Well Installed by others
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Test Pit Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- SNC AEC Boundary
- GREEN Meets CSR Standards before and after default vapour attenuation factors were applied as per MOE TG 4
- ORANGE Meets CSR Schedule 11 Standards after default vapour attenuation factors were applied as per MOE TG 4
- RED Exceeds CSR Schedule 11 Standards before and after default vapour attenuation factors were applied as per MOE TG 4
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTES

- Locations shown are approximate.
- BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96, including amendments up to BC Reg. 4/2014, January 31, 2014). The standards used are the applicable standards from CSR Schedule 11 (soil vapour standards) CL/IL standards.

ISSUED FOR USE

CLIENT

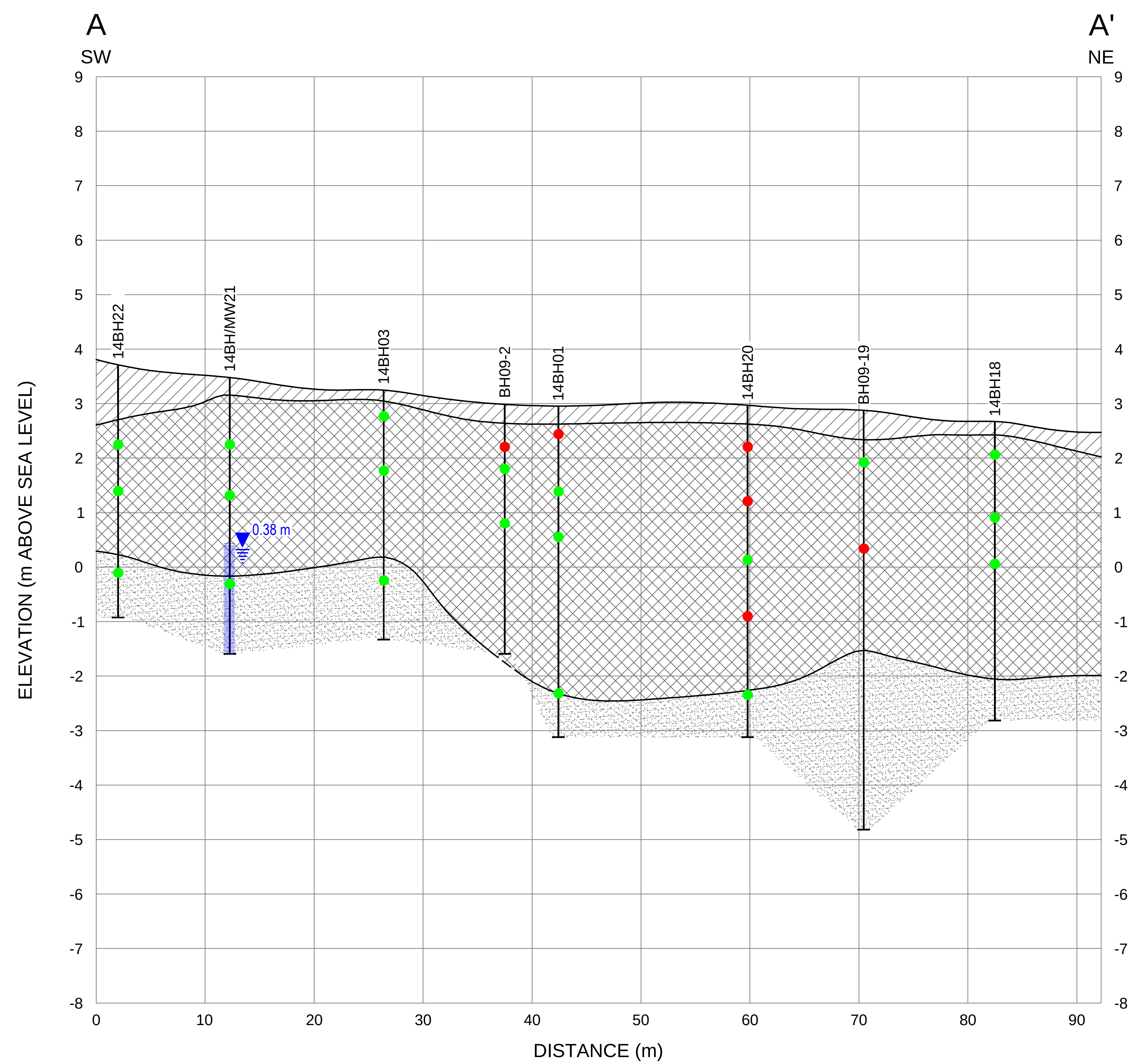
CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

SUMMARY OF SOIL VAPOUR ANALYTICAL RESULTS

PROJECT NO.	DWN	CKD	REV	
ENVIND03511-01	SF	LP	0	**Figure 9**
OFFICE	DATE			
VANC	November 25, 2015			



ISSUED FOR USE

LEGEND

- Analyzed Soil Sample
- No Exceedances - for all parameters analyzed
- Chromium Exceedances
- Well Screen
- Groundwater Potentiometric Surface at Low Tide (m-asl) (September 22, 2014)
- Asphalt and Fill
- Mixed Coal Waste Fill
- Marine Sand and Silt

VERTICAL SCALE 1:100

HORIZONTAL SCALE 1:500

CLIENT

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THE HARBOUR CITY

TETRA TECH EBA

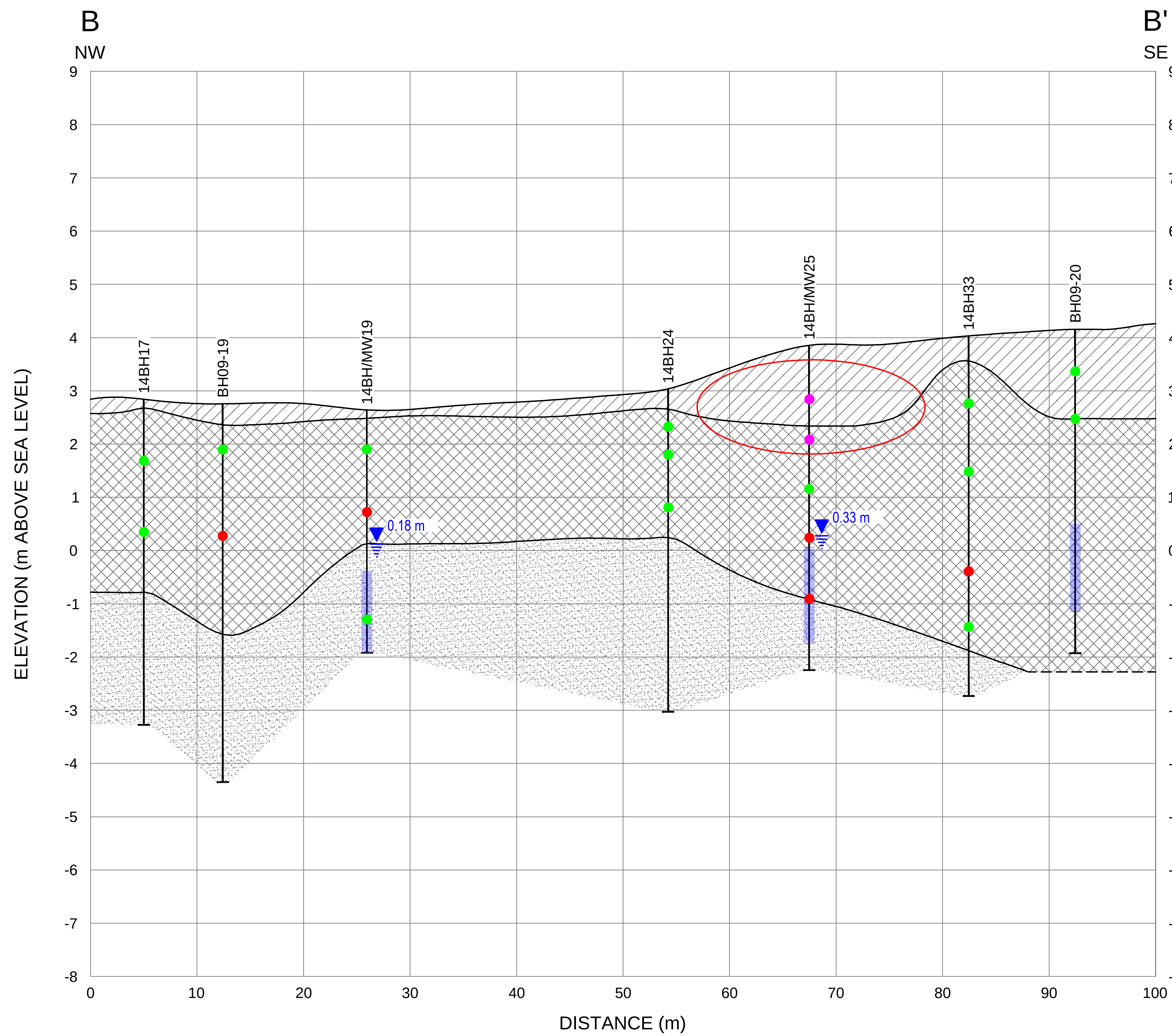
DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

CROSS-SECTION A-A'

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	LP	0
OFFICE	DATE		
VANC	November 25, 2015		

Figure 10

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17_R0 - DSI.dwg [FIGURE 10] November 25, 2015 - 10:50:27 am (BY: FOURNIER, SAMUEL)



ISSUED FOR USE

LEGEND

- Analyzed Soil Sample
- No Exceedances - for all parameters analyzed
- Chromium Exceedances
- Cadmium & Zinc Exceedance
- Well Screen
- Groundwater Potentiometric Surface at Low Tide (m-asl) (September 22, 2014)
- Asphalt and Fill
- Mixed Coal Waste Fill
- Marine Sand and Silt
- Approximate extent of Cadmium & Zinc soil plume

VERTICAL SCALE 1:100 (1 0 1 2 4m)

HORIZONTAL SCALE 1:500 (5 0 5 10 20m)

CLIENT: CITY OF NANAIMO THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

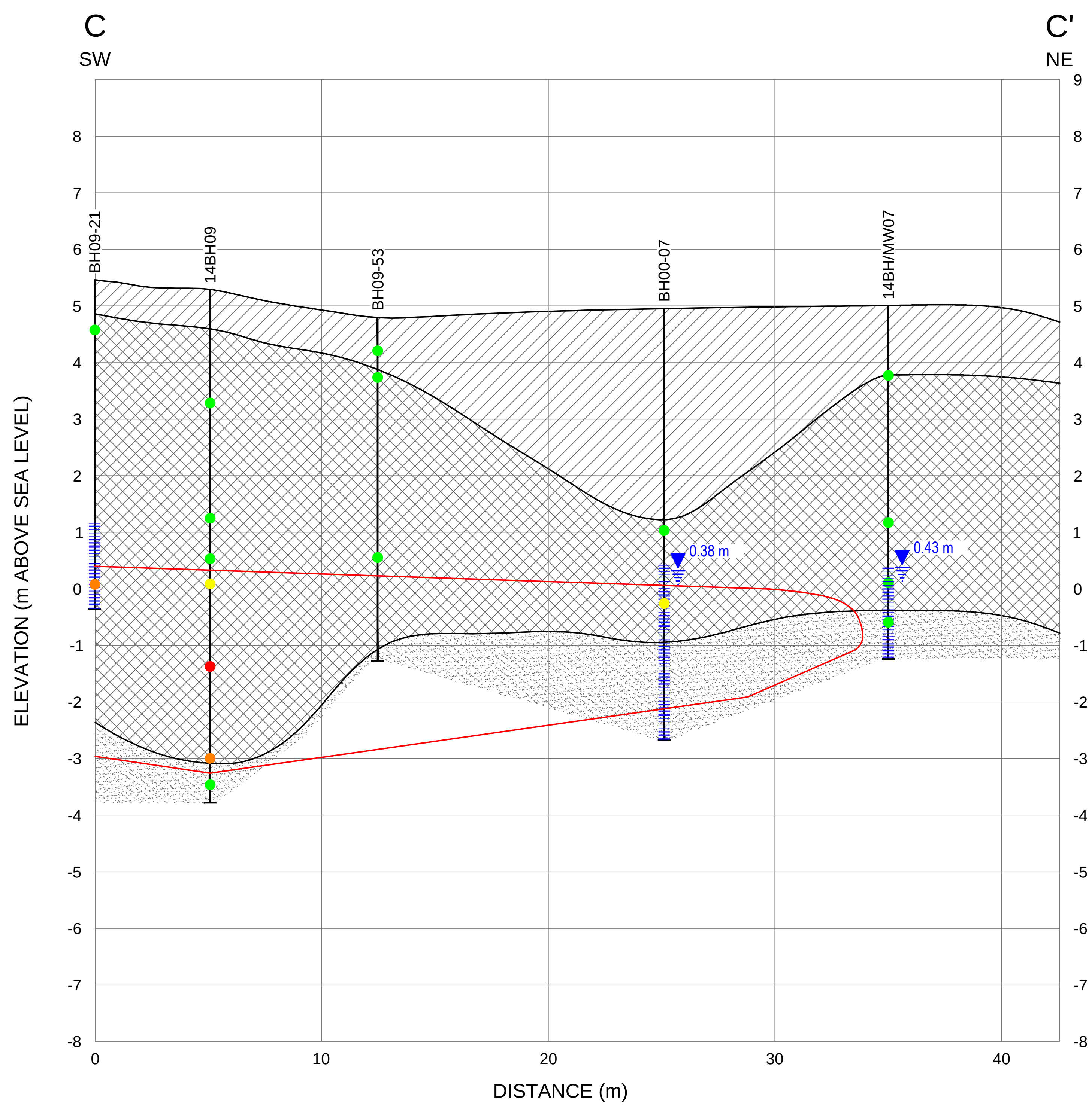
CROSS-SECTION B-B'

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	LP	0

OFFICE	DATE
VANC	November 25, 2015

Figure 11

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17_R0 - DSI.dwg [FIGURE 11] November 25, 2015 - 10:50:21 am (BY: FOURNIER, SAMUEL)



ISSUED FOR USE

LEGEND

- Analyzed Soil Sample
- No Exceedances - for all parameters analyzed
- Chromium Exceedances
- LEPH Exceedances
- EPH 10-19, EPH 19-32 Exceedance
- Well Screen
- Groundwater Potentiometric Surface at Low Tide (m-asl) (September 22, 2014)
- Asphalt and Fill
- Mixed Coal Waste Fill
- Marine Sand and Silt
- Approximate extent of LEPH and/or HEPH contaminated soil plume

VERTICAL SCALE 1:100

1 0 1 2 4m

HORIZONTAL SCALE 1:250

2 0 2 6 10m

CLIENT

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THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

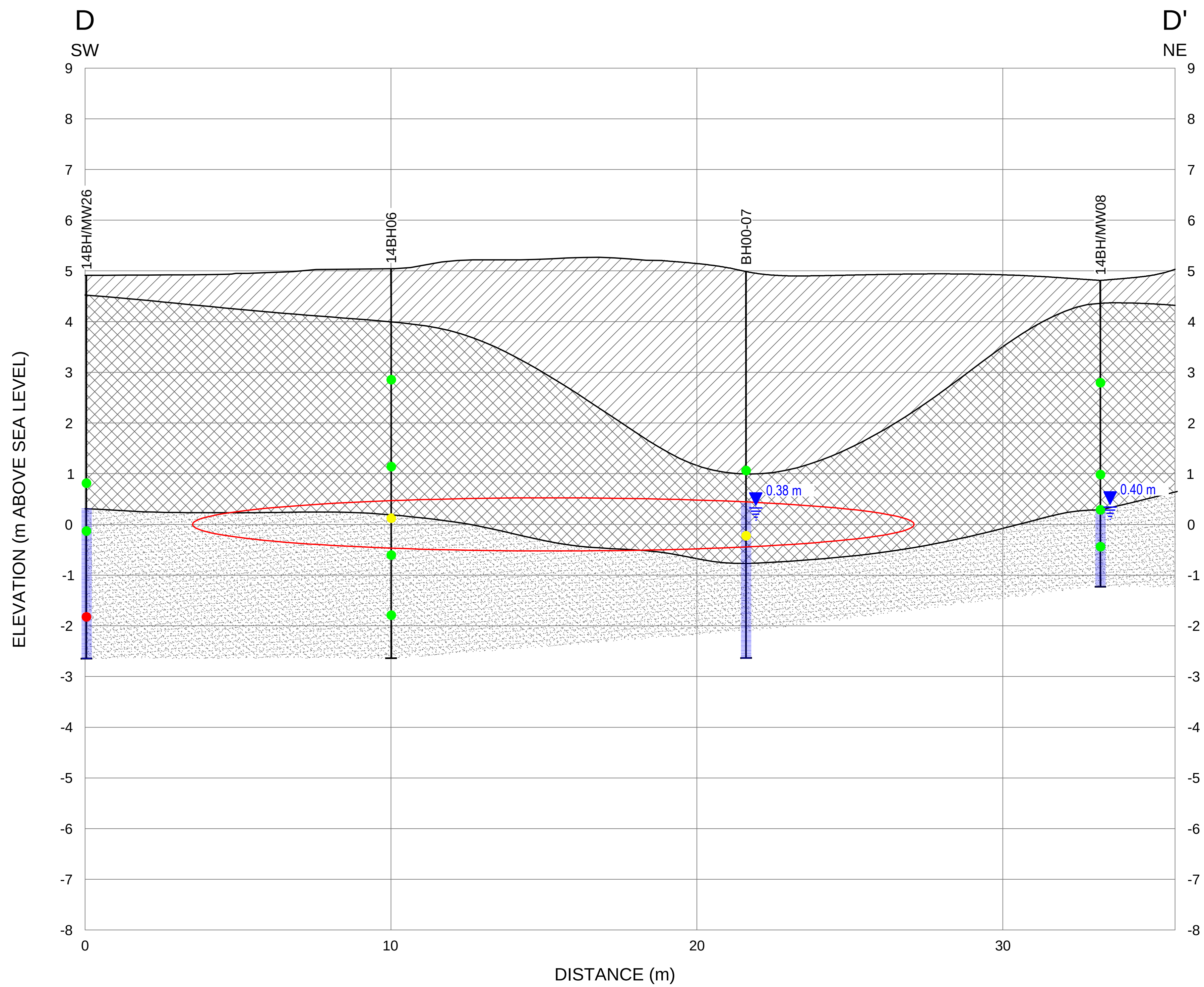
CROSS-SECTION C-C'

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	LP	0

OFFICE	DATE
VANC	November 25, 2015

Figure 12

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17-_R0 - DSI.dwg [FIGURE 12] November 25, 2015 - 10:50:12 am (BY: FOURNIER, SAMUEL)



ISSUED FOR USE

LEGEND

- Analyzed Soil Sample
- No Exceedances - for all parameters analyzed
- LEPH Exceedances
- Chromium Exceedances
- Well Screen
- Groundwater Potentiometric Surface at Low Tide (m-asl) (September 22, 2014)
- Asphalt and Fill
- Mixed Coal Waste Fill
- Marine Sand and Silt
- Approximate extent of LEPH and/or HEPH Contaminated Soil Plume

VERTICAL SCALE 1:100

HORIZONTAL SCALE 1:167

CLIENT: CITY OF NANAIMO THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

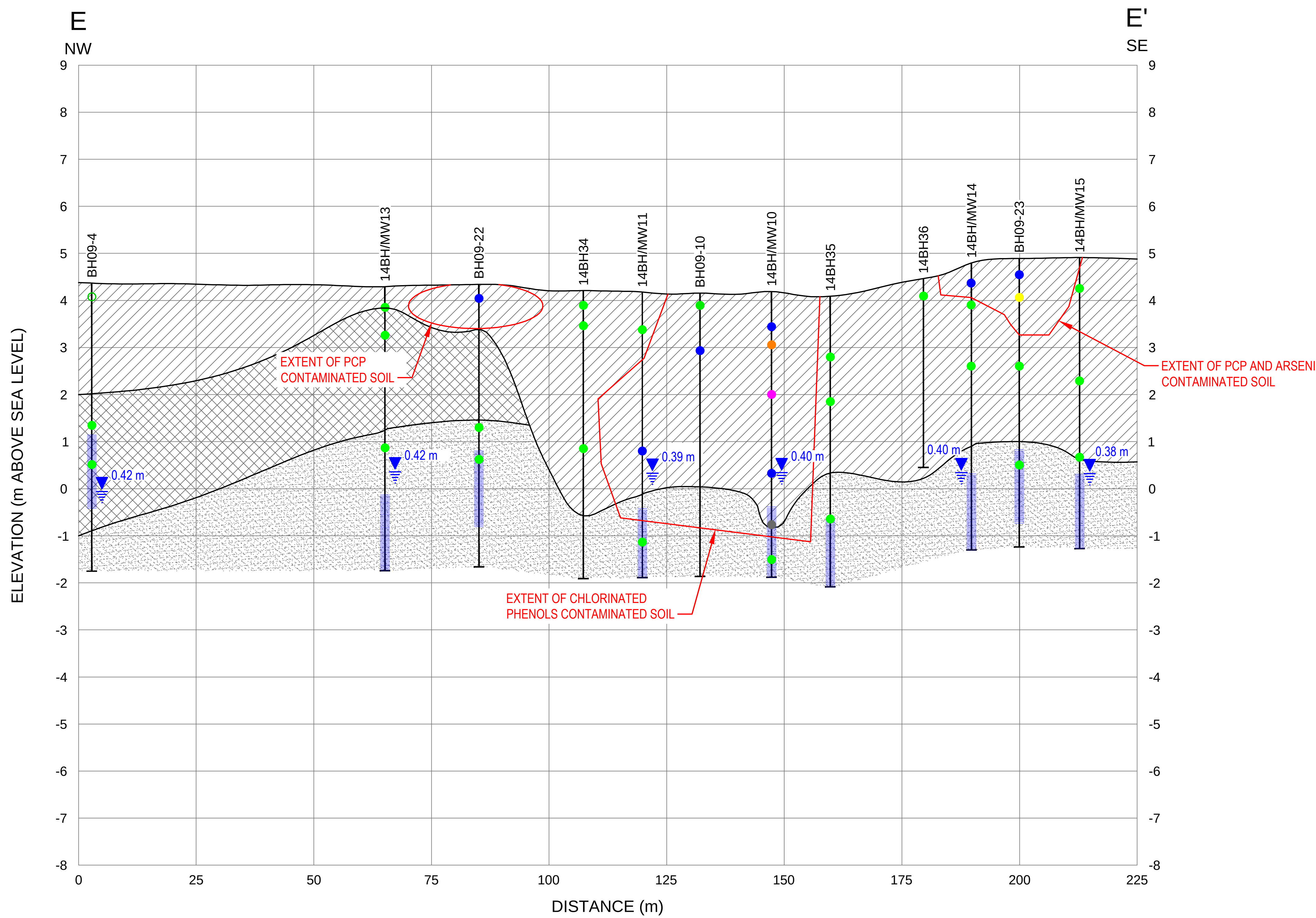
CROSS-SECTION D-D'

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	LP	0

OFFICE	DATE
VANC	November 25, 2015

Figure 13

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17._R0 - DSI.dwg [FIGURE 13] November 25, 2015 - 10:50:05 am (BY: FOURNIER, SAMUEL)



ISSUED FOR USE

LEGEND

- Analyzed Soil Sample
- No Exceedances
- Pentachlorophenol Exceedance
- Pentachlorophenol, 2,3,4,6-trichlorophenol and VPH Exceedances
- Pentachlorophenol, 2,4,5-trichlorophenol, 2,3,4,6-tetrachlorophenol and VPH Exceedances
- Arsenic and Zinc Exceedances
- 2,3,4,6-tetrachlophenol, 3,4-dichlorophenol, Phentachlorophenol Exceedances
- Well Screen
- Groundwater Potentiometric Surface at Low Tide (m-asl) (September 22, 2014)
- Asphalt and Fill
- Mixed Coal Waste Fill
- Marine Sediments Sand Fill

VERTICAL SCALE 1:100

1 0 1 2 4m

HORIZONTAL SCALE 1:1000

10 0 10 20 40m

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

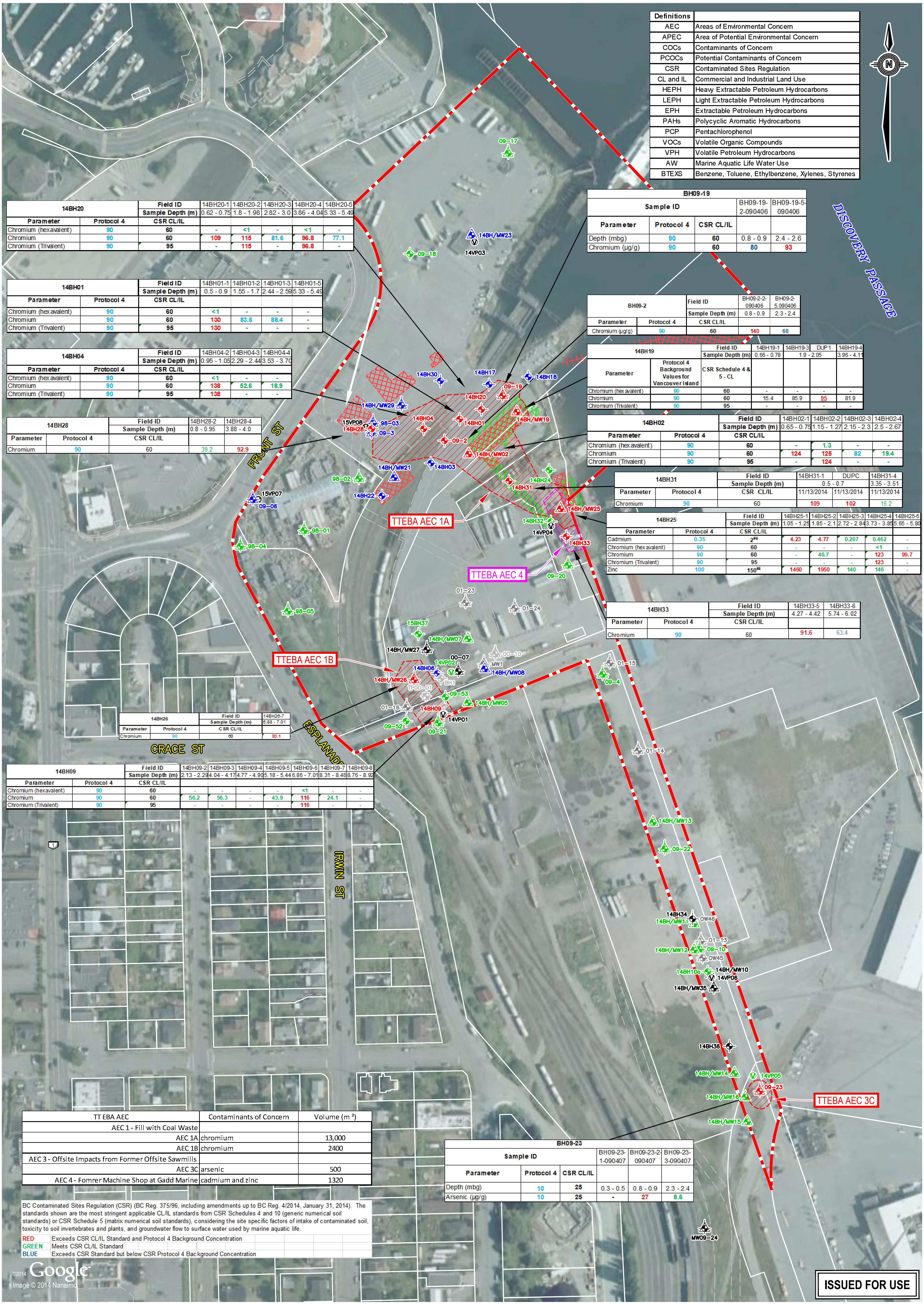
TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

CROSS-SECTION E-E'

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	LP	0
OFFICE	DATE		
VANC	November 25, 2015		

Figure 14



Definitions	
AEC	Areas of Environmental Concern
APEC	Area of Potential Environmental Concern
COCs	Contaminants of Concern
PCOCs	Potential Contaminants of Concern
CSR	Contaminated Sites Regulation
CL and IL	Commercial and Industrial Land Use
HEPH	Heavy Extractable Petroleum Hydrocarbons
LEPH	Light Extractable Petroleum Hydrocarbons
EPH	Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
PCP	Pentachlorophenol
VOCs	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
AW	Marine Aquatic Life Water Use
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrenes

14BH20		Field ID	14BH20-1	14BH20-2	14BH20-3	14BH20-4	14BH20-5
		Sample Depth (m)	0.62 - 0.75	1.8 - 1.98	2.82 - 3.0	3.86 - 4.04	5.33 - 5.49
Parameter	Protocol 4	CSR CL/IL					
Chromium (hexavalent)	90	60	-	<1	-	<1	-
Chromium	90	60	109	115	81.6	96.8	77.1
Chromium (Trivalent)	90	95	-	115	-	96.8	-

14BH01		Field ID	14BH01-1	14BH01-2	14BH01-3	14BH01-5
		Sample Depth (m)	0.5 - 0.9	1.55 - 1.7	2.44 - 2.59	5.33 - 5.49
Parameter	Protocol 4	CSR CL/IL				
Chromium (hexavalent)	90	60	<1	-	-	-
Chromium	90	60	130	83.6	88.4	-
Chromium (Trivalent)	90	95	130	-	-	-

14BH04		Field ID	14BH04-2	14BH04-3	14BH04-4
		Sample Depth (m)	0.95 - 1.05	2.29 - 2.44	3.53 - 3.70
Parameter	Protocol 4	CSR CL/IL			
Chromium (hexavalent)	90	60	<1	-	-
Chromium	90	60	138	52.6	18.9
Chromium (Trivalent)	90	95	138	-	-

14BH28		Field ID	14BH28-2	14BH28-4
		Sample Depth (m)	0.8 - 0.95	3.88 - 4.0
Parameter	Protocol 4	CSR CL/IL		
Chromium	90	60	39.2	92.9

BH09-19				
Sample ID			BH09-19-2-090406	BH09-19-5-090406
Parameter	Protocol 4	CSR CL/IL		
Depth (mbg)	90	60	0.8 - 0.9	2.4 - 2.6
Chromium (µg/g)	90	60	80	93

BH09-2		Field ID	BH09-2-2-090406	BH09-2-5.090406
		Sample Depth (m)	0.8 - 0.9	2.3 - 2.4
Parameter	Protocol 4	CSR CL/IL		
Chromium (µg/g)	90	60	140	68

14BH19		Field ID	14BH19-1	14BH19-3	DUP1	14BH19-4
		Sample Depth (m)	0.66 - 0.78	1.9 - 2.05		3.96 - 4.11
Parameter	Protocol 4 Background Values for Vancouver Island	CSR Schedule 4 & 5 - CL				
Chromium (hexavalent)	90	60	-	-	-	-
Chromium	90	60	15.4	85.9	95	81.9
Chromium (Trivalent)	90	95	-	-	-	-

14BH02		Field ID	14BH02-1	14BH02-2	14BH02-3	14BH02-4
		Sample Depth (m)	0.65 - 0.75	1.15 - 1.27	2.15 - 2.3	2.5 - 2.67
Parameter	Protocol 4	CSR CL/IL				
Chromium (hexavalent)	90	60	-	1.3	-	-
Chromium	90	60	124	125	82	19.4
Chromium (Trivalent)	90	95	-	124	-	-

14BH31		Field ID	14BH31-1	DUPC	14BH31-4
		Sample Depth (m)	0.5 - 0.7		3.35 - 3.51
Parameter	Protocol 4	CSR CL/IL	11/13/2014	11/13/2014	11/13/2014
Chromium	90	60	109	102	15.2

14BH25		Field ID	14BH25-1	14BH25-2	14BH25-3	14BH25-4	14BH25-5
		Sample Depth (m)	1.05 - 1.25	1.85 - 2.1	2.72 - 2.84	3.73 - 3.85	5.65 - 5.80
Parameter	Protocol 4	CSR CL/IL					
Cadmium	0.35	2[#4]	4.23	4.77	0.207	0.462	-
Chromium (hexavalent)	90	60	-	-	-	<1	-
Chromium	90	60	-	46.7	-	123	99.7
Chromium (Trivalent)	90	95	-	-	-	123	-
Zinc	100	150[#4]	1460	1950	140	146	-

14BH33		Field ID	14BH33-5	14BH33-6
		Sample Depth (m)	4.27 - 4.42	5.74 - 6.02
Parameter	Protocol 4	CSR CL/IL		
Chromium	90	60	91.6	63.4

14BH26		Field ID	14BH26-7
		Sample Depth (m)	6.88 - 7.01
Parameter	Protocol 4	CSR CL/IL	
Chromium	90	60	93.1

14BH09		Field ID	14BH09-2	14BH09-3	14BH09-4	14BH09-5	14BH09-6	14BH09-7	14BH09-8
		Sample Depth (m)	2.13 - 2.29	4.04 - 4.17	4.77 - 4.90	5.18 - 5.44	6.86 - 7.01	8.31 - 8.46	8.76 - 8.92
Parameter	Protocol 4	CSR CL/IL							
Chromium (hexavalent)	90	60	-	-	-	-	<1	-	-
Chromium	90	60	56.2	56.3	-	43.9	116	24.1	-
Chromium (Trivalent)	90	95	-	-	-	-	116	-	-

TT EBA AEC	Contaminants of Concern	Volume (m^3)
AEC 1 - Fill with Coal Waste		
AEC 1A	chromium	13,000
AEC 1B	chromium	2400
AEC 3 - Offsite Impacts from Former Offsite Sawmills		
AEC 3C	arsenic	500
AEC 4 - Fomrer Machine Shop at Gadd Marine	cadmium and zinc	1320

BH09-23					
Sample ID			BH09-23-1-090407	BH09-23-2-090407	BH09-23-3-090407
Parameter	Protocol 4	CSR CL/IL			
Depth (mbg)	10	25	0.3 - 0.5	0.8 - 0.9	2.3 - 2.4
Arsenic (µg/g)	10	25	-	27	8.6

BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96, including amendments up to BC Reg. 4/2014, January 31, 2014). The standards shown are the most stringent applicable CL/IL standards from CSR Schedules 4 and 10 (generic numerical soil standards) or CSR Schedule 5 (matrix numerical soil standards), considering the site specific factors of intake of contaminated soil, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by marine aquatic life.

RED	Exceeds CSR CL/IL Standard and Protocol 4 Background Concentration
GREEN	Meets CSR CL/IL Standard
BLUE	Exceeds CSR Standard but below CSR Protocol 4 Background Concentration

ISSUED FOR USE

LEGEND

- Subject Property
- Borehole
- 1951 Historical Buildings (Approximate)
- 1957 Historical Buildings (Approximate)
- Monitoring Well Installed by others
- Test Pit Installed by Tetra Tech EBA
- TT EBA AEC Boundary
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- Vapour Probe
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

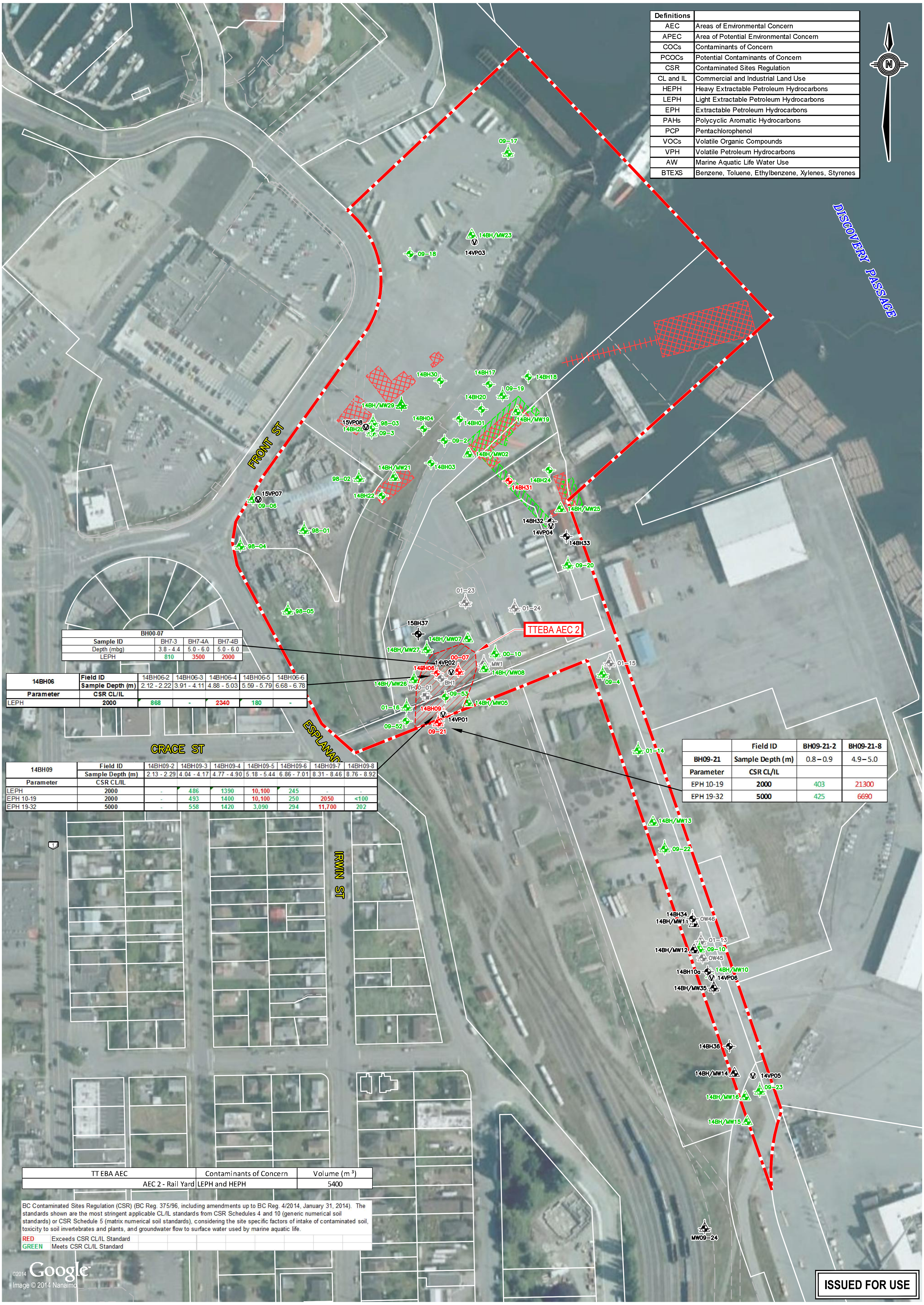
DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

AEC 1, AEC 3 AND AEC 4 - EXTENT OF METAL CONTAMINATED FILL SOILS

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0
OFFICE	DATE		
VANC	November 25, 2015		

Figure 15

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17-_R0 - DSI.dwg [FIGURE 16] November 25, 2015 - 10:49:38 am (BY: FOURNIER, SAMUEL)



Definitions	
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LEPH	Light Extractable Petroleum Hydrocarbons
EPH	Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
PCP	Pentachlorophenol
VOCs	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
AW	Marine Aquatic Life Water Use
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrenes

BH00-07			
Sample ID	BH7-3	BH7-4A	BH7-4B
Depth (mbg)	3.8 - 4.4	5.0 - 6.0	5.0 - 6.0
LEPH	810	3500	2000

14BH06	Field ID	14BH06-2	14BH06-3	14BH06-4	14BH06-5	14BH06-6
	Sample Depth (m)	2.12 - 2.22	3.91 - 4.11	4.88 - 5.03	5.59 - 5.79	6.68 - 6.78
Parameter	CSR CL/IL					
LEPH	2000	868	-	2340	180	-

BH09-21	Field ID	BH09-21-2	BH09-21-8
	Sample Depth (m)	0.8 – 0.9	4.9 – 5.0
Parameter	CSR CL/IL		
EPH 10-19	2000	403	21300
EPH 19-32	5000	425	6690

14BH09	Field ID	14BH09-2	14BH09-3	14BH09-4	14BH09-5	14BH09-6	14BH09-7	14BH09-8
	Sample Depth (m)	2.13 - 2.29	4.04 - 4.17	4.77 - 4.90	5.18 - 5.44	6.86 - 7.01	8.31 - 8.46	8.76 - 8.92
Parameter	CSR CL/IL							
LEPH	2000	-	486	1390	10,100	245	-	-
EPH 10-19	2000	-	493	1400	10,100	250	2050	<100
EPH 19-32	5000	-	558	1420	3,090	294	11,700	202

TT EBA AEC	Contaminants of Concern	Volume (m^3)
AEC 2 - Rail Yard	LEPH and HEPH	5400

BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96, including amendments up to BC Reg. 4/2014, January 31, 2014). The standards shown are the most stringent applicable CL/IL standards from CSR Schedules 4 and 10 (generic numerical soil standards) or CSR Schedule 5 (matrix numerical soil standards), considering the site specific factors of intake of contaminated soil, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by marine aquatic life.

RED	Exceeds CSR CL/IL Standard
GREEN	Meets CSR CL/IL Standard

LEGEND

- Subject Property
- Borehole
- 1951 Historical Buildings (Approximate)
- 1957 Historical Buildings (Approximate)
- Monitoring Well Installed by others
- Test Pit Installed by Tetra Tech EBA
- TT EBA AEC Boundary
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- Vapour Probe
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

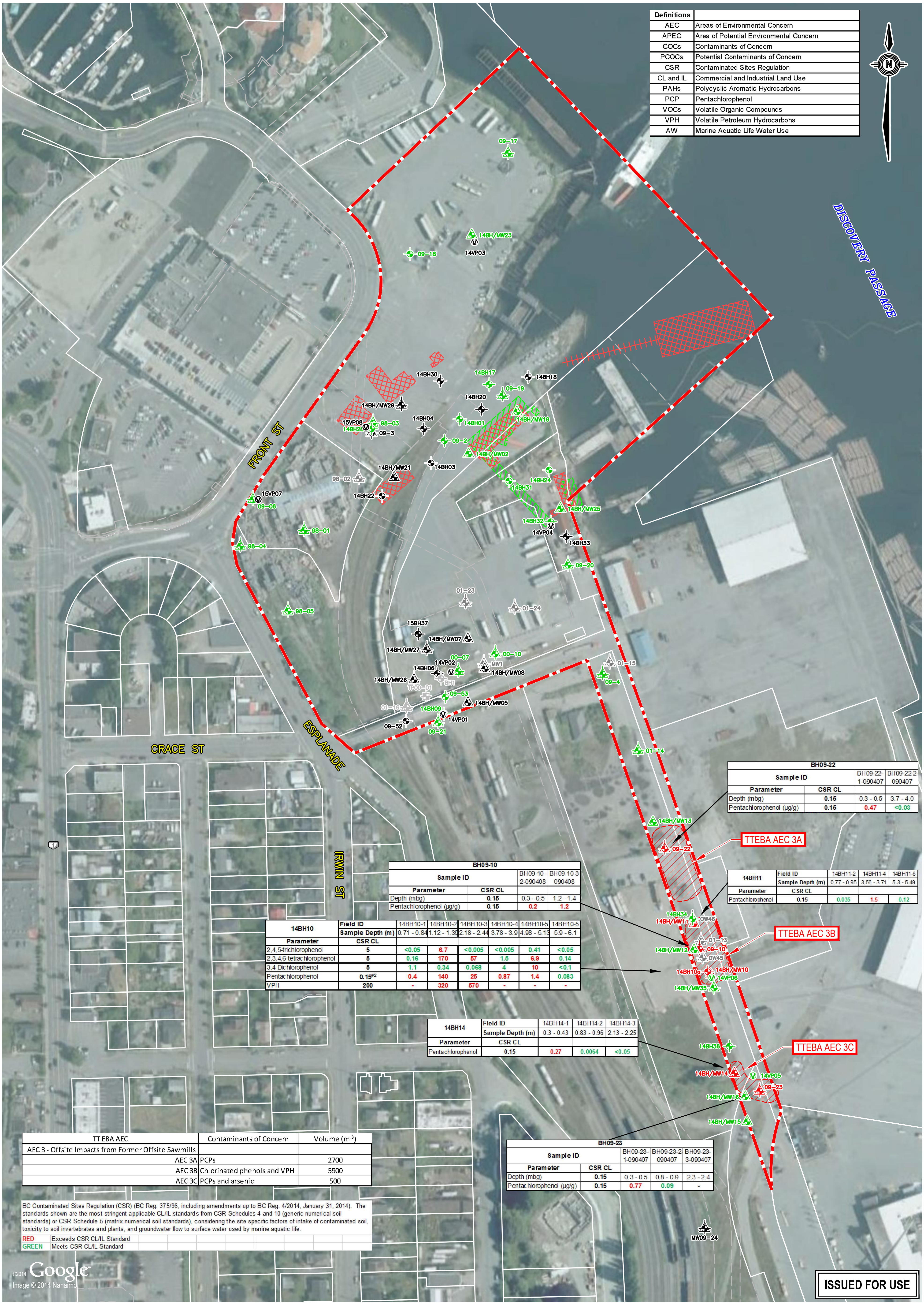
DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

AEC 2 - EXTENT OF LEPH/HEPH CONTAMINATED SOILS

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0
OFFICE	DATE		
VANC	November 25, 2015		

Figure 16

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 2-17-_R0 - DSI.dwg [FIGURE 17] November 25, 2015 - 10:48:38 am (BY: FOURNIER, SAMUEL)



Definitions	
AEC	Areas of Environmental Concern
APEC	Area of Potential Environmental Concern
COCs	Contaminants of Concern
PCOCs	Potential Contaminants of Concern
CSR	Contaminated Sites Regulation
CL and IL	Commercial and Industrial Land Use
PAHs	Polycyclic Aromatic Hydrocarbons
PCP	Pentachlorophenol
VOCs	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
AW	Marine Aquatic Life Water Use

BH09-22

Sample ID		BH09-22-1-090407	BH09-22-2-090407
Parameter	CSR CL		
Depth (mbg)	0.15	0.3 - 0.5	3.7 - 4.0
Pentachlorophenol (µg/g)	0.15	0.47	<0.03

14BH11	Field ID	14BH11-2	14BH11-4	14BH11-6
	Sample Depth (m)	0.77 - 0.95	3.56 - 3.71	5.3 - 5.49
Parameter	CSR CL			
Pentachlorophenol	0.15	0.035	1.5	0.12

BH09-10

Sample ID		BH09-10-2-090408	BH09-10-3-090408
Parameter	CSR CL		
Depth (mbg)	0.15	0.3 - 0.5	1.2 - 1.4
Pentachlorophenol (µg/g)	0.15	0.2	1.2

14BH10	Field ID	14BH10-1	14BH10-2	14BH10-3	14BH10-4	14BH10-5	14BH10-5
	Sample Depth (m)	0.71 - 0.84	1.12 - 1.35	2.18 - 2.44	3.78 - 3.9	4.98 - 5.13	5.9 - 6.1
Parameter	CSR CL						
2,4,5-trichlorophenol	5	<0.05	6.7	<0.005	<0.005	0.41	<0.05
2,3,4,6-tetrachlorophenol	5	0.16	170	57	1.5	6.9	0.14
3,4 Dichlorophenol	5	1.1	0.34	0.068	4	10	<0.1
Pentachlorophenol	0.15#2	0.4	140	25	0.87	1.4	0.083
VPH	200	-	320	570	-	-	-

14BH14	Field ID	14BH14-1	14BH14-2	14BH14-3
	Sample Depth (m)	0.3 - 0.43	0.83 - 0.96	2.13 - 2.25
Parameter	CSR CL			
Pentachlorophenol	0.15	0.27	0.0064	<0.05

BH09-23

Sample ID		BH09-23-1-090407	BH09-23-2-090407	BH09-23-3-090407
Parameter	CSR CL			
Depth (mbg)	0.15	0.3 - 0.5	0.8 - 0.9	2.3 - 2.4
Pentachlorophenol (µg/g)	0.15	0.77	0.09	-

TT EBA AEC	Contaminants of Concern	Volume (m^3)
AEC 3 - Offsite Impacts from Former Offsite Sawmills		
AEC 3A	PCPs	2700
AEC 3B	Chlorinated phenols and VPH	5900
AEC 3C	PCPs and arsenic	500

BC Contaminated Sites Regulation (CSR) (BC Reg. 375/96, including amendments up to BC Reg. 4/2014, January 31, 2014). The standards shown are the most stringent applicable CL/IL standards from CSR Schedules 4 and 10 (generic numerical soil standards) or CSR Schedule 5 (matrix numerical soil standards), considering the site specific factors of intake of contaminated soil, toxicity to soil invertebrates and plants, and groundwater flow to surface water used by marine aquatic life.

RED	Exceeds CSR CL/IL Standard
GREEN	Meets CSR CL/IL Standard

LEGEND

- Subject Property
- Borehole
- 1951 Historical Buildings (Approximate)
- 1957 Historical Buildings (Approximate)
- Monitoring Well Installed by others
- Test Pit Installed by Tetra Tech EBA
- TT EBA AEC Boundary
- Borehole & Monitoring Well Installed by Tetra Tech EBA
- Destroyed Monitoring Well
- Vapour Probe
- GREY Location Installed by others prior to 2009

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

AEC 3 - EXTENT OF CHLORINATED PHENOLS AND VPH CONTAMINATED SOILS

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0
OFFICE	DATE		
VANC	November 25, 2015		

Figure 17

APPENDIX A

TETRA TECH EBA'S GENERAL CONDITIONS

GENERAL CONDITIONS

GEOENVIRONMENTAL REPORT

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of Tetra Tech EBA’s client. Tetra Tech EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than Tetra Tech EBA’s Client unless otherwise authorized in writing by Tetra Tech EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of Tetra Tech EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where Tetra Tech EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed Tetra Tech EBA’s instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Tetra Tech EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of Tetra Tech EBA’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Tetra Tech EBA. The Client warrants that Tetra Tech EBA’s instruments of professional service will be used only and exactly as submitted by Tetra Tech EBA.

Electronic files submitted by Tetra Tech EBA have been prepared and submitted using specific software and hardware systems. Tetra Tech EBA makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

3.0 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by Tetra Tech EBA in its reasonably exercised discretion.

4.0 INFORMATION PROVIDED TO TETRA TECH EBA BY OTHERS

During the performance of the work and the preparation of the report, Tetra Tech EBA may rely on information provided by persons other than the Client. While Tetra Tech EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, Tetra Tech EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

APPENDIX B
BOREHOLE LOGS

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW02**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 3.13 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	■ Vapour readings (ppmv) ■ 100 200 300 400	Notes and Comments	14MW02	Elevation (m)
0	Solid stem auger	ASPHALT - (80 mm thick)				Top of casing elevation = 3.04 metres		3
		SILT (FILL) - sandy, dry, loose, light brown				Monitoring well was set in a cement mixture at surface.		
		SAND (COAL WASTE FILL) - some silt, trace to some gravel, fine to coarse grained sand, damp to moist, loose, dark brown to black		2-1		Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
1				2-2				2
2		- sticky, moist to wet		2-3				1
		SAND - silty, fine grained, saturated, mixed grey and black layers		2-4				
3 (▼ Sept22/14)								0 (▼ Sept22/14)
4				2-5				-1
		END OF BOREHOLE (4.57 metres) water - 2.87 metres below ground level at 17:34 on September 22, 2014 Monitoring well installed to 4.57 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						
5								-2
6								-3
7								-4
8								-5
9								-6
10								-7
11								-8
12								

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 4.57 m
Drilling Rig Type:	Start Date: 2014 September 15
Logged By: MG	Completion Date: 2014 September 15
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH/MW05**

CITY OF NANAIMO — THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 5.29 masl
NANAIMO, BRITISH COLUMBIA	

Method: Solid stem auger (with Hollow stem ream)

Vapour readings (ppmv): 100 200 300 400

Depth (m)	Soil Description	Sample Number
0	SILT AND SAND (FILL) - trace gravel, fine grained sand, dry, very loose, brown	
	SAND (FILL) - homogenous, fine grained, damp, loose, light brown	5-1
1	SILT AND SAND (FILL) - moist, soft, dark brown and black, some wood waste	
	SAND (FILL) - trace gravel, coarse grained sand, damp, pinkish brown	5-2
2	SAND (COAL WASTE FILL) - some silt, coarse grained, damp to moist, loose, black	5-3
3–4		5-4
4	SAND AND SILT (FILL) - fine grained, moist, soft, dark brown, wood waste	
	SAND (FILL) - silty, trace gravel, saturated, soft, black, hydrocarbon odour	5-5
5		5-6
6	SAND - some silt, fine grained, saturated, grey	5-7
7	SILT - organics, saturated, soft, mottled	
	SAND - silty, fine grained, saturated, grey	

END OF BOREHOLE (7.62 metres)
water - 4.90 metres below ground level at 18:08 on September 22, 2014
Monitoring well installed to 7.62 metres
Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)

Water level: Sept22/14

Notes and Comments

Top of casing elevation = 6.19 metres
Monitoring well was set in a cement mixture at surface.
Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a steel monument.
Pipe stickup = 0.90 metres

Depth scale (m): 0 1 2 3 4 5 6 7 8 9 10 11 12
Elevation (m): 5 4 3 2 1 0 -1 -2 -3 -4 -5 -6

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 7.62 m
Drilling Rig Type:	Start Date: 2014 September 15
Logged By: MG	Completion Date: 2014 September 15
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH/MW07**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.99 masl
NANAIMO, BRITISH COLUMBIA	

CITY OF NANAIMO THE HARBOUR CITY

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW07	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	ASPHALT - (70 mm thick)				Top of casing elevation = 4.93 metres		
		SAND (FILL) - some silt, some gravel, fine to coarse grained sand, damp, medium dense, brown - fine grained sand				Monitoring well was set in a cement mixture at surface.		
1		SILT AND SAND (FILL) - moist, grey, orange streaks				Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4
		SILT AND SAND (COAL WASTE FILL) - some gravel, fine to medium grained sand, moist, medium dense, black		7-1				
2								3
		- 150 mm gravel seam - black coal		7-2				
3								2
4				7-3				1
Sept22/14		GRAVEL (COAL WASTE FILL) - some medium to coarse grained sand, trace coal, small to medium grained gravel, black						Sept22/14
5				7-4				0
		SAND - silty, fine grained, saturated, grey and brown, trace of seashells		7-5				
6		SILT - some fine grained sand, trace organics, moist to wet, soft, brown, rotting marine odour						-1
		END OF BOREHOLE (6.10 metres) water - 4.57 metres below ground level at 18:04 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						
7								-2
8								-3
9								-4
10								-5
11								-6
12								-7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 17
Logged By: MG	Completion Date: 2014 September 17
Reviewed By: CM	Page 1 of 1

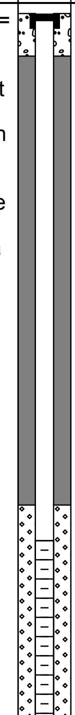
Borehole No: **14BH/MW08**

CITY OF NANAIMO
THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.88 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	SILT (FILL) - some gravel, damp, soft, brown (150 mm thick)				Top of casing elevation = 4.80 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.	
		SAND (FILL) - homogenous, fine grained, damp, loose, light brown (250 mm thick)					
		SILT AND SAND (COAL WASTE FILL) - trace gravel, trace organics, fine to coarse grained sand, damp to moist, brown and black		8-1			4
1							
2				8-2			3
3		- trace to some gravel					2
4				8-3			1
Sept22/14		- moist to wet					Sept22/14
		SAND - some gravel, medium to coarse grained sand, saturated, loose, brown		8-4			
5		- some silt, fine grained sand, grey, some broken seashells		8-5			0
6		SILT - saturated, soft, light brown					-1
		END OF BOREHOLE (6.10 metres) water - 4.49 metres below ground level at 19:53 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					
7							-2
8							-3
9							-4
10							-5
11							-6
12							-7

14MW08



TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 16
Logged By: MG	Completion Date: 2014 September 16
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH/MW10A**

CITY OF NANAIMO
THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.17 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	■ Vapour readings (ppmv) ■ 100 200 300 400	Notes and Comments	14MW10A	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	SILT (FILL) - sandy, some gravel, damp, soft, brown		Top of casing elevation = 4.13 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4
1		SAND (FILL) - fine to medium grained, damp, loose, brown, strong solvent odour - some silt, damp to moist, medium dense, mixed crushed seashells, solvent odour				3
2						2
3		- trace crushed seashells				1
4 (▼ Sept22/14)		- homogenous, moist to wet, no visible seashells - larger broken shells				0 (▼ Sept22/14)
5		SILT - some organics, saturated, soft, black, less odour SILT AND SAND - some gravel, fine to coarse grained sand, saturated, black				-1
6		END OF BOREHOLE (6.10 metres) water - 3.78 metres below ground level at 17:54 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)				-2
7						-3
8						-4
9						-5
10						-6
11						-7
12						

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 17
Logged By: MG	Completion Date: 2014 September 17
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW11**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.16 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW11	Elevation (m)
0	Solid stem auger	SILT (FILL) - sandy, some gravel, fine to coarse grained sand, damp, soft, brown (300 mm thick)				Top of casing elevation = 4.05 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4
		SAND (FILL) - some silt, homogenous, very fine grained, damp, dark grey		11-1				
1		- trace silt, medium dense, light brown and grey, orange streaks		11-2				3
		SILT (FILL) - trace fine grained sand, moist, soft, brown						
2		SAND (FILL) - trace silt, homogenous, fine grained, damp, loose, brown, broken seashells		11-3				2
3				11-4				1
4 (Sept22/14)		- moist, medium dense, grey, no visible seashells						0 (Sept22/14)
		SILT - gravelly, some sand, saturated, soft, dark brown to black		11-5				
5				11-6				-1
6		END OF BOREHOLE (6.10 metres) water - 3.77 metres below ground level at 17:43 on September 22, 2014 Monitoring well installed to 6.10 metres						-2
7								-3
8								-4
9								-5
10								-6
11								-7
12								

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 17
Logged By: MG	Completion Date: 2014 September 17
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW12**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.15 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW12	Elevation (m)
0	Solid stem auger	SAND AND GRAVEL (FILL) - some silt, fine to coarse grained sand, damp, loose, brown (250 mm thick)				Top of casing elevation = 4.06 metres		4
		SAND (FILL) - fine to medium grained, damp, medium dense, brown, some crushed seashells		12-1		Monitoring well was set in a cement mixture at surface.		
1		- trace silt, homogenous, fine grained, damp, occasional orange streak		12-2		Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		3
		SILT (FILL) - some very fine grained sand, moist, soft, grey and brown						
2		SAND (FILL) - trace silt, homogenous, fine grained, damp, medium dense, grey		12-3				2
3								1
4 (Sept22/14)		- moist to wet		12-4			(Sept22/14)	0
		- silty						
		- trace silt, saturated						
5		SILT - sandy, trace gravel, saturated, dark brown, trace broken seashells		12-5				-1
6		END OF BOREHOLE (6.10 metres) water - 3.73 metres below ground level at 17:49 on September 22, 2014 Monitoring well installed to 5.89 metres						-2
7								-3
8								-4
9								-5
10								-6
11								-7
12								

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 17
Logged By: MG	Completion Date: 2014 September 17
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW13**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.33 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW13	Elevation (m)
0	Solid stem auger	SAND AND GRAVEL (FILL) - some silt, fine to coarse grained sand, damp, loose, brown				Top of casing elevation = 4.25 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4
		SAND (COAL WASTE FILL) - some silt, trace gravel, damp, medium dense, black and brown		13-1	■			
1		SAND (FILL) - homogenous, fine grained, damp, medium dense, brown - trace to some silt, dry, loose, grey and brown, some crushed seashells - fine to medium grained, damp, medium dense, brown		13-2	■			3
2		SILT (FILL) - trace to some fine grained sand, moist, soft, dark grey, grey sand lenses, trace broken shells		13-3	■			2
3		SAND - homogenous, fine to medium grained, moist, medium dense, dark grey		13-4	■			1
4 (Sept22/14)		SILT - some very fine grained sand, moist to saturated, soft, brown and grey						0 (Sept22/14)
5		GRAVEL - some sand, some silt, saturated, dark brown		13-5	■			-1
6		SILT - trace to some sand, moist to wet, soft, dark grey						
		END OF BOREHOLE (6.10 metres) water - 3.91 metres below ground level at 17:38 on September 22, 2014 Monitoring well installed to 6.10 metres						-2
7								-3
8								-4
9								-5
10								-6
11								-7
12								

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 17
Logged By: MG	Completion Date: 2014 September 17
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH/MW14**

CITY OF NANAIMO — THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.71 masl
NANAIMO, BRITISH COLUMBIA	

Method: Solid stem auger (with Hollow stem ream)

Depth (m)	Soil Description	Sample Number	Notes and Comments
0	SAND (FILL) - some silt, some gravel, fine to coarse grained sand, dry, loose, dark brown, mottled, broken brick inclusions	14-1	Top of casing elevation = 4.58 metres. Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.
	- homogenous, fine grained sand, damp, light brown	14-2	
	- trace broken seashells		
2	SILT (FILL) - some fine grained sand, moist, soft, grey, wood waste inclusions, thin sand lenses	14-3	
	SAND AND SILT (COAL WASTE FILL) - trace gravel, moist, dense, black	14-4	
4	SAND - silty, homogenous, moist, medium dense, brown		
	- some silt, saturated, grey		
	SILT - sandy, trace of gravel, saturated, soft, dark brown	14-5	
	GRAVEL - silty, some sand, saturated, dark brown		
6	END OF BOREHOLE (6.10 metres) water - 4.32 metres below ground level at 17:58 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)		

Vapour readings (ppmv): 100 200 300 400

Well: 14MW14; water level Sept22/14

Depth (m): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Elevation (m): 4, 3, 2, 1, 0, -1, -2, -3, -4, -5, -6, -7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 18
Logged By: MG	Completion Date: 2014 September 18
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW15**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.85 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW15	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	SAND AND GRAVEL (FILL) - some silt, fine to coarse grained sand, dry, loose, brown (280 mm thick)				Top of casing elevation = 4.75 metres. Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
		SAND (FILL) - some silt, fine grained, damp, brown						
		SAND (COAL WASTE FILL) - some silt, trace gravel, fine to coarse grained sand, damp, black		15-1				4
1								
2		- silty, moist		15-2				3
3		SAND (FILL) - some silt, some gravel, trace coal, medium to coarse grained sand, dense, brown and black		15-3				2
4		SILT AND SAND - trace to some gravel, saturated, dark brown		15-4				1
5 (Sept22/14)								0 (Sept22/14)
6				15-5				-1
		END OF BOREHOLE (6.10 metres) water - 4.48 metres below ground level at 18:01 on September 22, 2014. Monitoring well installed to 6.10 metres. Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						
7								-2
8								-3
9								-4
10								-5
11								-6
12								-7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 18
Logged By: MG	Completion Date: 2014 September 18
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW16**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.82 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW16	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	SILT AND SAND (COAL WASTE FILL) - gravelly, fine to coarse grained sand, damp, wood, crushed brick and sawdust				Top of casing elevation = 4.66 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
1				16-1				4
2				16-2				3
3		SAND (FILL) - gravelly, coarse grained sand, moist, loose, mixed broken seashells and broken brick		16-3				2
		SILT (FILL) - sandy, some gravel, trace coal, moist to wet, soft, black						
4		SILT - sandy, trace gravel, saturated, soft, dark brown		16-4				1
5 (Sept22/14)				16-5			Sept22/14	0
6		END OF BOREHOLE (6.10 metres) water - 4.45 metres below ground level at 18:01 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-1
7								-2
8								-3
9								-4
10								-5
11								-6
12								-7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 18
Logged By: MG	Completion Date: 2014 September 18
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH/MW19**

CITY OF NANAIMO
THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 2.6 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW19	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	ASPHALT - (80 mm thick)				Top of casing elevation = 2.51 metres. Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
		SILT (FILL) - sandy, trace gravel, fine grained sand, damp, soft, light brown and brown		19-1				2
1				19-2				1
2		SAND (COAL WASTE FILL) - silty, fine to medium grained, moist, loose, black		19-3				
Sept22/14		SAND - trace to some gravel, coarse grained sand, saturated, dark brown					Sept22/14	0
3								-1
4				19-4				
		END OF BOREHOLE (4.57 metres) water - 2.33 metres below ground level at 17:26 on September 22, 2014 Monitoring well installed to 4.57 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-2
5								-3
6								-4
7								-5
8								-6
9								-7
10								-8
11								-9
12								

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 4.57 m
Drilling Rig Type:	Start Date: 2014 September 15
Logged By: MG	Completion Date: 2014 September 15
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH/MW21**

CITY OF NANAIMO — THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 3.47 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW21	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	SILT, SAND AND GRAVEL (FILL) - dry, loose, brown, (300 mm thick)				Top of casing elevation = 3.26 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		3
		SAND (COAL WASTE FILL) - silty, trace gravel, fine to coarse grained sand, damp, medium dense, brown, black and orange specks, trace coal waste		21-1	■			
1				21-2	■			2
2		- some silt, some gravel, black, trace crushed brick		21-3	■			1
3 (Sept22/14 water level)		SAND (FILL) - silty, coarse grained, saturated, soft, dark brown						0 (Sept22/14 water level)
4		SAND - some silt, fine grained, saturated, medium dense, light brown		21-4	■			-1
		- trace silt, grey						
5		END OF BOREHOLE (5.03 metres) water - 3.29 metres below grade level at 17:39 on September 22, 2014 Monitoring well installed to 4.88 metres Note: Stopped due to auger refusal on probable bedrock. Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-2
6								-3
7								-4
8								-5
9								-6
10								-7
11								-8
12								

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 5.03 m
Drilling Rig Type:	Start Date: 2014 September 19
Logged By: MG	Completion Date: 2014 September 19
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW23**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.53 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW23	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	SILT (COAL WASTE FILL) - sandy, some gravel, damp, mottled, trace coal waste, crushed bricks		23-1		Top of casing elevation = 4.43 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4
2		SAND (COAL WASTE FILL) - gravelly, trace to some silt, trace coal, damp, medium dense, brown and black - loose, brown		23-2				3, 2
3		SAND AND SILT (FILL) - some gravel, fine to coarse grained sand, damp, medium dense, dark brown						1
4 (Sept22/14)		SAND (FILL) - silty, some gravel, moist to wet, dark brown		23-3				Sept22/14, 0
5		SILT - some sand, trace gravel, saturated, stiff, brown		23-4				-1
6		SAND - some silt, trace to some gravel, saturated, dark brown						
		END OF BOREHOLE (6.10 metres) water - 3.83 metres below grade level at 17:21 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-2
7, 8, 9, 10, 11, 12								-3, -4, -5, -6, -7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 19
Logged By: MG	Completion Date: 2014 September 19
Reviewed By: CM	

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW25**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 3.89 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	■ Vapour readings (ppmv) ■ 100 200 300 400	Notes and Comments	14MW25	Elevation (m)
0	Solid stem auger (with Hollow stem ream)	SILT (FILL) - sandy, some gravel, dry, very loose, light brown				Top of casing elevation = 3.84 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
		ORGANICS (FILL) - silty, damp, soft, black, mixed with sand, wood waste		25-1				3
1								
		SILT AND SAND (COAL WASTE FILL) - some gravel, trace coal, moist, medium dense, black and brown, trace wood waste		25-2				2
2		SILT (FILL) - gravelly, some sand, dry, dense, light brown						
		SAND AND SILT (FILL) - gravelly, damp to moist, dense, brown		25-3				1
3		SAND - gravelly, some silt, saturated, dark brown						
4 (Sept22/14 ▼)				25-4				0 (Sept22/14 ▼)
5								-1
				25-5				-2
6		END OF BOREHOLE (6.10 metres) slough - 5.49 metres at 0 hrs. water - 3.57 metres below ground level at 17:19 on September 22, 2014 Monitoring well installed to 5.49 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						
7								-3
8								-4
9								-5
10								-6
11								-7
12								-8

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 18
Logged By: MG	Completion Date: 2014 September 18
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH/MW26**

CITY OF NANAIMO — THE HARBOUR CITY

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 5.06 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW26	Elevation (m)
0	Solid and Hollow stem auger	SAND (FILL) - some silt, trace of gravel, fine to medium grained sand, damp, loose, dark brown				Monitoring well was set in a cement mixture at surface. Well was completed with 152 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		5
		SAND (COAL WASTE FILL) - trace to some gravel, medium to coarse grained sand, damp, loose to medium dense, black		26-1				
1								4
2				26-2				3
3				26-3				2
4		SILT (FILL) - some gravel to gravelly, some sand, damp, soft to stiff, brown						1
Nov17/14		- saturated, sticky		26-4				Nov17/14
		GRAVEL - some silt, some sand, small to medium gravel, saturated, loose, brown						
5				26-5				0
				26-6				
6								-1
7				26-7				-2
8		END OF BOREHOLE (7.62 metres) water - 4.52 metres below ground level on November 17, 2014 Monitoring well installed to 7.62 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-3
9								-4
10								-5
11								-6
12								

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 7.62 m
Drilling Rig Type:	Start Date: 2014 November 12
Logged By: MG	Completion Date: 2014 November 12
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW27**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.97 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW27	Elevation (m)
0	Solid and Hollow stem auger	ASPHALT - (70 mm thick)				Monitoring well was set in a cement mixture at surface. Well was completed with 152 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
		SAND (FILL) - homogenous, fine grained, damp, loose, light brown, trace of broken seashells						
1		SILT AND SAND (COAL WASTE FILL) - trace of gravel, trace of coal, fine to medium grained sand, damp, medium dense, dark brown		27-1				4
		SAND (FILL) - trace of gravel, trace of silt, medium to coarse grained sand, damp, loose, mottled, brick and wood waste, coal inclusions						
2		SAND (COAL WASTE FILL) - gravelly, trace of silt, trace of coal, fine to coarse grained, damp, loose, black		27-2				3
3		- some silt to silty, some gravel, medium grained sand, moist		27-3				2
4		SAND (FILL) - gravelly, trace of silt, trace of coal, coarse grained sand, saturated, loose, black, hydrocarbon odour		27-4				1
Nov17/14 ▼								Nov17/14 ▼
5				27-5				0
		SILT - sandy, fine grained, saturated, very soft, brown grey, trace of seashells, organic odour		27-6				
6		END OF BOREHOLE (6.10 metres) water - 4.40 metres below ground surface on November 17, 2914 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-1
7								-2
8								-3
9								-4
10								-5
11								-6
12								-7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 November 12
Logged By: MG	Completion Date: 2014 November 12
Reviewed By: SS	Page 1 of 1

Borehole No: **14BH/MW29**

CITY OF NANAIMO
THE HARBOUR CITY

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.07 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW29	Elevation (m)
0	Solid and Hollow stem auger	ASPHALT - (70 mm thick)				Monitoring well was set in a cement mixture at surface. Well was completed with 152 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4
		SAND (COAL WASTE FILL) - some silt to silty, fine to medium grained, damp, medium dense, black - trace of silt, fine to coarse grained, loose, black and brown		29-1				
1				29-2				3
2		SILT (FILL) - trace of sand, trace of gravel, damp, very stiff, brown and grey		29-3				2
		SILT AND SAND (COAL WASTE FILL) - some gravel, moist, stiff, black and brown						
3		GRAVEL - sandy, some silt, fine to coarse gravel, saturated, sticky, dark brown		29-4				1
4 (Nov17/14)								0 (Nov17/14)
5				29-5				-1
6		END OF BOREHOLE (6.10 metres) water - 3.89 metres below ground surface on November 17, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-2
7								-3
8								-4
9								-5
10								-6
11								-7
12								

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 November 13
Logged By: MG	Completion Date: 2014 November 13
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH/MW35**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.22 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14MW35	Elevation (m)
0	Solid stem auger	SAND (FILL) - trace of silt, homogenous, fine grained sand, damp, medium dense, brown and grey, trace of broken seashells		35-1, 35-2		Monitoring well was set in a cement mixture at surface. Well was completed with 152 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4
2		- slight solvent odour		35-3				2
3		- moist to wet, grey, no discernible odour		35-4				1
4 (Nov17/14)		- saturated						0 (Nov17/14)
		SILT - trace of sand, trace of organics, saturated, very soft, dark brown		35-5, 35-6				
5		SAND - some silt, trace of fine gravel, fine grained sand, saturated, grey and brown, trace of broken seashells		35-7				-1
6		END OF BOREHOLE (6.10 metres) water - 3.63 metres below ground surface on November 17, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-2

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Elevation scale: 4, 3, 2, 1, 0, -1, -2, -3, -4, -5, -6, -7

TETRA TECH EBA

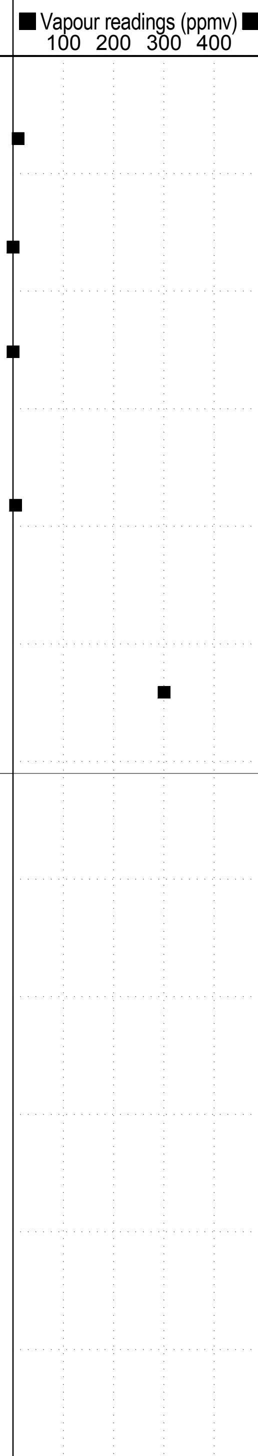
Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 November 14
Logged By: MG	Completion Date: 2014 November 14
Reviewed By: SS	Page 1 of 1

Borehole No: **14BH01**

CITY OF NANAIMO
THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 2.94 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Notes and Comments	Elevation (m)
0	Solid stem auger	ASPHALT - (90 mm thick)				
		SAND (FILL) - some gravel, fine to medium grained sand, damp, very loose, dark brown to black		1-1		2
1						
		- fine to coarse grained sand, damp to moist, black, coal fragments		1-2		1
2				1-3		
		GRAVEL (FILL) - sandy, trace silt, medium grained gravel, saturated, medium dense, brown to black				0
3						
				1-4		-1
4						
5		SAND - silty, fine grained, saturated, grey		1-5		-2
6		END OF BOREHOLE (6.10 metres) Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)				-3
7						-4
8						-5
9						-6
10						-7
11						-8
12						-9



TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 15
Logged By: MG	Completion Date: 2014 September 15
Reviewed By: CM	Page 1 of 1

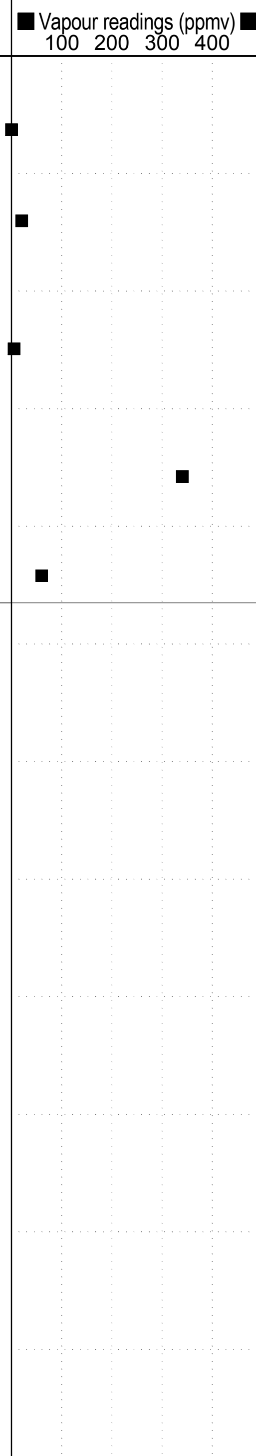
Borehole No: **14BH03**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 3.26 masl
NANAIMO, BRITISH COLUMBIA	

Method: Solid stem auger

Depth (m)	Soil Description	Elevation (m)
0	ASPHALT - (135 mm thick)	
	SAND (FILL) - silty, some gravel, fine to coarse grained sand, dry, loose, brown	3
	SAND (COAL WASTE FILL) - silty, trace gravel, fine to coarse grained sand, damp, medium dense, black and brown	
1	- increased coal content	2
2	SILT (FILL) - sandy, some small gravel, fine grained sand, moist, soft, black	1
3	SAND - gravelly, coarse grained sand, saturated, loose, dark brown - silty, fine grained sand, soft, light brown and grey	0
4	SILT - trace organics, moist to wet, soft, grey and brown	-1
	END OF BOREHOLE (4.65 metres)	
5		-2
6		-3
7		-4
8		-5
9		-6
10		-7
11		-8
12		

Sample Type	Sample Number
	3-1
	3-2
	3-3
	3-4
	3-5



Notes and Comments

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 4.65 m
Drilling Rig Type:	Start Date: 2014 September 16
Logged By: MG	Completion Date: 2014 September 16
Reviewed By: CM	Page 1 of 1

TETRA TECH EBA

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH04**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 3.51 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SILT (FILL) - some sand, trace gravel, dry, loose, brown, trace roots					
			▆	4-1	■		3
1		SAND (COAL WASTE FILL) - some silt to silty, trace gravel, damp to moist, loose, brown and black	▆	4-2	■		
2							2
			▆	4-3	■		1
3		- moist					
		SAND AND GRAVEL (COAL WASTE FILL) - fine to coarse gained, moist to wet, black					
		SAND - trace silt, homogeneous, fine grained, moist to wet, grey and light brown	▆	4-4	■		0
4							
		END OF BOREHOLE (4.57 metres)					-1
5							-2
6							-3
7							-4
8							-5
9							-6
10							-7
11							-8
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 4.57 m
Drilling Rig Type:	Start Date: 2014 September 16
Logged By: MG	Completion Date: 2014 September 16
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH06**

CITY OF NANAIMO THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 5.01 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SAND (FILL) - trace silt, homogenous, fine grained, damp, loose, brown					5
		SILT (FILL) - trace fine grained sand, damp, soft, brown					
1		SAND (COAL WASTE FILL) - trace to some silt, trace gravel, damp, medium dense, black, mottled		6-1			4
2				6-2			3
		- mixed wood waste					
3							2
4		- piece of wood - hydrocarbon odour - cobble		6-3			1
5		GRAVEL (FILL) - sandy, medium to coarse grained gravel, saturated, loose, black and grey, hydrocarbon odour		6-4			0
		SAND - silty, fine grained, saturated, soft, dark grey, hydrocarbon odour		6-5			
6							-1
				6-6			
7							-2
		END OF BOREHOLE (7.62 metres)					
8							-3
9							-4
10							-5
11							-6
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 7.62 m
Drilling Rig Type:	Start Date: 2014 September 17
Logged By: MG	Completion Date: 2014 September 17
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH09**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 5.42 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	■ Vapour readings (ppmv) ■ 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SAND (FILL) - some silt, some gravel, some cobbles, dry, very loose, brown					5
1		SAND (COAL WASTE FILL) - some silt, trace gravel, fine grained sand, damp, loose, brown and black		9-1			4
2		- mixed ash layer for 150 mm		9-2			3
3		SAND (FILL) - some silt, trace of gravel, fine to medium grained sand, damp, brown					2
		SILT (COAL WASTE FILL) - some sand, trace gravel, moist, soft, black					
4		SAND (COAL WASTE FILL) - coarse grained, moist, black		9-3			1
5				9-4			0
		- strong hydrocarbon odour		9-5			
6							-1
7		SAND AND SILT (COAL WASTE FILL) - trace gravel and coal, sticky, saturated, dark brown, hydrocarbon odour		9-6			-2
		- slight hydrocarbon odour to 8.53 metres					
8				9-7			-3
		SILT - some fine grained sand, saturated, dark brown and grey		9-8			
9		END OF BOREHOLE (9.14 metres)					-4
10							-5
11							-6
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 9.14 m
Drilling Rig Type:	Start Date: 2014 September 16
Logged By: MG	Completion Date: 2014 September 16
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH10**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 4.19 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SILT (FILL) - sandy, some gravel, damp, soft, brown					4
				10-1	720		
1		SAND (FILL) - fine to medium grained, damp, loose, brown, strong solvent odour		10-2	930		3
		- some silt, damp to moist, medium dense, mixed crushed seashells, solvent odour					
2				10-3	590		2
3		- trace crushed seashells					1
		- homogenous, moist to wet, no visible seashells		10-4	940		
4		- larger broken shells					0
5				10-5			-1
		SILT - some organics, saturated, soft, black, less odour					
		SILT AND SAND - some gravel, fine to coarse grained sand, saturated, black		10-6			
6		END OF BOREHOLE (6.10 metres)					-2
7							-3
8							-4
9							-5
10							-6
11							-7
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 17
Logged By: MG	Completion Date: 2014 September 17
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH17**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 2.82 masl
NANAIMO, BRITISH COLUMBIA	

Method: Solid stem auger

Depth (m)	Soil Description	Sample Number	Vapour readings (ppmv)	Elevation (m)
0	ASPHALT - (75 mm thick)			
	SILT (COAL WASTE FILL) - sandy, some gravel, soft, mottled	17-1		
1		17-2		2
2	SAND (COAL WASTE FILL) - trace to some silt, trace gravel, fine grained sand, moist, medium dense, black			1
	SAND (FILL) - silty, some gravel, saturated, medium dense, dark brown to black	17-3		
3				0
	SAND - trace gravel, trace silt, medium grained sand, saturated, loose			-1
4		17-4		
	SAND AND GRAVEL - trace silt, saturated, loose, dark brown			-2
5				
6		17-5		-3
	END OF BOREHOLE (6.10 metres)			
7				-4
8				-5
9				-6
10				-7
11				-8
12				-9

Vapour readings scale: 100 200 300 400

Notes and Comments

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 15
Logged By: MG	Completion Date: 2014 September 15
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH18**

CITY OF NANAIMO
THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 2.61 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SAND (FILL) - some silt, fine grained, dry, loose, light brown (150 mm thick)					
		SAND AND SILT (COAL WASTE FILL) - moist, loose, black, coal fragments		18-1			2
1							
				18-2			1
2		SAND AND SILT (FILL) - some fine to coarse gravel, saturated, mottled, some wood waste		18-3			0
3							-1
4		SILT (FILL) - trace to some gravel, saturated, stiff, light brown - occasional cobbles or boulders		18-4			
		SAND (FILL) - trace silt, medium to coarse grained, saturated, loose, black, coal flakes					-2
5		SAND - trace gravel, saturated, loose, dark brown		18-5			
		END OF BOREHOLE (5.49 metres)					-3
6							-4
7							-5
8							-6
9							-7
10							-8
11							-9
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 5.49 m
Drilling Rig Type:	Start Date: 2014 September 15
Logged By: MG	Completion Date: 2014 September 15
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH20**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 2.93 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	ASPHALT - (70 mm thick)					
		SAND (FILL) - some gravel, fine to medium grained sand, dry, loose, brown					
		SAND (COAL WASTE FILL) - some silt to silty, some gravel, damp, medium dense, black and brown		20-1	■		
1		SAND AND GRAVEL (COAL WASTE FILL) - some silt, dry, loose to medium dense, mottled, coal waste inclusions					2
		SAND (COAL WASTE FILL) - some silt, trace to some gravel, damp, loose, black					
2				20-2	■		1
		- larger gravel					
		- silty, some gravel, saturated, dark brown, trace coal waste, mixed coal waste					
3				20-3	■		0
4				20-4	■		-1
5							-2
		SAND - silty, saturated, brown		20-5	■		
6							-3
		END OF BOREHOLE (6.10 metres)					
7							-4
8							-5
9							-6
10							-7
11							-8
12							-9

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 16
Logged By: MG	Completion Date: 2014 September 16
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH22**

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 3.64 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SILT AND SAND (FILL) - gravelly, dry, loose, brown					
		CONCRETE SLAB					3
1		SAND (FILL) - some silt, some gravel, fine to medium grained sand, damp, medium dense, light brown to tan		22-1	■		
		SAND (COAL WASTE FILL) - some silt, some gravel, damp, medium dense, black		22-2	■		2
2				22-3	■		
3							1
		SAND AND SILT (COAL WASTE FILL) - fine to coarse grained, saturated, soft, brown and black, trace coal waste		22-4	■		0
4		SAND - some silt, very fine grained, saturated, brown and grey		22-5	■		
		END OF BOREHOLE (4.57 metres)					-1
5							-2
6							-3
7							-4
8							-5
9							-6
10							-7
11							-8
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 4.57 m
Drilling Rig Type:	Start Date: 2014 September 19
Logged By: MG	Completion Date: 2014 September 19
Reviewed By: CM	Page 1 of 1

Borehole No: **14BH24**

CITY OF NANAIMO — THE HARBOUR CITY

Project: DETAILED SITE INVESTIGATION	Project No: ENVIND03511-01.003
Location: 1 PORT DRIVE	Ground Elev: 3.02 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SAND (FILL) - some gravel, trace silt, fine grained sand, damp, loose, brown					3
		SAND (COAL WASTE FILL) - some gravel, some silt, occasional cobbles, damp, medium dense, black		24-1			
1		- black coal		24-2			2
		SILT (FILL) - sandy, gravelly, dry, dense, light brown - wood piece					
2		SAND (COAL WASTE FILL) - some silt, trace gravel, moist, black		24-3			1
		SILT (FILL) - some sand, some gravel, moist, hard, brown					
3		SAND - gravelly, trace silt, saturated, loose - wood waste		24-4			0
4		- wood					-1
5				24-5			-2
6		END OF BOREHOLE (6.10 metres)					-3
7							-4
8							-5
9							-6
10							-7
11							-8
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 September 18
Logged By: MG	Completion Date: 2014 September 18
Reviewed By: CM	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH28**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.41 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	■ Vapour readings (ppmv) ■ 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	ASPHALT - (70 mm thick)					
		SILT (COAL WASTE FILL) - sandy, damp, soft, black	■	28-1	■		4
		SAND (COAL WASTE FILL) - trace of gravel, trace of silt, medium to coarse grained sand, damp, loose, brown and black	■	28-2	■		
1							3
2		- coarse grained sand	■	28-3	■		2
3		COAL (FILL) - sandy, some small gravel, damp, loose, black					1
		SAND AND GRAVEL (FILL) - some coal, trace of silt, moist, medium dense, black	■	28-4	■		
4		GRAVEL (FILL) - sandy, saturated, sticky, loose, dark brown	■	28-5	■		0
5		ASH (FILL) - silt-like, damp, light grey					
		GRAVEL - some sand, saturated, brown	■	28-6	■		-1
6		END OF BOREHOLE (5.49 metres) Note: Refusal on suspected bedrock. All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					-2
7							-3
8							-4
9							-5
10							-6
11							-7
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 5.49 m
Drilling Rig Type:	Start Date: 2014 November 13
Logged By: MG	Completion Date: 2014 November 13
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH30**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 3.36 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	ASPHALT - (70 mm thick)					
		SILT (FILL) - some sand, dry, soft, light brown, (80 mm thick)					3
		SAND (COAL WASTE FILL) - some coal, trace of fine gravel, medium to coarse grained sand, damp, loose, brown and black					
1		SILT (COAL WASTE FILL) - sandy, trace of gravel, fine to coarse grained sand, damp, soft, brown and black		30-1			2
2		SAND (COAL WASTE FILL) - some silt, some gravel, some coal, fine to coarse grained sand, moist, medium dense, black		30-2			1
		SAND - trace of silt, homogenous, fine grained, moist, light brown		30-3			
3		GRAVEL - some silt, some sand, fine gravel, saturated, medium dense, grey - saturated - trace of silt, very wet, loose					0
4				30-4			-1
5		END OF BOREHOLE (4.57 metres) Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					-2
6							-3
7							-4
8							-5
9							-6
10							-7
11							-8
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 4.57 m
Drilling Rig Type:	Start Date: 2014 November 13
Logged By: MG	Completion Date: 2014 November 13
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH31**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.02 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SAND (COAL WASTE FILL) - some fine gravel, some coal, trace of silt, fine to coarse grained san,d damp, loose, black, no visible staining, no discernible odour		31-1			4
1				31-2			3
2				31-3			2
3		SAND - trace of silt, homogenous, fine grained, saturated, medium dense, trace of broken seashells, no visible staining, no discernible odour		31-4			1
4				31-5			0
5		END OF BOREHOLE (4.57 metres) Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					-1
6							-2
7							-3
8							-4
9							-5
10							-6
11							-7
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 4.57 m
Drilling Rig Type:	Start Date: 2014 November 13
Logged By: MG	Completion Date: 2014 November 13
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH32**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.08 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	ASPHALT - three layers, (180 mm thick)					4
		SAND (FILL) - silty, trace of fine gravel, fine to coarse grained sand, damp, medium dense, brown		32-1	■		
1		- some silt		32-2	■		3
2		SAND AND GRAVEL (COAL WASTE FILL) - trace of coal, fine to coarse grained sand, fine to medium gravel, damp, medium dense, brown and black					2
		SAND (COAL WASTE FILL) - trace of silt, trace of coal, medium to coarse grained, moist, brown and black		32-3	■		
3		SAND - trace of silt, homogenous, fine grained, saturated, medium dense, brown and grey, trace of broken seashells		32-4	■		1
4				32-5	■		0
5		END OF BOREHOLE (4.57 metres) Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					-1
6							-2
7							-3
8							-4
9							-5
10							-6
11							-7
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 4.57 m
Drilling Rig Type:	Start Date: 2014 November 13
Logged By: MG	Completion Date: 2014 November 13
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH33**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 3.89 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SAND (FILL) - trace of silt, homogenous, fine to medium grained, damp, brown, (250 mm thick)					
		SAND (COAL WASTE FILL) - some silt, coal, fine to coarse grained, damp, loose to medium dense, black		33-1	■		3
1				33-2	■		
		- some fine gravel, medium to coarse grained sand, damp to moist, medium dense, black and brown					2
2				33-3	■		
		SAND (FILL) - silty, fine to coarse grained, damp, dense, light brown					1
3		SAND AND GRAVEL (COAL WASTE FILL) - fine to coarse grained sand, moist, medium dense, black and brown					
		GRAVEL (FILL) - some sand, trace of silt, fine to coarse gravel, saturated, loose, dark brown		33-4	■		0
4				33-5	■		-1
5							
6				33-6	■		-2
		SILT - some fine grained sand, saturated, grey, trace of broken seashells, sulphur odour		33-7	■		-3
7							
		END OF BOREHOLE (7.62 metres) Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					-4
8							-5
9							-6
10							-7
11							
12							-8

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 7.62 m
Drilling Rig Type:	Start Date: 2014 November 13
Logged By: MG	Completion Date: 2014 November 13
Reviewed By: SS	Page 1 of 1

Borehole No: **14BH34**

CITY OF NANAIMO — THE HARBOUR CITY

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.11 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	■ Vapour readings (ppmv) ■ 100 200 300 400	Notes and Comments	Elevation (m)
0	Solid stem auger	SAND (FILL) - trace of silt, fine grained, damp, low to medium dense, brown, trace of broken seashells		34-1			4
1		- no visible seashells		34-2			3
		- brown and grey					
2		- moist, trace of broken seashells		34-3			2
3		- 50 mm thick wood waste layer		34-4			1
4		- 50 mm thick wood waste layer					0
		- saturated		34-5			
		SILT AND SAND (FILL) - fine grained sand, saturated, soft, grey					
5		SAND - gravelly, some silt, coarse grained, saturated, sticky, dark brown		34-6			-1
6		END OF BOREHOLE (6.10 metres) Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					-2
7							-3
8							-4
9							-5
10							-6
11							-7
12							

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6.1 m
Drilling Rig Type:	Start Date: 2014 November 14
Logged By: MG	Completion Date: 2014 November 14
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14BH36**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.46 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Elevation (m)
0–1.5	Solid stem auger	SAND (FILL) - trace to some silt, homogenous, fine grained, moist, loose to medium dense, brown		36-1, 36-2			4, 3
1.5–3	Solid stem auger	SILT (FILL) - trace of fine grained sand, trace of organics, moist, soft, greyish brown		36-3, 36-4			2
3		END OF BOREHOLE (3.00 metres) Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					1

Depth scale (m): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Elevation scale (m): 4, 3, 2, 1, 0, -1, -2, -3, -4, -5, -6, -7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 3 m
Drilling Rig Type:	Start Date: 2014 November 14
Logged By: MG	Completion Date: 2014 November 14
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO
THE HARBOUR CITY

Borehole No: **14VP01**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 5.48 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14VP01	Elevation (m)
0	Solid stem auger	SAND (FILL) - some silt, some gravel, fine to medium grained, damp, medium dense, brown		Vapour probe was set in a cement mixture at surface. Probe was constructed with a 150 mm length stainless steel screen attached to vinyl tubing and set in a flush mounted road box.		5
1	Solid stem auger	SAND AND SILT (COAL WASTE FILL) - trace of gravel, trace of coal, fine to coarse grained sand, damp, medium dense, brown and black				4
2		END OF BOREHOLE (2.30 metres) Soil vapour probe installed to 2.3 metres				3
3						2
4						1
5						0
6						-1
7						-2
8						-3
9						-4
10						-5
11						-6
12						

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 2.3 m
Drilling Rig Type:	Start Date: 2014 November 12
Logged By: MG	Completion Date: 2014 November 12
Reviewed By: SS	Page 1 of 1

Borehole No: **14VP02**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.98 masl
NANAIMO, BRITISH COLUMBIA	

CITY OF NANAIMO
THE HARBOUR CITY

Depth (m)	Method	Soil Description	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14VP02	Elevation (m)
0	Solid stem auger	ASPHALT - cracked, (50 mm thick)		Vapour probe was set in a cement mixture at surface. Probe was constructed with a 150 mm length stainless steel screen attached to vinyl tubing and set in a flush mounted road box.		
		SAND (FILL) - some silt, trace of gravel, fine grained, moist, medium dense, brown - plastic-like green cloth				
1						4
		END OF BOREHOLE (1.30 metres) Soil vapour probe installed to 1.30 metres				
2						3
3						2
4						1
5						0
6						-1
7						-2
8						-3
9						-4
10						-5
11						-6
12						-7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 1.3 m
Drilling Rig Type:	Start Date: 2014 November 14
Logged By: MG	Completion Date: 2014 November 14
Reviewed By: SS	Page 1 of 1

Borehole No: **14VP03**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.5 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14VP03	Elevation (m)
0	Solid stem auger	ASPHALT - (70 mm thick)		Vapour probe was set in a cement mixture at surface. Probe was constructed with a 150 mm length stainless steel screen attached to vinyl tubing and set in a flush mounted road box.		
		SILT (FILL) - some sand, trace of fine to medium gravel, fine to coarse grained sand, damp, dense, brown				4
		SAND (FILL) - trace of fine gravel, fine grained sand, amp, loose, light brown				
1		SILT (COAL WASTE FILL) - sandy, trace of coal, moist, soft to stiff, black and brown, wood inclusions				
		SAND (COAL WASTE FILL) - some silt, trace of gravel, trace of coal, damp, medium dense, brown, trace of brick, trace of wood inclusions - black coal - broken concrete				3
2		END OF BOREHOLE (2.00 metres) Soil vapour probe installed to 2.00 metres				
3						2
4						1
5						0
6						-1
7						-2
8						-3
9						-4
10						-5
11						-6
12						-7

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 2 m
Drilling Rig Type:	Start Date: 2014 November 12
Logged By: MG	Completion Date: 2014 November 12
Reviewed By: SS	Page 1 of 1

Borehole No: **14VP04**

CITY OF NANAIMO — THE HARBOUR CITY

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.13 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14VP04	Elevation (m)
0	Solid stem auger	ASPHALT - (150 mm thick)		Vapour probe was set in a cement mixture at surface. Probe was constructed with a 150 mm length stainless steel screen attached to vinyl tubing and set in a flush mounted road box.		4
		SAND AND SILT (FILL) - trace of gravel, fine to medium grained sand, moist, medium dense, brown				
1		SAND AND SILT (COAL WASTE FILL) - trace of gravel, trace of coal, fine to medium grained sand, moist, medium dense, brown				3
		END OF BOREHOLE (1.20 metres) Soil vapour probe installed to 1.07 metres				
2						2
3						1
4						0
5						-1
6						-2
7						-3
8						-4
9						-5
10						-6
11						-7
12						

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 1.2 m
Drilling Rig Type:	Start Date: 2014 November 13
Logged By: MG	Completion Date: 2014 November 13
Reviewed By: SS	Page 1 of 1

Borehole No: **14VP05**

CITY OF NANAIMO — THE HARBOUR CITY

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14VP05	Depth (ft)
0	Solid stem auger	ASPHALT - (60 mm thick)				Vapour probe was set in a cement mixture at surface. Probe was constructed with a 150 mm length stainless steel screen attached to vinyl tubing and set in a flush mounted road box.		0
		CRUSHED BRICK (FILL) - dry, loose, orange, (90 mm thick)		05-1	■			
		SAND (FILL) - some silt, trace to some fine gravel, fine grained sand, damp, loose, brown						2
1		- homogenous, damp, medium dense, light brown		05.2	■			
		END OF BOREHOLE (1.20 metres) Soil vapour probe installed to 0.50 metres Note: Vapour probe destroyed recently after installation and prior to surveying.						4

Depth scale (m): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
Depth scale (ft): 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 39

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 1.2 m
Drilling Rig Type:	Start Date: 2014 November 14
Logged By: MG	Completion Date: 2014 November 14
Reviewed By: SS	Page 1 of 1

Borehole No: **14VP06**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.004
Location: 1 PORT DRIVE	Ground Elev: 4.24 masl
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	14VP06	Elevation (m)
0	Solid stem auger	SAND (FILL) - trace of silt, fine to medium grained, damp, loose to medium dense, brown and grey, trace of broken seashells, strong solvent odour		Vapour probe was set in a cement mixture at surface. Probe was constructed with a 150 mm length stainless steel screen attached to vinyl tubing and set in a flush mounted road box.		4
1		- grey				3
		END OF BOREHOLE (1.52 metres) Soil vapour probe installed to 1.30 metres				
2						2
3						1
4						0
5						-1
6						-2
7						-3
8						-4
9						-5
10						-6
11						-7
12						

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 1.52 m
Drilling Rig Type:	Start Date: 2014 November 14
Logged By: MG	Completion Date: 2014 November 14
Reviewed By: SS	Page 1 of 1

Borehole No: **15BH37**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.008
Location: 1 PORT DRIVE	
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Sample Type	Sample Number	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	Backfill	Depth (ft)
0	Solid stem auger	ASPHALT						0
		COAL WASTE - sandy, gravelly, silty, some angular cobbles, medium to coarse grained sand, subangular gravel, moist, black staining, coal inclusions						2
		- some silty grey sand, some reddish brick inclusions						
1								4
2		- boulders						6
		- some clay, dense for 300 mm						8
3								10
4								12
		- trace of sand and silt, moist, sheen on soil, noticeable sweet hydrocarbon odour		37-1				14
5								16
		SAND - silty, moist, loose, grey		37-2				18
6		END OF BOREHOLE (6.00 metres) Note: Backfilled at completion. All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						20
7								22, 24
8								26, 28
9								30
10								32, 34
11								36, 38
12								39

TETRA TECH EBA

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 6 m
Drilling Rig Type:	Start Date: 2015 March 26
Logged By: DT	Completion Date: 2015 March 26
Reviewed By: SS	Page 1 of 1

CITY OF NANAIMO THE HARBOUR CITY	**Borehole No: 15VP07**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.008
Location: 1 PORT DRIVE	
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	15VP07	Depth (ft)
0	Solid stem auger	COAL WASTE - silty, gravelly, sandy, medium to coarse grained sand, gravel to 10 mm diameter, black staining throughout, frequent coal inclusions		Road box set in concrete at surface		0
		SAND - silty, gravelly, fine to medium grained, firm, grey, frequent black staining, coal inclusions - trace of silt, medium to coarse grained, moist, loose, beige, some rust colouration				2
1		END OF BOREHOLE (1.0 metre) Soil vapour probe installed to 1.0 metre				4
2						6, 8
3						10
4						12, 14
5						16, 18
6						20
7						22, 24
8						26, 28
9						30
10						32, 34
11						36, 38
12						39

TETRA TECH EBA	Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 1 m
	Drilling Rig Type:	Start Date: 2015 March 26
	Logged By: DT	Completion Date: 2015 March 26
	Reviewed By: SS	Page 1 of 1

Borehole No: **15VP08**

Project: DSI - 1 PORT DRIVE	Project No: ENVIND03511-01.008
Location: 1 PORT DRIVE	
NANAIMO, BRITISH COLUMBIA	

Depth (m)	Method	Soil Description	Vapour readings (ppmv) 100 200 300 400	Notes and Comments	15VP08	Depth (ft)
0	Solid stem auger	ASPHALT		Road box set in concrete at surface		0
		SAND - silty, gravelly, fine to medium grained sand, moist, grey to beige, some rust colour inclusions, no visible staining, no discernible odour				2
1		COAL WASTE - silty, gravelly, sandy, fine to medium grained sand, gravel to 10 mm diameter, black staining, frequent coal inclusions				
		SAND - silty, gravelly, fine to medium grained, firm, light grey, some black staining, coal inclusions				4
		END OF BOREHOLE (1.0 metre) Soil vapour probe installed to 1.0 metre				
2						6
						8
3						10
						12
4						14
5						16
						18
6						20
						22
7						24
8						26
						28
9						30
						32
10						34
11						36
						38
12						39

Contractor: DRILLWELL ENTERPRISES LTD.	Completion Depth: 1 m
Drilling Rig Type:	Start Date: 2015 March 26
Logged By: DT	Completion Date: 2015 March 26
Reviewed By: SS	Page 1 of 1

APPENDIX C
WELL DEVELOPMENT DETAILS

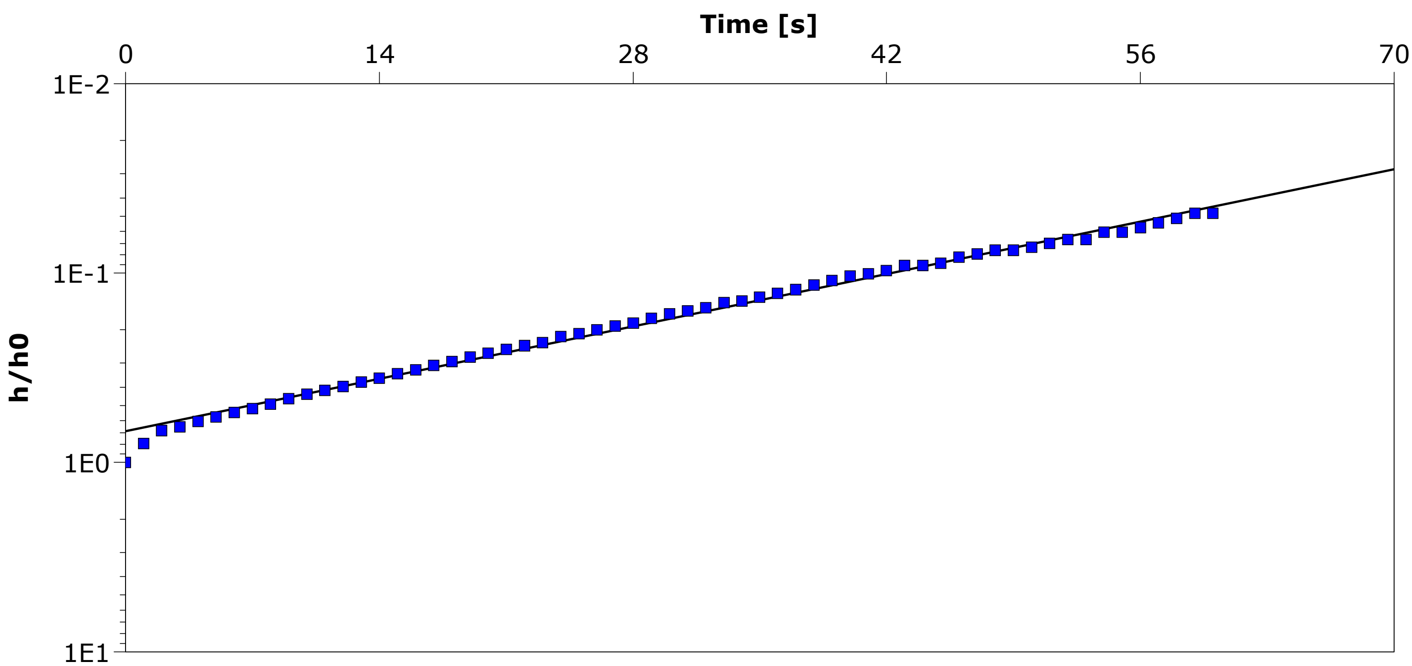
Appendix C: Well Development Details

Monitoring Well	Approximate Well Volumes / Litres of Groundwater Removed During Well Development	Method	Notes
BH14-02	9 Volumes/30 L (September 16, 2014)	Whale Pump	▪ Well volume prior to development was 3.5 L.
14BH05	5 Volumes/30 L (September 16, 2014)	Whale Pump	▪ Well volume prior to development was 5.5 L.
BH14-07	9 Volumes/30 L (September 16, 2014)	Bailer	▪ Well volume prior to development was 3.5 L.
BH14-08	9 Volumes/30 L (September 16, 2014)	Whale Pump	▪ Well volume prior to development was 3.5 L.
BH14-10	9 Volumes/43 L (September 19, 2014)	Bailer	▪ Well volume prior to development was 4.7 L.
BH14-11	9 Volumes/40 L (September 16, 2014)	Bailer	▪ Well volume prior to development was 4.2 L.
BH14-12	9 Volumes/31 L (September 16, 2014)	Bailer	▪ Well volume prior to development was 3.5 L.
BH14-13	9 Volumes/40 L (September 18, 2014)	Bailer	▪ Well volume prior to development was 4.5 L.
BH14-14	9 Volumes/31 L (September 19, 2014)	Bailer	▪ Well volume prior to development was 3.5 L.
BH14-15	9 Volumes/30 L (September 19, 2014)	Bailer	▪ Well volume prior to development was 3.4 L.
BH14-16	9 Volumes/30 L (September 19, 2014)	Bailer	▪ Well volume prior to development was 3.6 L.
BH14-19	8 Volumes/30 L (September 16, 2014)	Whale Pump	▪ Well volume prior to development was 3.9 L.
BH14-21	9 Volumes/37 L (September 22, 2014)	Bailer	▪ Well volume prior to development was 4.9 L. ▪ Attempted to purge with Waterra but encountered issues with foot valve clogging.
BH14-25	9 Volumes/37 L (September 19, 2014)	Bailer	▪ Well volume prior to development was 4.9 L.
14MW26	9 Volumes/54 L (November 17, 2014)	Waterra Tubing and Surge Block	▪ Well volume prior to development was 6.4 L.
14MW27	9 Volumes/36 L (November 17, 2014)	Waterra Tubing and Surge Block	▪ Well volume prior to development was 3.4 L.
14MW29	9 Volumes/40 L (November 17, 2014)	Waterra Tubing and Surge Block	▪ Well volume prior to development was 4.3 L.
14MW35	9 Volumes/54 L (November 17, 2014)	Waterra Tubing and Surge Block	▪ Well volume prior to development was 5.2 L.
MW00-07	9 Volumes/54 L (November 17, 2014)	Waterra Tubing and Surge Block	▪ Well volume prior to development was 6.3 L.

APPENDIX D
HYDRAULIC CONDUCTIVITY DATA

Tetra Tech EBA Inc. Oceanic Plaza 9th Floor, 1066 W Hastings Street Vancouver BC V6E 3X2	**Slug Test Analysis Report** D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Falling Head Test 1	Test Well: 14BH/MW13
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Falling Head Test 1 - Hvorslev	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

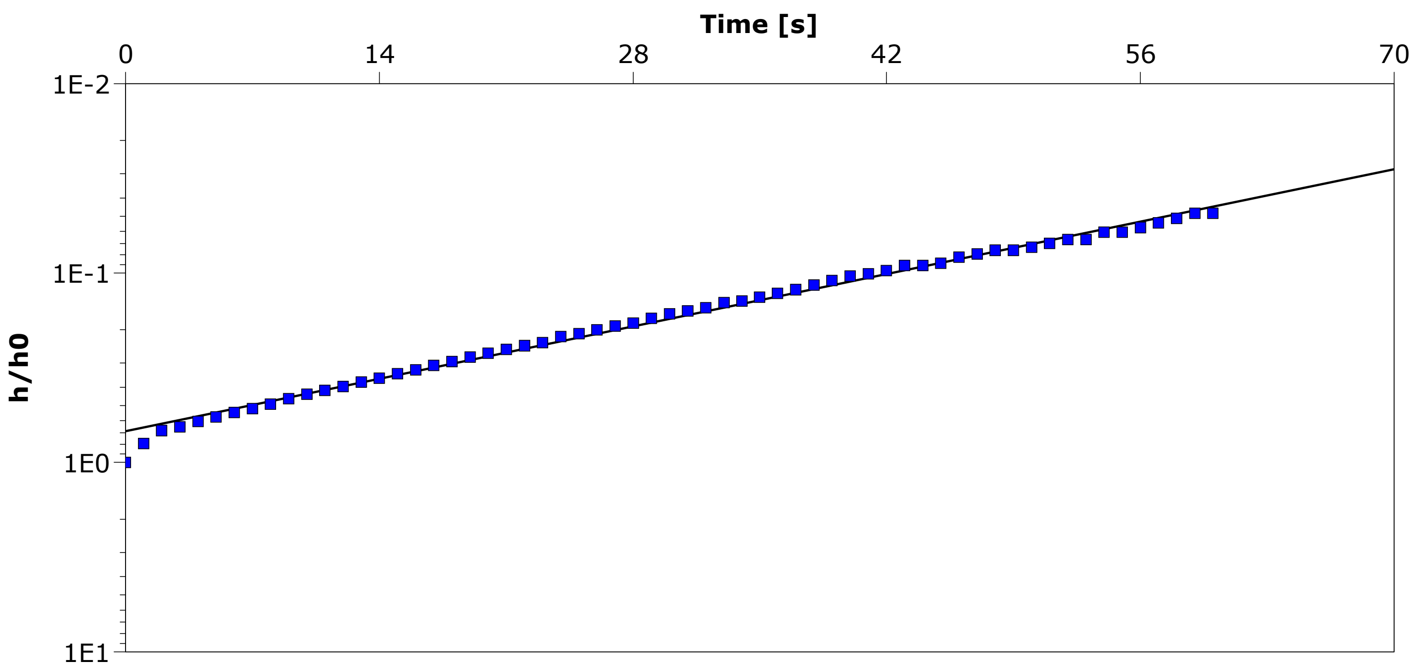


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW13	3.08×10^{-5}	

Tetra Tech EBA Inc. Oceanic Plaza 9th Floor, 1066 W Hastings Street Vancouver BC V6E 3X2	**Slug Test Analysis Report** D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Falling Head Test 1	Test Well: 14BH/MW13
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Falling Head Test 1 - Bouwer & Rice	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

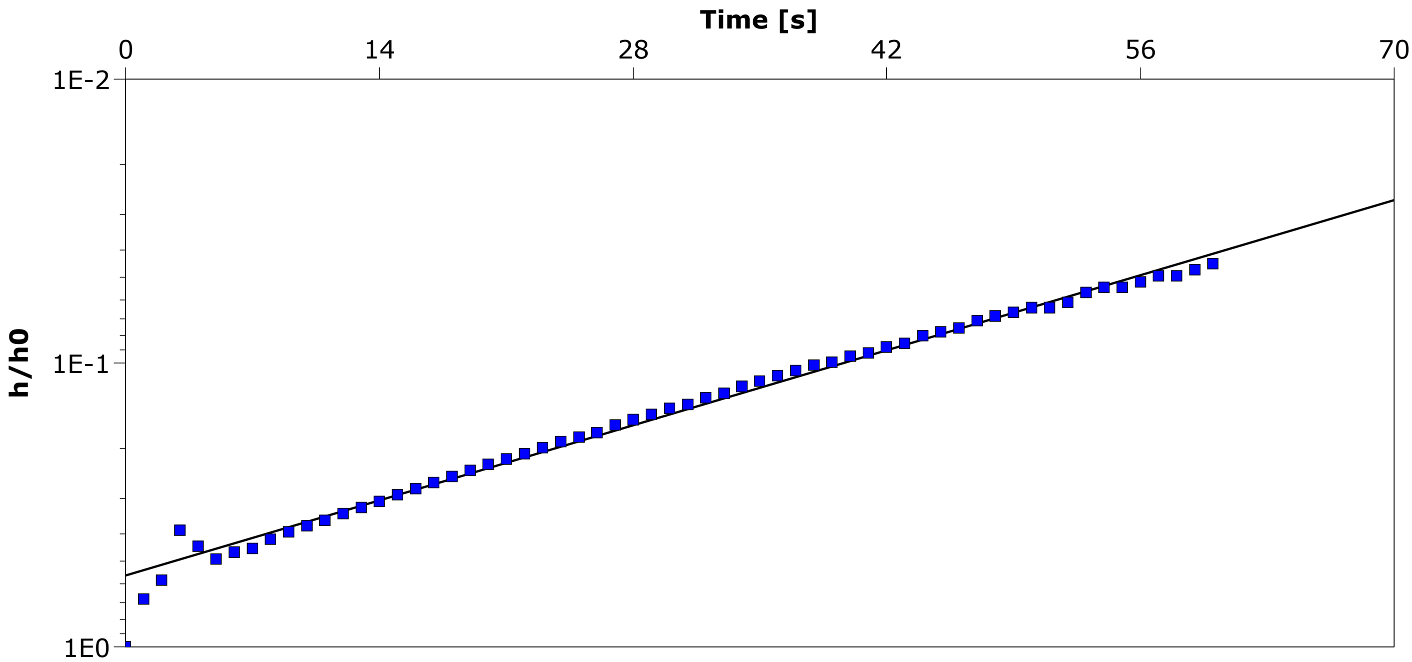


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW13	2.14×10^{-5}	

Tetra Tech EBA Inc. **Oceanic Plaza** **9th Floor, 1066 W Hastings Street** **Vancouver BC V6E 3X2**	**Slug Test Analysis Report**	D
	Project: Detailed Site Investigation	
	Number: 704-ENVIND03511-01.003	
	Client: City of Nanaimo	

Location: 1 Port Drive	Slug Test: Falling Head Test 2	Test Well: 14BH/MW13
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Falling Head Test 2 - Hvorslev	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

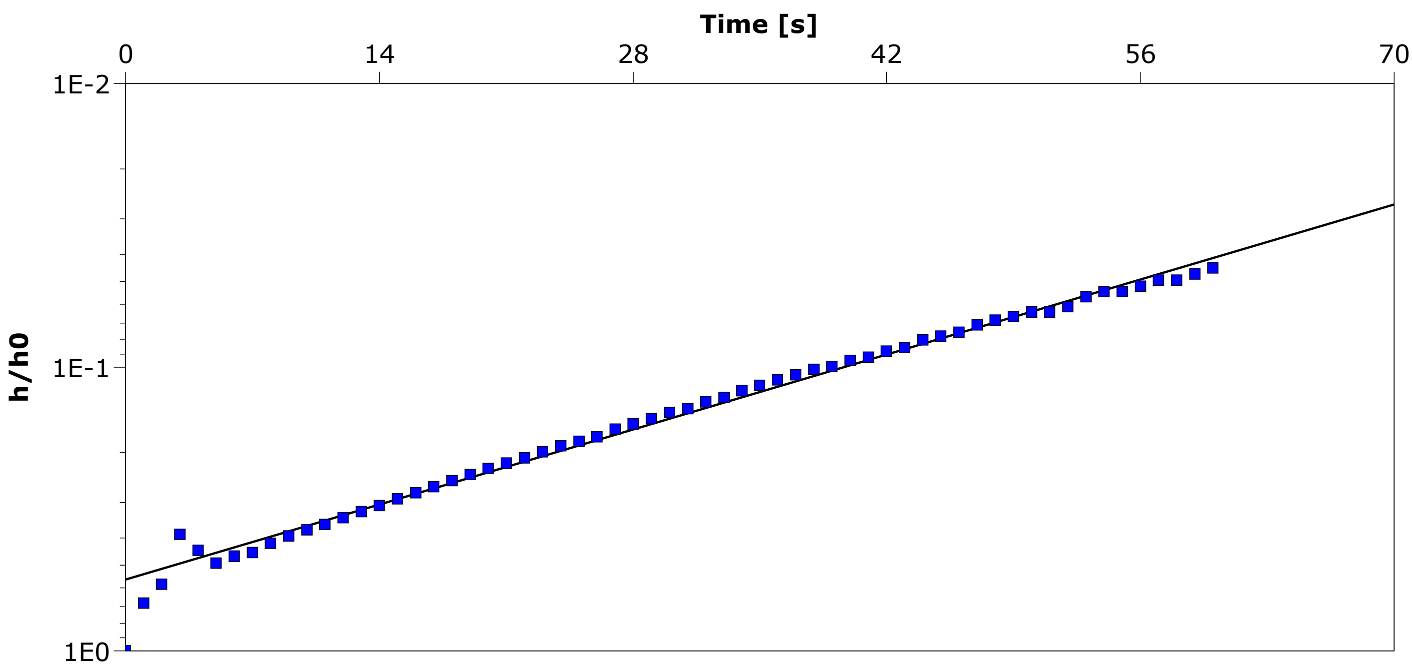


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW13	2.94×10^{-5}	

Tetra Tech EBA Inc. **Oceanic Plaza** **9th Floor, 1066 W Hastings Street** **Vancouver BC V6E 3X2**	**Slug Test Analysis Report** D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Falling Head Test 2	Test Well: 14BH/MW13
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Falling Head Test 2 - Bouwer & Rice	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		



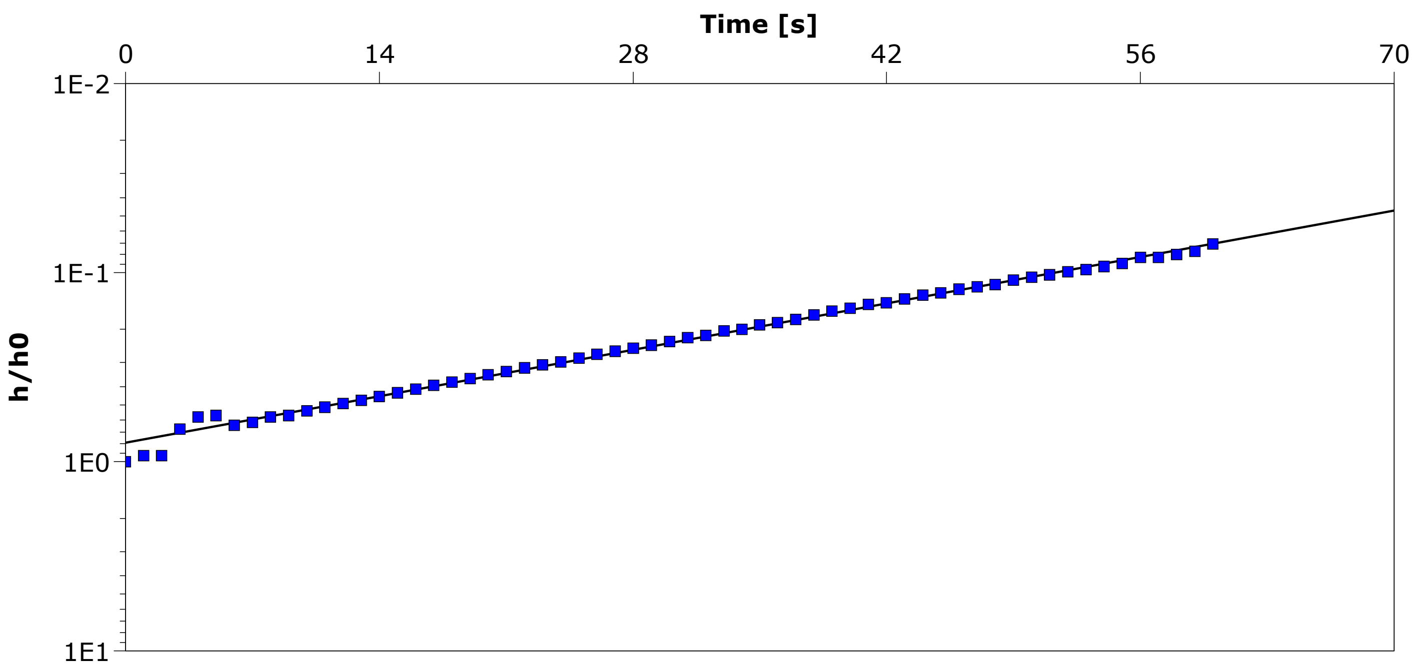
Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW13	2.04×10^{-5}	

TETRA TECH EBA	**Tetra Tech EBA Inc.** **Oceanic Plaza** **9th Floor, 1066 W Hastings Street** **Vancouver BC V6E 3X2**

Slug Test Analysis Report	D
Project: Detailed Site Investigation	
Number: 704-ENVIND03511-01.003	
Client: City of Nanaimo	

Location: 1 Port Drive	Slug Test: Falling Head Test 3	Test Well: 14BH/MW13
Test Conducted by: MG/DT		Test Date: 10/16/2014
Analysis Performed by: CM	Falling Head Test 3 - Hvorslev	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

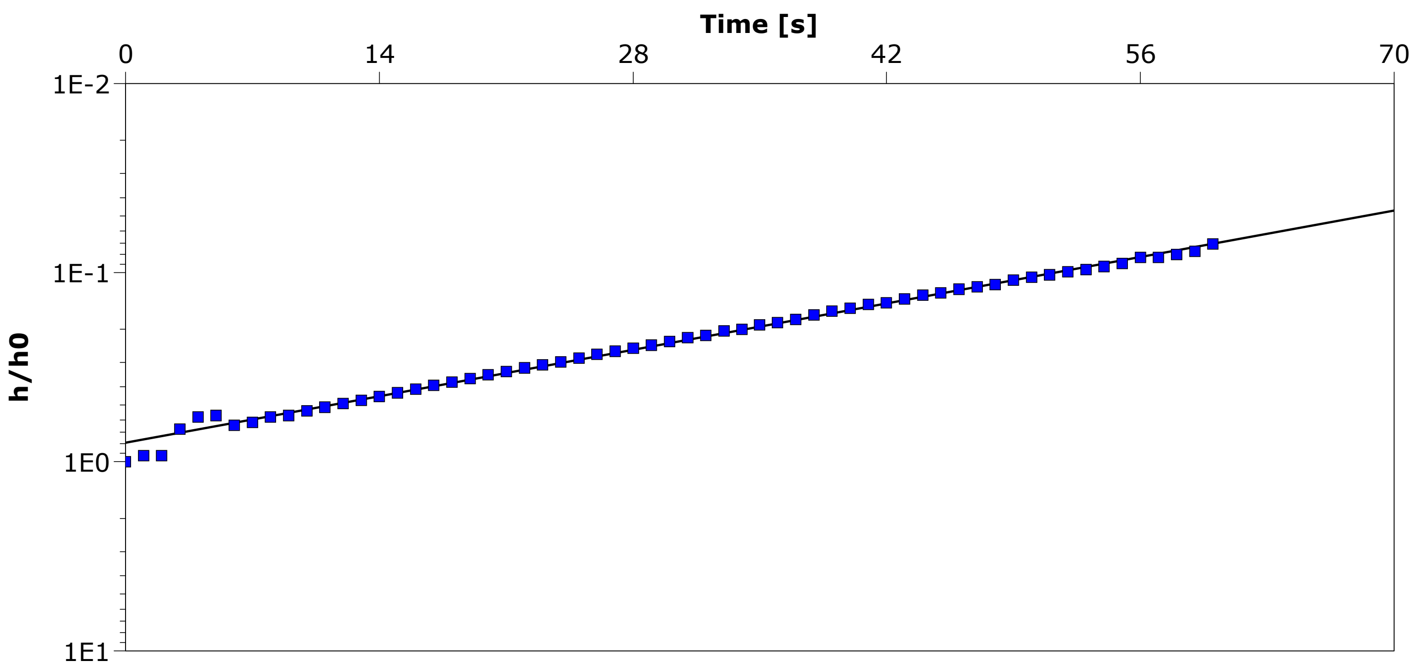


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW13	2.73×10^{-5}	

Tetra Tech EBA Inc. **Oceanic Plaza** **9th Floor, 1066 W Hastings Street** **Vancouver BC V6E 3X2**	**Slug Test Analysis Report** D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Falling Head Test 3	Test Well: 14BH/MW13
Test Conducted by: MG/DT		Test Date: 10/16/2014
Analysis Performed by: CM	Falling Head Test 3 - Bouwer & Rice	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

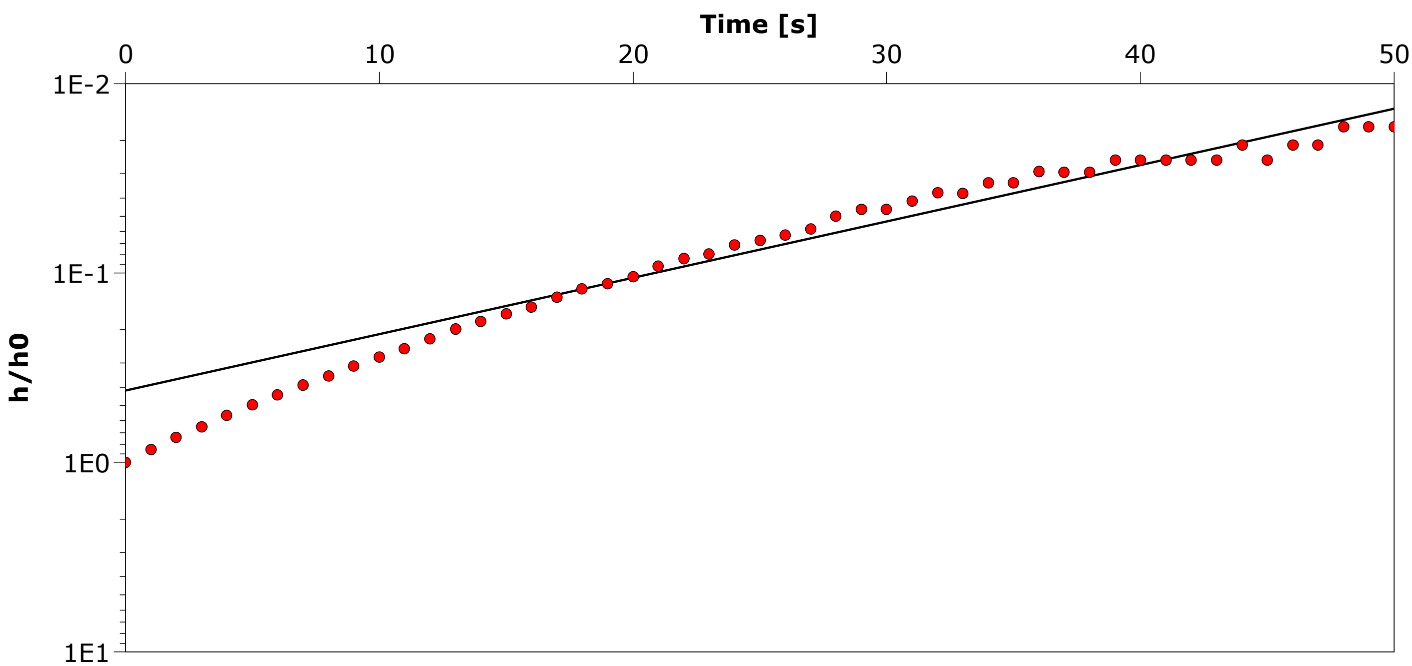


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW13	1.89×10^{-5}	

Tetra Tech EBA Inc. Oceanic Plaza 9th Floor, 1066 W Hastings Street Vancouver BC V6E 3X2	**Slug Test Analysis Report** D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Rising Head Test 1	Test Well: 14BH/MW14
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Rising Head Test 1 - Hvorslev	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

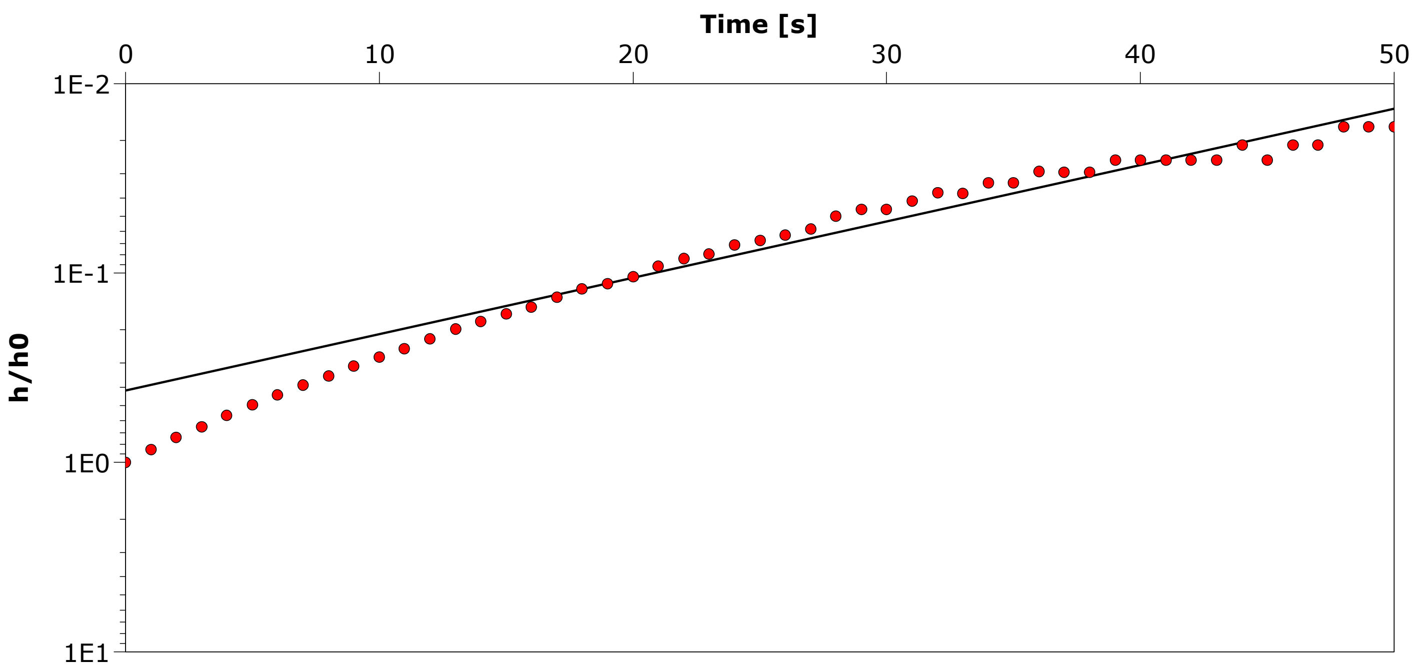


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW14	4.20×10^{-5}	

Tetra Tech EBA Inc. **Oceanic Plaza** **9th Floor, 1066 W Hastings Street** **Vancouver BC V6E 3X2**	**Slug Test Analysis Report** D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Rising Head Test 1	Test Well: 14BH/MW14
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Rising Head Test 1 - Bouwer & Rice	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

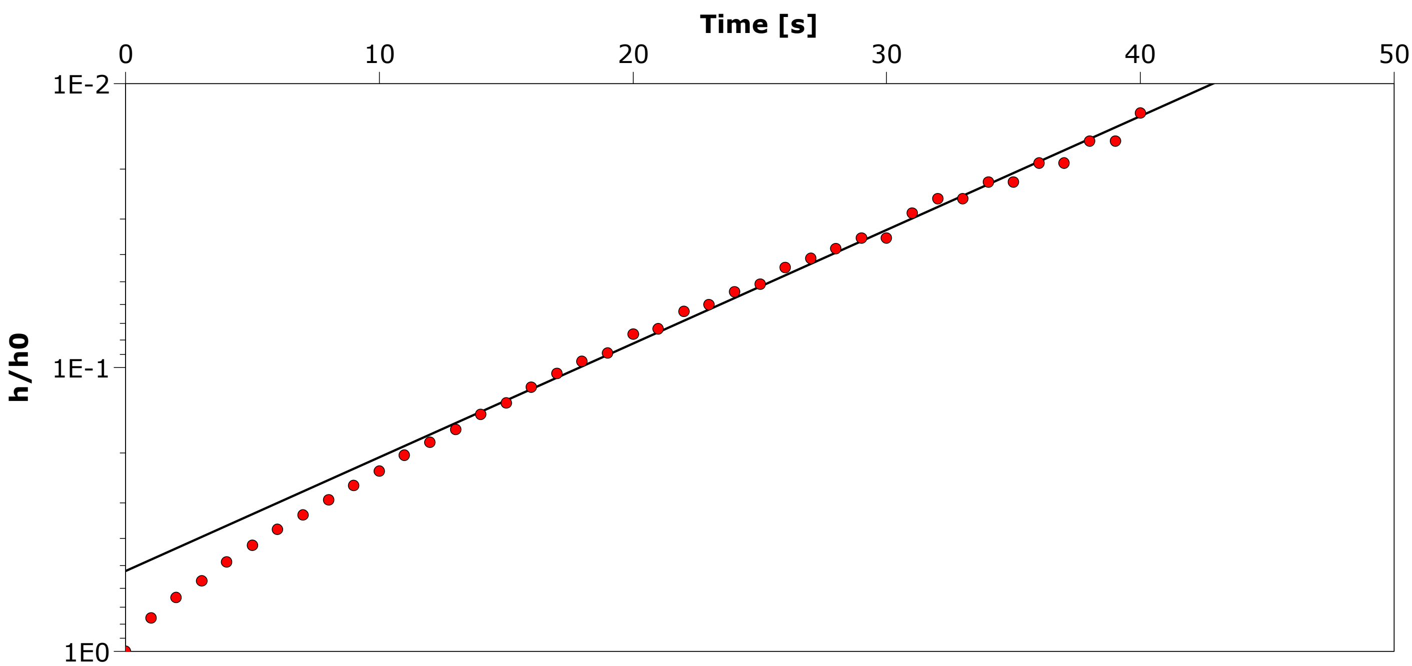


Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW14	2.77×10^{-5}	

Tetra Tech EBA Inc. **Oceanic Plaza** **9th Floor, 1066 W Hastings Street** **Vancouver BC V6E 3X2**	**Slug Test Analysis Report** D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Rising Head Test 2	Test Well: 14BH/MW14
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Rising Head Test 2 - Hovrselv	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

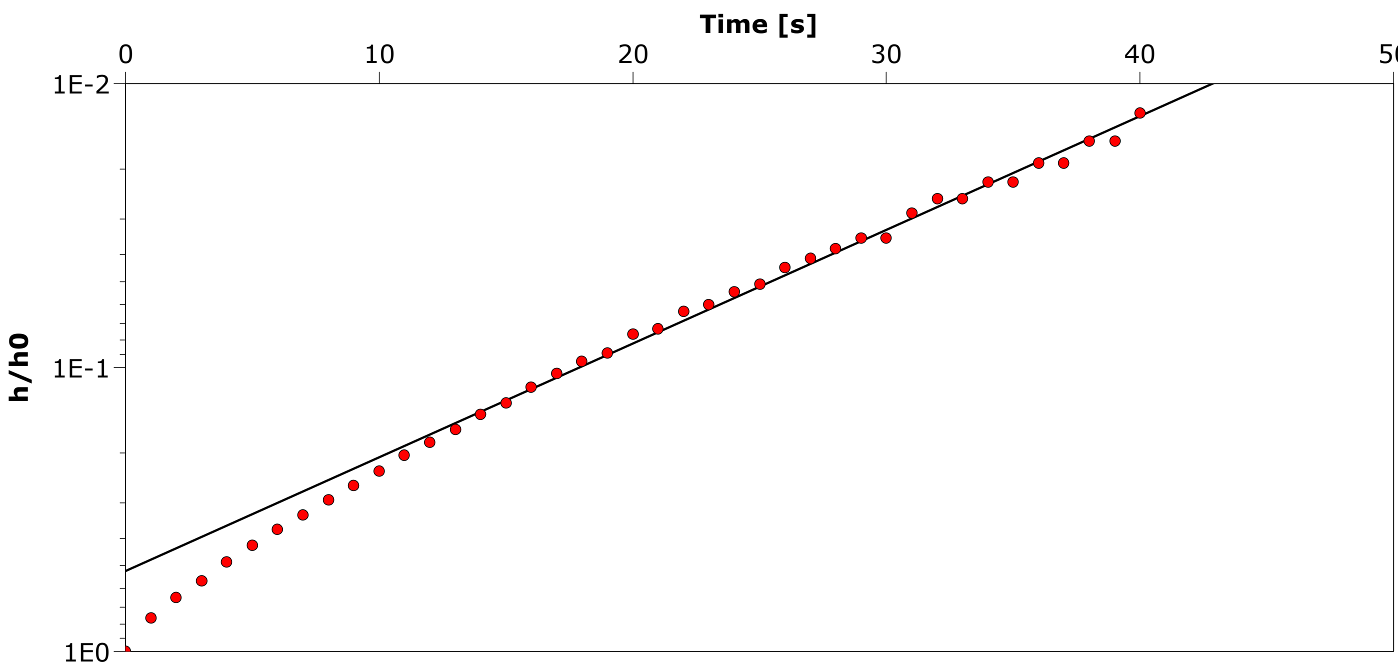


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW14	5.65×10^{-5}	

Tetra Tech EBA Inc. Oceanic Plaza 9th Floor, 1066 W Hastings Street Vancouver BC V6E 3X2	**Slug Test Analysis Report** D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Rising Head Test 2	Test Well: 14BH/MW14
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Rising Head Test 2 - Bouwer & Rice	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		



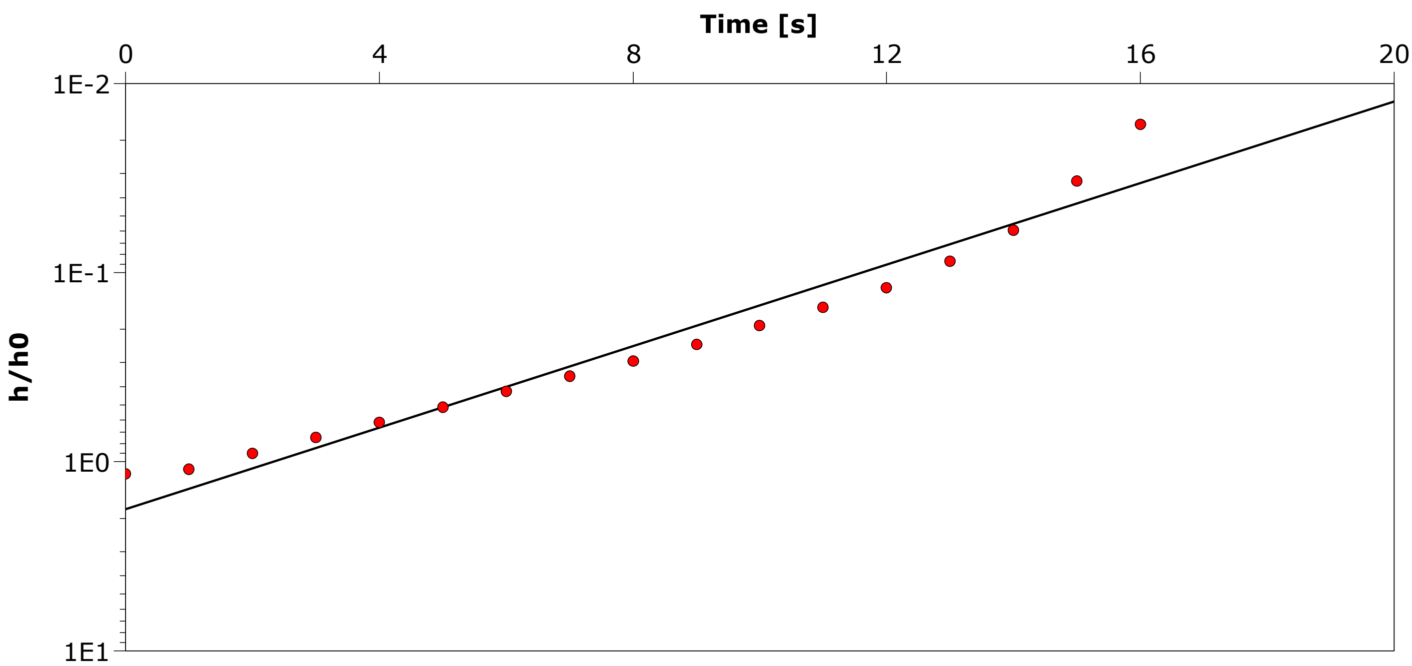
Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW14	3.73×10^{-5}	

Tetra Tech EBA Inc.
Oceanic Plaza
9th Floor, 1066 W Hastings Street
Vancouver BC V6E 3X2

Slug Test Analysis Report	D
Project: Detailed Site Investigation	
Number: 704-ENVIND03511-01.003	
Client: City of Nanaimo	

Location: 1 Port Drive	Slug Test: Rising Head Test 3	Test Well: 14BH/MW14
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Rising Head Test 3 - Hvorslev	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		

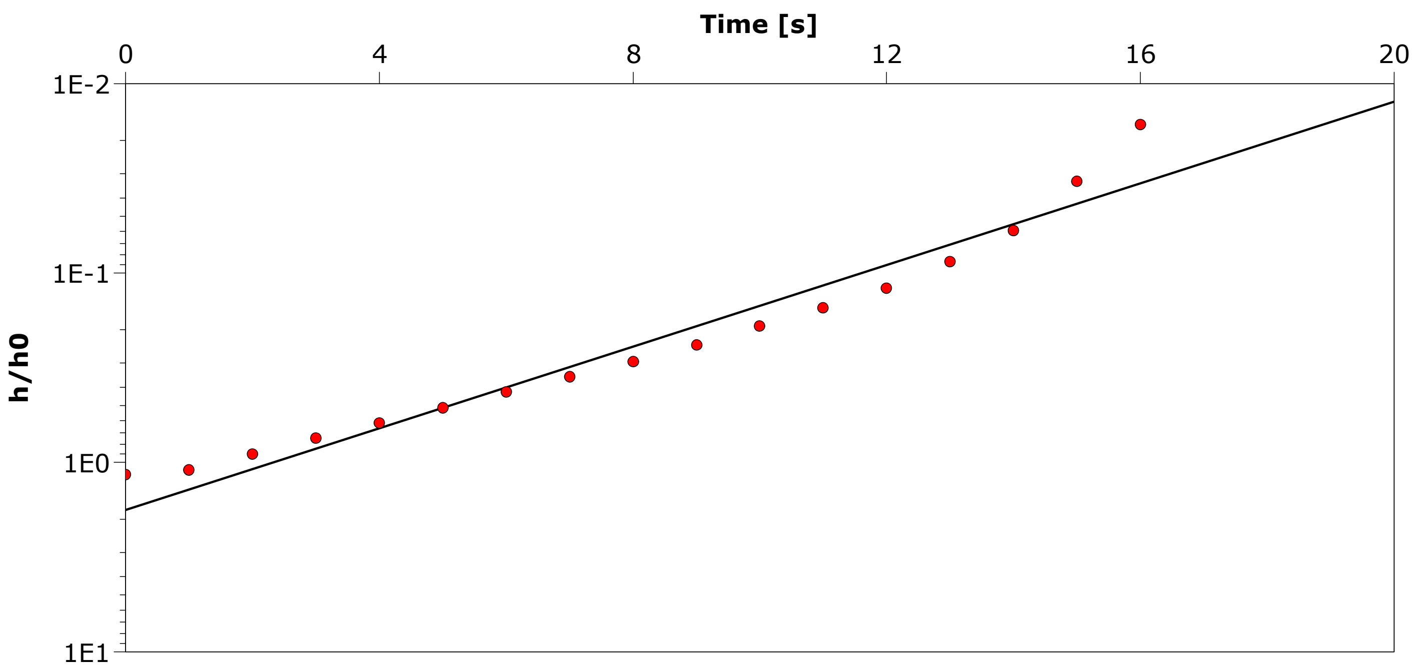


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW14	1.52×10^{-4}	

Tetra Tech EBA Inc. Oceanic Plaza 9th Floor, 1066 W Hastings Street Vancouver BC V6E 3X2	Slug Test Analysis Report D Project: Detailed Site Investigation Number: 704-ENVIND03511-01.003 Client: City of Nanaimo

Location: 1 Port Drive	Slug Test: Rising Head Test 3	Test Well: 14BH/MW14
Test Conducted by: MG/DT		Test Date: 9/30/2014
Analysis Performed by: CM	Rising Head Test 3 - Bouwer & Rice	Analysis Date: 10/16/2014
Aquifer Thickness: 5.00 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]	
14BH/MW14	1.00×10^{-4}	

APPENDIX E
DRINKING WATER DETERMINATION

BRITISH
COLUMBIA

File: 26250-20/11687
Site: 11687

December 15, 2014

Mr. Bill Corson
City of Nanaimo
455 Wallace Street
Nanaimo, BC V6R5J6

Re: Request for Water Use Determination, 1 Port Drive, Nanaimo, B.C., (MOE File No. 26250/20/11687)

The Ministry of Environment (ministry) has reviewed the following technical reports prepared by Tetra Tech EBA Inc. (Tetra Tech) and submitted in support of your October 31, 2014 application for a determination of no drinking water use at 1 Port Drive in Nanaimo (the Site):

- *Request for Water Use Determination, Portion of 1 Port Drive, Nanaimo, BC,* October 28, 2014, Tetra Tech EBA Inc., and
- Additional information provided in e-mail communication from Tetra Tech, December 1, 2014.

The legal description of the Site to which this water use determination applies is:

Lot A, Section 1, and Part of the Bed of the Public Harbour of Nanaimo, Nanaimo District Plan EPP27507.

The site is depicted in attached Figure 1 for reference.

Section 12(5) of the Contaminated Sites Regulation (CSR) specifies the water uses that may apply at sites in BC, including aquatic life, drinking, irrigation and livestock watering water uses, as well as the factors a director must consider in determining current and reasonable potential future water uses at a site. Technical Guidance 6 (TG6) provides further guidance to assist responsible parties and qualified professionals in evaluating current and reasonable potential future water uses at specific sites.

Where a determination of water use has been reached under TG6 that is considered inappropriate to site circumstances, a site-specific water use determination may be sought from the director on the basis of valid supporting arguments presented in a technical report prepared by a qualified professional. In the case of drinking water use, the ministry's draft decision framework "*Director's Criteria for a Weight-of-Evidence Site-Specific Exemption from Application of the Drinking Water Use*" outlines a multiple lines-of-evidence approach for seeking a director's determination of no drinking water use at a specific site.

The October 28, 2014 letter report prepared by Tetra Tech provides the following rationale for why drinking water use should not apply at the Site:

- There is no current drinking water use of the groundwater at the site or within 500 m radius of the site (BC Water Resource Atlas).
- The Site and surrounding area are serviced by a municipal water supply that does not rely on groundwater.
- There is a long history of industrial land use in the vicinity of the Site, with multiple sources and multiple landowners, which has resulted in widespread contamination of soils and groundwater. Surficial sediments are comprised of coal waste and mixed coal waste fill material used to infill Nanaimo Harbour in the late 1800s and up to the 1970s.
- The entire site, except for two small areas located along the northern property boundary and the southwestern corner of the Property, was occupied by the Nanaimo Harbour in 1891.
- The B.C. Water Resources Atlas does not identify an aquifer in the vicinity of the site. The nearest aquifer boundary is located approximately 2.4 km east of the Site.
- Elevated TDS concentrations were found in groundwater ranging from highs of 898 mg/L and 1740 mg/L in the southern and central portions of the site to greater than 11,800 mg/L in the northern portion. Elevated sodium and chloride concentrations were also found across the site.
- Groundwater across the site is tidally influenced and susceptible to seawater intrusion that would be expected to increase if groundwater pumping wells were operated on site.
- An application for a Water Use Determination at Port Place Mall located immediately north of the property was approved by the ministry in June, 2013.

On the basis of the arguments and supporting information provided by Tetra Tech and summarized above, I concur with the conclusion reached by Tetra Tech that potential future use of the groundwater underlying the Site for drinking water is unlikely. Therefore, I hereby determine that drinking water use does not apply at the Site. I also confirm that marine aquatic life water use does apply.

This decision is based on the most recent information available to the ministry regarding the above referenced site. The ministry, however, makes no representation or warranty as to the accuracy or completeness of this information.

Please contact Peggy Evans at 250-356-8386 or Amy Sloma at 250-387-6479 if you require clarification regarding this letter.

Sincerely,

Peggy Evans

Peggy Evans
For Director, *Environmental Management Act*

cc: Lora Paul, Tetra Tech EBA
Amy Sloma, Ministry of Environment, Victoria
Lucy Hewlett, Ministry of Environment, Victoria
Catherine Schachtel, CSAP Society


SHORELINE (1854)
DW EXEMPTION
PORT PLACE MALL
1951 CAR REPAIRS
1951 MACHINE SHOP
1951 WELDING SHOP
1951 SAWMILL
1951 MACHINE SHOP
1951 ENGINE HOUSE
APEC 9
APEC 11
APEC 8
APEC 10
AEC 7
AEC 2
AEC 3
FRONT ST
ESPLANADE
DISCOVERY PASSAGE
Definitions
Areas of Potential Environmental Concern
Contaminated Sites Regulation
Commercial and Industrial Land Use
Heavy Extractable Petroleum Hydrocarbons
Polycyclic Aromatic Hydrocarbons
Potential Contaminants of Concern
Volatile Petroleum Hydrocarbons
AEC#
Location
Description of Environmental Media with COCs >CSR Standards
APECS
Location
Suspect PCOCs and Environmental Media

Figure 1

October 28, 2014

ISSUED FOR USE
FILE: ENVIND03511-01
Via Email: csp_cio@Victoria1.gov.bc.ca

British Columbia Ministry of Environment
Land Remediation Section
PO Box 9342 Stn. Prov. Government
Victoria, BC V8W 9M1

Attention: Client Information Officer

Subject: Request For Water Use Determination, Portion of 1 Port Drive, Nanaimo, British Columbia

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) has been commissioned by the City of Nanaimo (CoN) to conduct a Detailed Site Investigation (DSI) of an industrial property located at 1 Port Drive in downtown Nanaimo, British Columbia (herein referred to as the "Property"). The Property is situated entirely on land reclaimed from the sea consisting of poor quality industrial fill materials. The boundaries of the Property are shown on the attached Figure 1.

The CoN wishes to redevelop the Property for ongoing and future commercial and light industrial use. As of the date of this letter, Tetra Tech EBA has completed a Stage 1 Preliminary Site Investigation; reviewed previous environmental reports conducted at the Property, and completed the initial phase of the DSI. Tetra Tech EBA is currently planning a follow-up drilling investigation for a second phase of the DSI.

After reviewing the results of the initial phase of the DSI, Tetra Tech EBA is of the opinion that we have collected sufficient information to present the BC Ministry of Environment (MoE) with evidence to make a water use determination for the Property with a view that the Property should be exempt from Drinking Water standards listed in the *BC Contaminated Site Regulation* (CSR). We understand that Protocol 21 (P21) has been developed by the MoE and will be released for public review and comment soon. P21 will replace the current Technical Guidance Document 6 Water Use Determination. Based on recent correspondence with staff at the MoE, Land Remediation Section, we understand that we can submit a request under P21 prior to its release as long as we submit the request directly to the MoE and not as a Protocol 6 submission. Accordingly, we are submitting this letter directly to the MoE to request a water use determination. If the MoE can provide a determination for the Property, it will be important to our client to keep redevelopment plans on schedule and to Tetra Tech EBA for planning our subsequent investigation as the scope of work will depend upon whether or not drinking water standards apply to the Property. We would appreciate a response on this matter as soon as possible.

2.0 SUMMARY OF EXEMPTION CRITERIA

The response that Tetra Tech EBA received from the MoE Land Remediation Section regarding water use determinations for reclaimed marine lands under P21 was as follows:

Tetra Tech EBA Inc.
#1 - 4376 Boban Drive
Nanaimo, BC V9T 6A7 CANADA
Tel 250.756.2256 Fax 250.756.2686

"Given that infilled land typically will contain high levels of sodium and chloride, the current DRAFT of P21 (which are going to replace TG6) contains the following section:

Geological units located within and below filled former marine and estuarine foreshore typically contain elevated concentrations of dissolved sodium, chloride and total dissolved solids and are vulnerable to seawater intrusion in response to pumping. Future drinking water use does not apply to these geological units."

(correspondence received from Annette Mortensen, MSc, PhD, P.Eng., Senior Contaminated Sites Officer, BC MoE Land Remediation dated September 10, 2014)

We later confirmed with MoE that:

"the exemption of infilled former marine foreshore can be used in a water use determination; however, until P21 is finalized and published, the argument can only be used in applications send to the ministry and not in P6 submissions."

(correspondence received from Annette Mortensen, September 11, 2014)

Therefore, Tetra Tech EBA is submitting this Water Use Determination request directly to the MoE.

3.0 SITE CONDITIONS

3.1 Site Location, Boundaries and Ownership

The Property is located at 1 Port Drive, Nanaimo, BC. The Property is zoned CS3 for mixed commercial service use (zone provides for transportation terminals, depots, corridors and other required infrastructure) and W2 for waterfront use (zone provides for active marine uses, such as ship yards, fishing fleet support, float homes, moorage and water-based transportation).

The cartographic co-ordinates for the approximate centre of the Property are:

- Latitude: 49º 09' 50.3" North
- Longitude: 123º 55' 50.7" West

A Property Location Plan is presented as Figure 1.

3.2 Current Legal Description

The legal description for the Property is as follows:

- Parcel Identification Number (PID): 029-036-500
- Lot A, Section 1, and Part of the Bed of the Public Harbour of Nanaimo, Nanaimo District Plan EPP27507

The CoN is the registered owner of the Property and a copy of the land title is attached in Appendix A.

3.3 Potable Water Supply

Potable drinking water is supplied to occupants of the CoN from a reservoir that is located approximately 6 km south of the Property. The reservoir is managed by the CoN and is supplied through a piped water distribution system.

The CoN has indicated that land use at the Property and in the area, will remain commercial and light industrial for the foreseeable future. Based on these current and future land use plans, it is highly unlikely that the Property will ever support groundwater extraction wells as a source of potable water.

According to the MoE Water Resources Atlas, there are no domestic groundwater wells located within 500 m of the Property. The MoE has not mapped any surficial or bedrock aquifers in this area of Nanaimo. The nearest identified aquifers to the Property are located at the Duke Point Industrial Park 2.4 km east of the Property across Nanaimo Harbour, and east of Westwood Lake, 2.7 km west from the Property.

3.4 Surface Geology and Infill History

The Property has a long history of industrial activity, dating to the nineteenth century. The Property was developed by the Vancouver Coal Mining and Land Company in the late 1800s as a coal processing and shipping terminal. At this time, much of the Property was occupied by the Nanaimo Harbour, and waste from mining activities was placed into the harbour to expand and fill the Property.

The Property changed ownership several times during the early 1900s, and continued to be utilized for coal processing and export until 1953, when coal operations were ceased and the Property was sold to CP Rail (CPR). CPR developed the Property for use as a central hub for freight on Vancouver Island by constructing a ferry transport service (referred to as the Wellcox Yard). CPR leased several parcels of land to sawmills, marine industry, and other tenants during their ownership of the Property.

As development at the Property continued, the shoreline was modified for industrial purposes by filling with coal mining waste, dredged fills from the Nanaimo Harbour, and other fills. The shoreline, as mapped in 1854, 1862, and 1891, is shown in Appendix B. It is expected that this shoreline profile corresponds to the natural shoreline, with possible minor filling in the area of the coal terminal that existed along the northern property boundary. Infilling continued and the expansion of the shoreline is shown on shoreline maps from 1928, 1944, 1960, and 1977 in Appendix B. The entire site, except for two small areas located along the northern property boundary and the southwestern corner of the Property, was occupied by the Nanaimo Harbour in 1891. It is likely that the only original ground on site is located at the southwestern corner, and that this native ground has had fill placed to elevate and level the Property.

Tetra Tech EBA's September 2014 drilling program consisted of drilling 25 boreholes and completing 15 boreholes with groundwater monitoring well installations. The drilling confirmed the presence of industrial fill materials consisting of coal waste and mixed coal waste (coal mixed with heterogeneous silt, sand and gravel, that may include crushed brick, concrete, or organics such as sawdust or wood waste) overlying marine foreshore sediments throughout the entire Property. Copies of Tetra Tech EBA's borehole and monitoring well logs are attached in Appendix C and the borehole and monitoring well locations are presented on Figure 2. In addition, our review of environmental investigations conducted by others at the Property contained at least 32 other drilling and test pit locations that showed similar geology and infill conditions existing across the Property.

Analytical results of the coal waste and mixed coal waste fill soil show measureable concentrations of hydrocarbons, polycyclic aromatic hydrocarbons (PAH) and concentrations of metals (chromium, copper and zinc) above or near standards values. Chromium is the most common metal to exceed the CSR Commercial Land Use (CL) standards at the Property. Although hydrocarbons and PAHs were measured in most of the fill soils that contained coal waste that were tested, they were not at concentrations that exceeded the CSR CL standards (except in Area of Environmental Concern #2 where a diesel fuel spill occurred).

Two geological cross sections were drafted by SNC Lavalin Environment for their June 2009 *Comprehensive Environmental Site Investigation* (SNC Lavalin, June 2009. Comprehensive Environmental Site Investigation, CPR Wellcox Yard Nanaimo, BC. Report prepared for Canadian Pacific Railway). That report was prepared for the CPR, and covered the entire "Wellcox Yard" that included the Property and other lands to the south and east. Figure 3a and 3b attached shows the geological cross sections through the Wellcox Yard. Tetra Tech EBA notes that some of the borehole records used to prepare these cross sections will be used when Tetra Tech EBA prepares updated cross sections using information for the current DSI program being conducted at the Property.

3.5 Preliminary Hydrogeology

The general direction of groundwater flow at the Property is inferred toward the northeast in the northern section of the Property, and toward the east in the southern portion of the Property, generally toward the Nanaimo Harbour. Because the Property consists of reclaimed land, tidal fluctuation influences the shallow groundwater in the unconfined aquifer of fill materials.

Tetra Tech EBA measured groundwater levels during a low tide event on September 22nd and returned to the Property just prior to high tide to measure fluctuations in water levels. The tidal fluctuation on that day was 2.4 m. These observations showed a change in piezometric contours. In the northern portion of the Property, the direction of groundwater flow at high tide was reversed when compared to the direction of flow at low tide. The direction of groundwater flow on September 22, 2014 is attached on Figures 4a and 4b.

Tidal influence at the Property is supported in the previous environmental site investigation conducted by SNC Lavalin of Vancouver, BC. SNC Lavalin conducted a 69-hour tidal monitoring event in three groundwater monitoring wells at distances from the sea of 35 m, 50 m and 110 m. The well closest to the sea (MW09-19) is located in the northern portion of the Property. SNC reported that during tidal monitoring, the groundwater levels fluctuated up to 1 m in the well located 35 m from the sea, less than 0.5 m in the well located 50 m from the sea, and < 0.2 m in the well located 110 m from the sea. There was also a lag time response that ranged from one to five hours from high and low tide events (SNC Lavalin, June 2009). Therefore, the entire Property lies within the tidally-influenced area.

Groundwater quality parameters such as Total Dissolved Solids (TDS), salinity, chloride, sodium and hardness will be greatly affected by sea water intrusion and are geochemical indicators of tidal influence in the fill materials underlying the Property.

4.0 GROUNDWATER MONITORING WELL ANALYTICAL RESULTS

Tetra Tech EBA installed 15 groundwater monitoring wells at the Property (September 2014) and others have previously installed at least 26 other groundwater monitoring wells at the Property. The groundwater monitoring well locations are shown on Figure 2. Groundwater samples from the newly installed wells were collected on September 24 and 25, 2014. Field monitoring results and the laboratory analytical results for TDS, salinity-related parameters, and dissolved Hardness are shown on Table 1, attached.

The analytical results indicate that there is a definite impact from sea water intrusion on groundwater quality in the northern portion of the Property with less strong impacts to the central and southern portions of the Property. The analytical results for TDS, salinity-related parameters, and dissolved hardness indicated the following:

- The sodium concentration at monitoring well 14BH/MW02 was 1,060 mg/L, which exceeded the CSR Drinking Water (DW) standard of 200 mg/L.
- The chloride concentrations at monitoring wells 14BH/MW19, 14BH/MW21, 14BH/MW23, and 14BH/MW25 were 14,000 mg/L, 6,200 mg/L, 15,000 mg/L, and 11,000 mg/L, respectively. These concentrations exceeded the CSR DW standard of 250 mg/L.

- The salinity concentrations of 14BH/MW19, 14BH/MW21, 14BH/MW23, and 14BH/MW25 were 23.3 g/L, 10.7 g/L, 25.5 g/L, and 17.5 g/L, respectively. The natural salinity of the sea water collected from the harbour near 14BH/MW25 was 26.9 g/L.

- The greatest TDS concentrations were measured in the northern portion of the Property. At 14BH/MW19, 14BH/MW21, 14BH/MW23, and 14BH/MW25 the TDS concentrations were 24,900 mg/L, 11,800 mg/L, 25,400 mg/L, and 17,800 mg/L, respectively. In the central portion of the Property near Area of Environmental Concern #2 – Rail Yard, the TDS concentrations were, ranging from 788 mg/L to 1,740 mg/L. In the southern portion of the Property along the Port Drive road allowance, TDS concentrations ranged from 560 mg/L to 898 mg/L.

- Elevated dissolved hardness concentrations are another indicator of potential tidal effects on groundwater quality because seawater contains elevated concentrations of calcium and magnesium. In the northern portion of the Property, hardness concentrations ranged from 1,580 mg/L to 5,040 mg/L, while in the southern portion of the Property, hardness concentrations ranged from 483 mg/L to 594 mg/L.

- Elevated conductivity is another indicator of potential tidal effects on groundwater quality. In the northern portion of the Property, the conductivity of the groundwater ranged from 4,580 µS/cm to 18,400 µS/cm. In the central portion of the Property, the conductivity of the groundwater ranged from 1,188 µS/cm to 2,578 µS/cm. In the southern portion of the Property, the conductivity of the groundwater ranged from 411 µS/cm to 693 µS/cm.

Although there are no standards for TDS, hardness and conductivity in the CSR, the measured concentrations of these TDS and hardness are above the aesthetic objective Guidelines for Canadian Drinking Water Quality in all areas of the Property. In the existing Technical Guidance Document 6, TDS concentrations over 4,000 mg/L are considered unsuitable drinking water use.

5.0 PRECEDENT FROM NEIGHBOURING PROPERTY

Tetra Tech EBA is aware that a portion of the neighbouring property located immediately to the north of the Property (Port Place Mall, identified on Figure 2) has a similar history of infilling of former marine areas and that the owners of that site received a DW exemption from the MoE in June, 2013. The Port Place Mall property is listed in the MoE Contaminated Sites Registry under Site ID No. 12024 (MoE File No. 26250-20/12024).

A detailed report entitled Water Use Determination Port Place Mall, 650 Terminal Avenue Nanaimo, BC was prepared by PHH ARC Environmental of Victoria BC in June 2013. This report provided sufficient evidence to support a position that DW standards should not apply to the northern portion of that site because it is built on reclaimed land from the sea with poor quality industrial fill material (predominantly coal waste) with elevated TDS and salinity parameters in groundwater.

The area of the neighbouring property that was given a drinking water exemption is a continuation of the reclaimed land that is contiguous with the Property. Tetra Tech EBA's initial DSI has confirmed that the fill material and analytical results of soil and groundwater are similar to what was found in the northern portion of the Port Place Mall property. For these reasons, the granting of a DW exemption for that neighbouring property could be viewed as a precedent to grant a similar exemption for the Property.

6.0 SUMMARY OF REQUEST

The intent of this letter is to request from the MoE an exemption from DW standards under the CSR process based on results of Tetra Tech EBA's initial DSI works and review of historical records with respect to the drilling program and groundwater quality at the Property which is situated on reclaimed land in a marine foreshore setting.

After reviewing the results of the initial phase of the DSI, Tetra Tech EBA is of the opinion that we have collected sufficient information to present the MoE evidence to make a water use determination for the Property as per the upcoming P21 document currently being developed. It is well documented that the entire property consists of reclaimed marine land and most of the Property contains elevated concentrations of TDS, sodium and chloride and is susceptible to seawater intrusion (which would tend to increase if groundwater pumping wells were constructed at the Property). Therefore, groundwater would not be foreseeably used as a future drinking water source at the Property.

We request that the MoE provide a water use determination (DW exemption) for the Property. Time is of the essence in that it is important to our client (CoN) to keep their redevelopment plans for the Property on schedule and for Tetra Tech EBA to plan the subsequent phase of drilling. The scope of work for the follow-up drilling investigation depends upon whether or not drinking water standards apply to the Property. If the MoE grants a DW exemption for the Property, this would result in considerable savings of time and effort for the CoN because of reduced scope of work in the next phase of investigation.

7.0 LIMITATIONS OF LETTER

This letter and its contents are intended for the sole use of the BC Ministry of Environment and their authorized agents. Tetra Tech EBA does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the letter when the letter is used or relied upon by any Party other than the BC Ministry of Environment, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this letter is at the sole risk of the user. Tetra Tech EBA's General Conditions are provided in Appendix D.

8.0 CLOSURE

We trust this letter and associated attachments are sufficient for a water use determination based on the current draft of Protocol 21. We appreciate your timely response in this matter. If any questions or follow-up is required, please contact Ms. Lora Paul, P.Eng. or Mr. Michael Gallo B.Sc. of Tetra Tech EBA's Nanaimo BC office.

Respectfully submitted,
Tetra Tech EBA Inc.

Prepared by:
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Oct 28/14

Reviewed by:
Lora Paul, P.Eng.
Senior Project Manager – Infrastructure & Development
Environment Practice
Direct Line: 250.714.3043
Lora.Paul@tetratech.com

/cee

Attachments:
- BC Ministry of Environment Water Use Determination Application Form
- Site Risk Classification Form
- Table 1: Groundwater Analytical Results – TDS and Salinity Parameters
- Figure (7)
- Appendix A: Legal Land Title
- Appendix B: Historical Shoreline and Infilling Maps – Nanaimo, BC
- Appendix C: Borehole and Monitoring Well Logs
- Appendix D: Tetra Tech EBA's General Conditions

TABLES

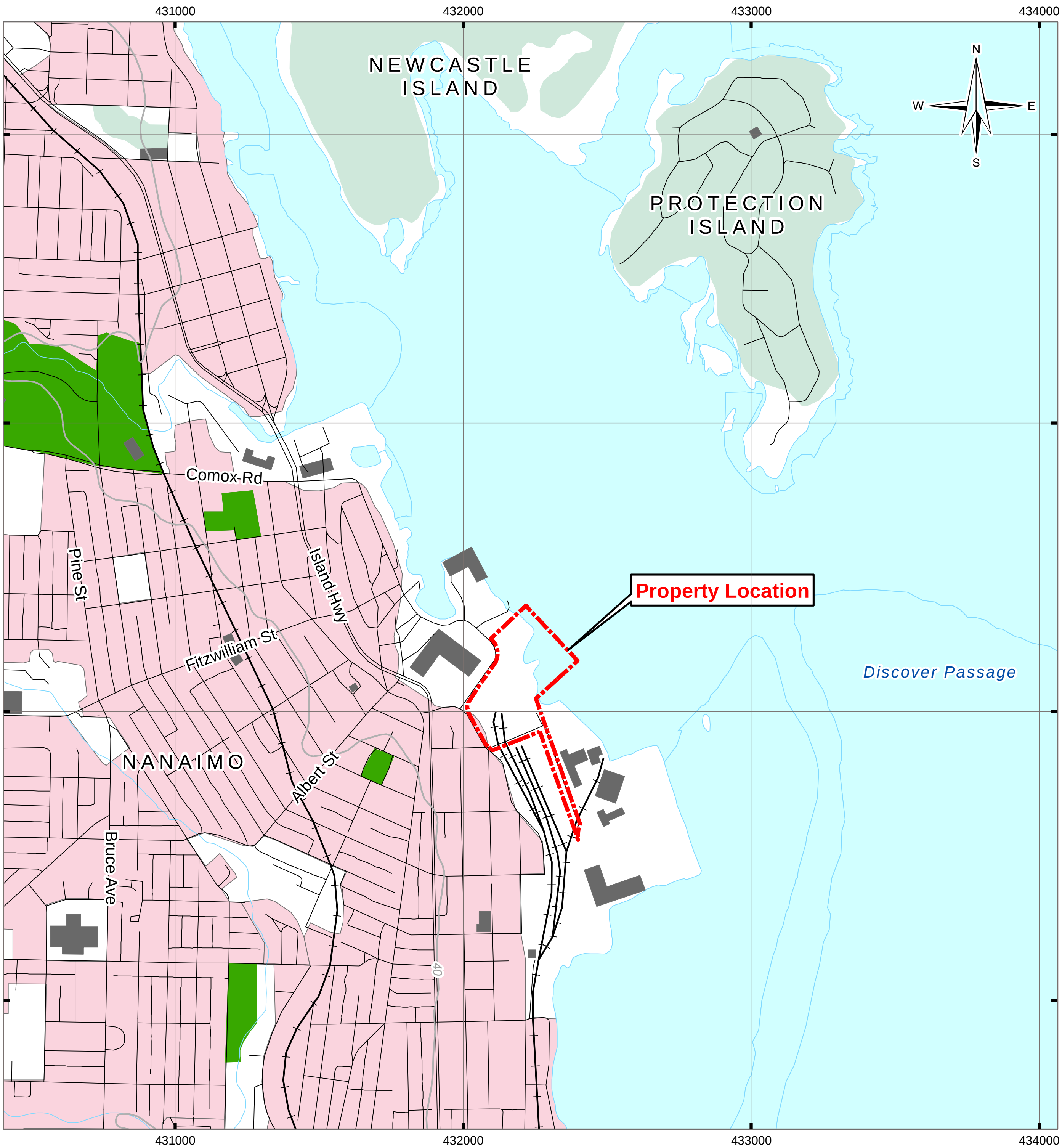
Table 1: Groundwater Analytical Results

Parameter	Unit	CSR - AW (Marine)	CSR - DW	AEC 1		AEC 2			AEC 3				AEC 4			AEC 7	APEC 8	APEC 9	APEC 10	Background
				14MW02	DUP1	14MW05	14MW07	14MW08	14MW10	14MW11	14MW12	14MW13	14MW14	14MW15	14MW16	14MW19	14MW21	14MW23	14MW25	14SW01
				24-Sep-2014		24-Sep-2014	24-Sep-2014	24-Sep-2014	25-Sep-2014	24-Sep-2014	24-Sep-2014	25-Sep-2014	25-Sep-2014	25-Sep-2014	25-Sep-2014	24-Sep-2014	25-Sep-2014	25-Sep-2014	24-Sep-2014	30-Sep-2014
Field																				
Field pH	pH Units	-	-	6.59	-	6.64	6.66	6.50	6.70	7.14	7.12	7.16	6.98	6.41	6.71	6.41	6.32	6.44	6.28	8.15
Field Electric Conductivity	µS/cm	-	-	4580	-	1188	1499	2578	1222	1366	1385	1191	1028	952	823	18,400	9690	18,320	14,900	18,310
Field Total Dissolved Solids (TDS)	ppm	-	-	2,290	-	593	750	1228	617	682	693	596	514	459	411	9,270	4,850	9,150	7,450	9,150
Field Temperature	°C	-	-	17.3	-	13.5	15.0	14.7	14.0	15.0	15.9	14.5	13.6	13.3	15.6	20.5	15.5	17.7	16.3	14.5
Physical Parameter																				
Hardness	mg/L	-	-	1580	1560	-	-	-	-	507	483	589	594	-	481	4190	2710	5040	3630	-
Routine																				
Chloride	mg/L	-	250 [#1]	-	-	-	-	-	-	-	-	-	-	-	-	14,000	6200	15,000	11,000	16,000
Sodium (Total)	mg/L	-	200 [#1]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7630
Sodium (Dissolved)	mg/L	-	200 [#1]	1060	1040	-	-	-	-	128	157	68.0	17.5	-	6.22	6570	3390	7550	4610	-
Salinity	g/L	40	-	-	-	-	-	-	-	-	-	-	-	-	-	23.3	10.7	25.5	17.5	26.9
Total Dissolved Solids (TDS)	mg/L	-	-	-	-	788	1060	1740	832	864	898	764	692	-	560	24,900	11,800	25,400	17,800	-
Laboratory Work Order Number				B485949	B485949	B485949	B485949	B485949	B486398	B485949	B485949	B486398	B486398	B486398	B486398	B485949	B486398	B486398	B485949	B488030
Laboratory Identification Number				KR8216	KR8225	KR8217	KR8218	KR8219	KS0768	KR8221	KR8222	KS0769	KS0770	KS0767	KS0771	KR8223	KS0764	KS0765	KR8224	KT1541

NOTES:

-	Not analyzed or no standard exists.
<	Concentration is less than the laboratory detection limit indicated.
#1	Standard to protect against taste and odour concerns.
CSR	BC Contaminated Sites Regulation water standards (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014, January 31, 2014 - Schedule 6).
AW	Marine Aquatic Life.
DW	Drinking Water.
Bold	Bold and shaded indicates an exceedance of the CSR AW marine standards.
Underlined	Underlined and shaded indicates an exceedance of the CSR DW standards.

FIGURES



LEGEND

- Subject Property
- Road
- Railway
- Building
- Residential Area
- Park
- Contour (40 m)
- Watercourse
- Waterbody
- Vegetation

NOTES
Property boundaries are approximate.
Base data source:
CanVec 1:50,000 (Sheet 092G04).

STATUS
ISSUED FOR USE

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

Property Location Plan

PROJECTION	DATUM	CLIENT
UTM Zone 10	NAD83	CITY OF NANAIMO

Scale: 1:20,000
400 200 0 400
Metres

FILE NO.
IND03511-01_Figure01_SiteLocation.mxd

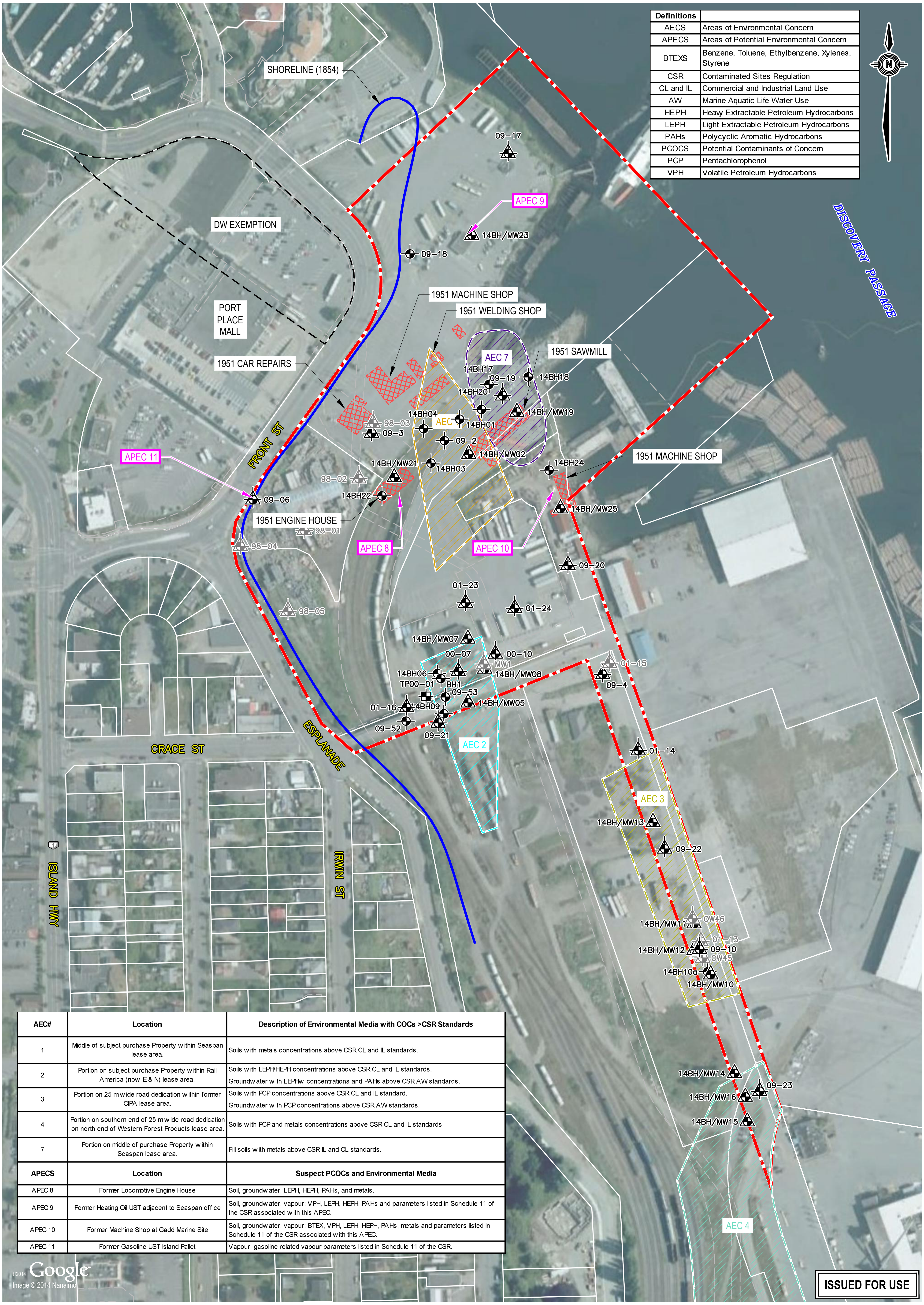
TETRA TECH EBA

PROJECT NO.	DWN	CKD	APVD	REV
ENVIND03511-01	SL	MEZ	KG	0

OFFICE	DATE
Tt EBA-VANC	October 22, 2014

Figure 1

Q:\Vancouver\GIS\ENVIRONMENTAL\IND\IND03511-01\Maps\IND03511-01_Figure01_SiteLocation.mxd modified 10/28/2014 by samuel.fournier



Definitions	
AECS	Areas of Environmental Concern
APECS	Areas of Potential Environmental Concern
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes, Styrene
CSR	Contaminated Sites Regulation
CL and IL	Commercial and Industrial Land Use
AW	Marine Aquatic Life Water Use
HEPH	Heavy Extractable Petroleum Hydrocarbons
LEPH	Light Extractable Petroleum Hydrocarbons
PAHs	Polycyclic Aromatic Hydrocarbons
PCOCS	Potential Contaminants of Concern
PCP	Pentachlorophenol
VPH	Volatile Petroleum Hydrocarbons

AEC#	Location	Description of Environmental Media with COCs >CSR Standards
1	Middle of subject purchase Property within Seaspan lease area.	Soils with metals concentrations above CSR CL and IL standards.
2	Portion on subject purchase Property within Rail America (now E & N) lease area.	Soils with LEPH/HEPH concentrations above CSR CL and IL standards. Groundwater with LEPHw concentrations and PAHs above CSR AW standards.
3	Portion on 25 m wide road dedication within former CIPA lease area.	Soils with PCP concentrations above CSR CL and IL standard. Groundwater with PCP concentrations above CSR AW standards.
4	Portion on southern end of 25 m wide road dedication on north end of Western Forest Products lease area.	Soils with PCP and metals concentrations above CSR CL and IL standards.
7	Portion on middle of purchase Property within Seaspan lease area.	Fill soils with metals above CSR IL and CL standards.
APECS	**Location**	**Suspect PCOCs and Environmental Media**
APEC 8	Former Locomotive Engine House	Soil, groundwater, LEPH, HEPH, PAHs, and metals.
APEC 9	Former Heating Oil UST adjacent to Seaspan office	Soil, groundwater, vapour: VPH, LEPH, HEPH, PAHs and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 10	Former Machine Shop at Gadd Marine Site	Soil, groundwater, vapour: BTEX, VPH, LEPH, HEPH, PAHs, metals and parameters listed in Schedule 11 of the CSR associated with this APEC.
APEC 11	Former Gasoline UST Island Pallet	Vapour: gasoline related vapour parameters listed in Schedule 11 of the CSR.

LEGEND

- Subject Property
- 1951 Historical Buildings (Approximate)
- Borehole
- Shoreline (1854)
- Monitoring Well
- Borehole & Monitoring Well
- Test Pit
- Destroyed Monitoring Well installed prior to 2001
- SNC AEC Boundary

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

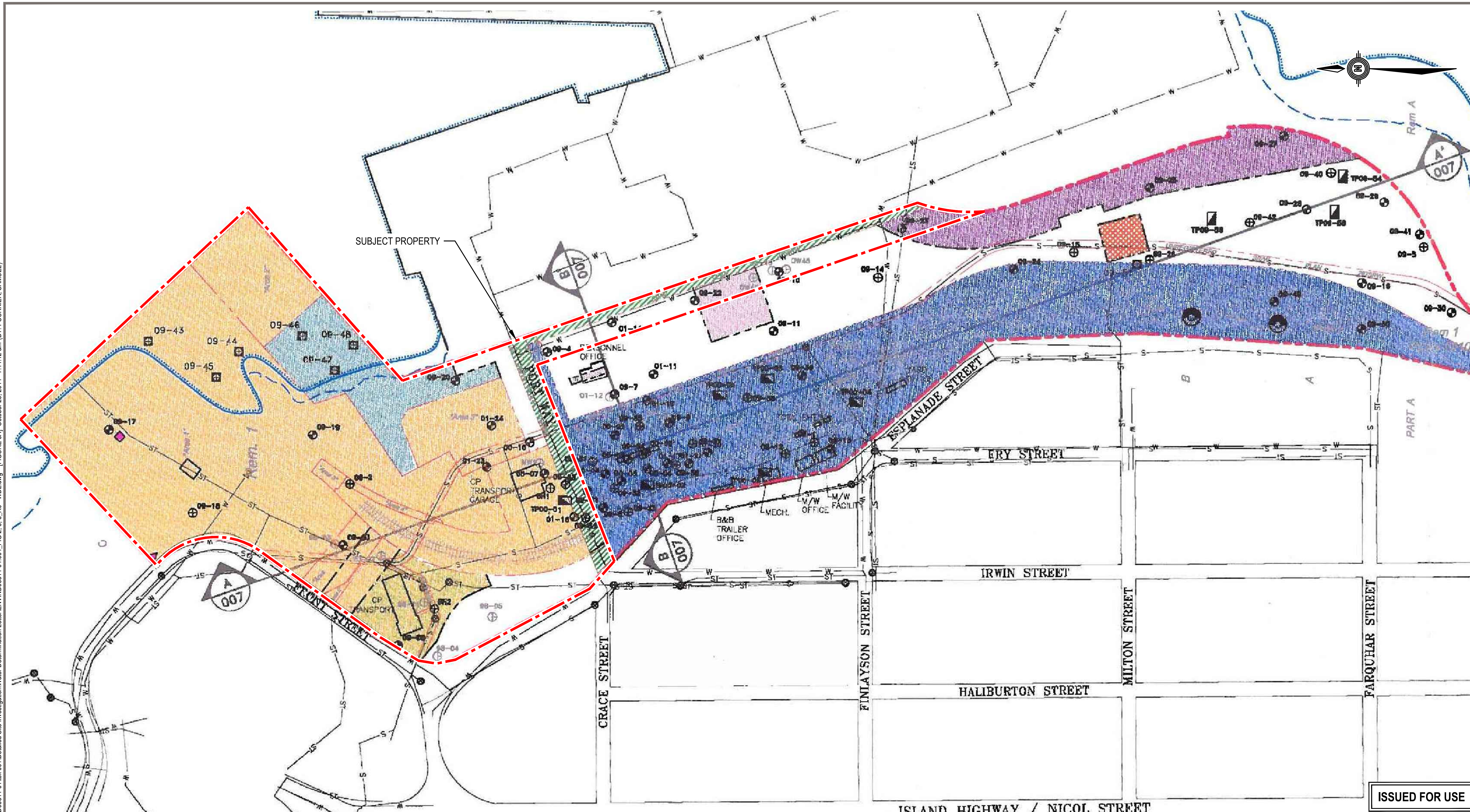
TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

BOREHOLE AND MONITORING WELL LOCATION PLAN

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0
OFFICE	DATE		
VANC	October 28, 2014		

Figure 2



LEGEND

- SHORE LINE
- SITE BOUNDARY
- OLD HIGH WATERLINE
- WATER LINE
- STORM LINE
- SANITARY LINE
- BOREHOLE
- MONITORING WELL
- SEDIMENT SAMPLE
- TEST PIT
- MINE SHAFT
- CANADIAN COAST GUARD
- DOMAN LUMBER
- GADD MARINE CONSTRUCTORS
- ISLAND PALLET SOLUTIONS
- MARPOLE TRANSPORT
- RAIL AMERICA
- SEASPAN COASTAL INTERMODAL
- WESTERN FOREST PRODUCTS
- WEYERHAUSER
- CROSS SECTION LOCATION (A / 007)

SCALE 1:3000

20 0 20 60 120m

NOTES

BASE DRAWING PROVIDED BY SNC LAVALAIN, COMPREHENSIVE ENVIRONMENTAL SITE INVESTIGATION REPORT, CPR WELLCOX YARD, NANAIMO, BC - JUNE 26, 2009.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

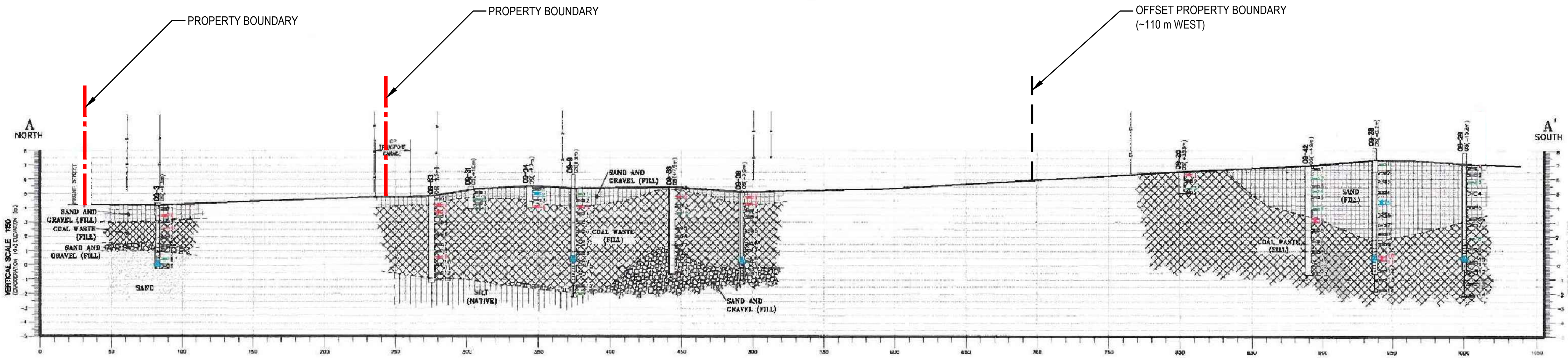
DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

GEOLOGICAL CROSS-SECTIONS LOCATIONS

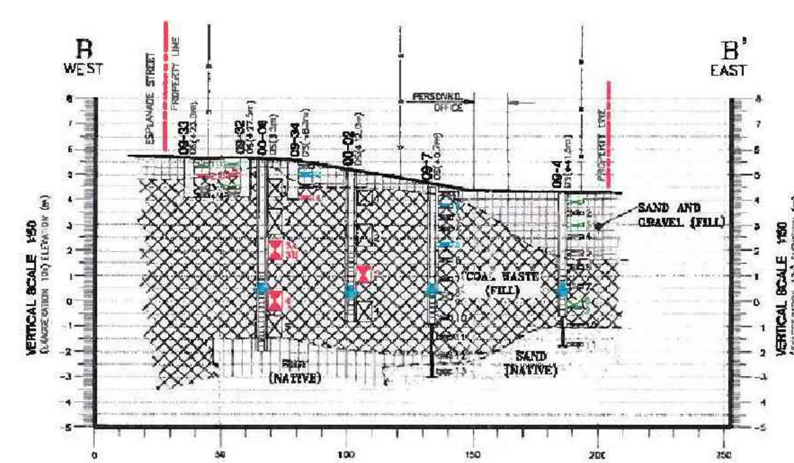
PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	LP	0
OFFICE	DATE		
VANC	October 28, 2014		

Figure 3a

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\Water Determination Letter\ENVIND03511-01.001_FIG 2, 3, 5_R0 - WDL.dwg [FIGURE 3A] October 28, 2014 - 7:11:12 am (BY: FOURNIER, SAMUEL)



A-A' SECTION
002 HORIZONTAL SCALE 1:1500 (m)



B-B' SECTION
002 HORIZONTAL SCALE 1:500 (m)

ISSUED FOR USE

LEGEND

- SITE BOUNDARY
- WATER LINE
- STORM LINE
- SANITARY LINE
- PREFERRED STRATIGRAPHIC BOUNDARY
- GROUNDWATER ELEVATION MEASURED ON 2009-04-14

LITHOLOGY

- SAND AND GRAVEL (FILL)
- COAL WASTE (FILL)
- SAND AND GRAVEL (FILL)
- SAND (NATIVE)
- SILT (NATIVE)

- GRAB SAMPLE (NOT ANALYZED)
- SPLIT SPOON SAMPLE (NOT ANALYZED)
- CORE SAMPLE (NOT ANALYZED)
- CONCENTRATION LESS THAN THE OR EQUAL TO APPLICABLE CSR STANDARDS
- CONCENTRATION GREATER THAN THE APPLICABLE CSR RL STANDARDS
- CONCENTRATION GREATER THAN THE APPLICABLE CSR CL/IL STANDARDS

SCALE 1:3000

20 0 20 60 120m

NOTES

BASE DRAWING PROVIDED BY SNC LAVALAIN, COMPREHENSIVE ENVIRONMENTAL SITE INVESTIGATION REPORT, CPR WELLCOX YARD, NANAIMO, BC - JUNE 26, 2009.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

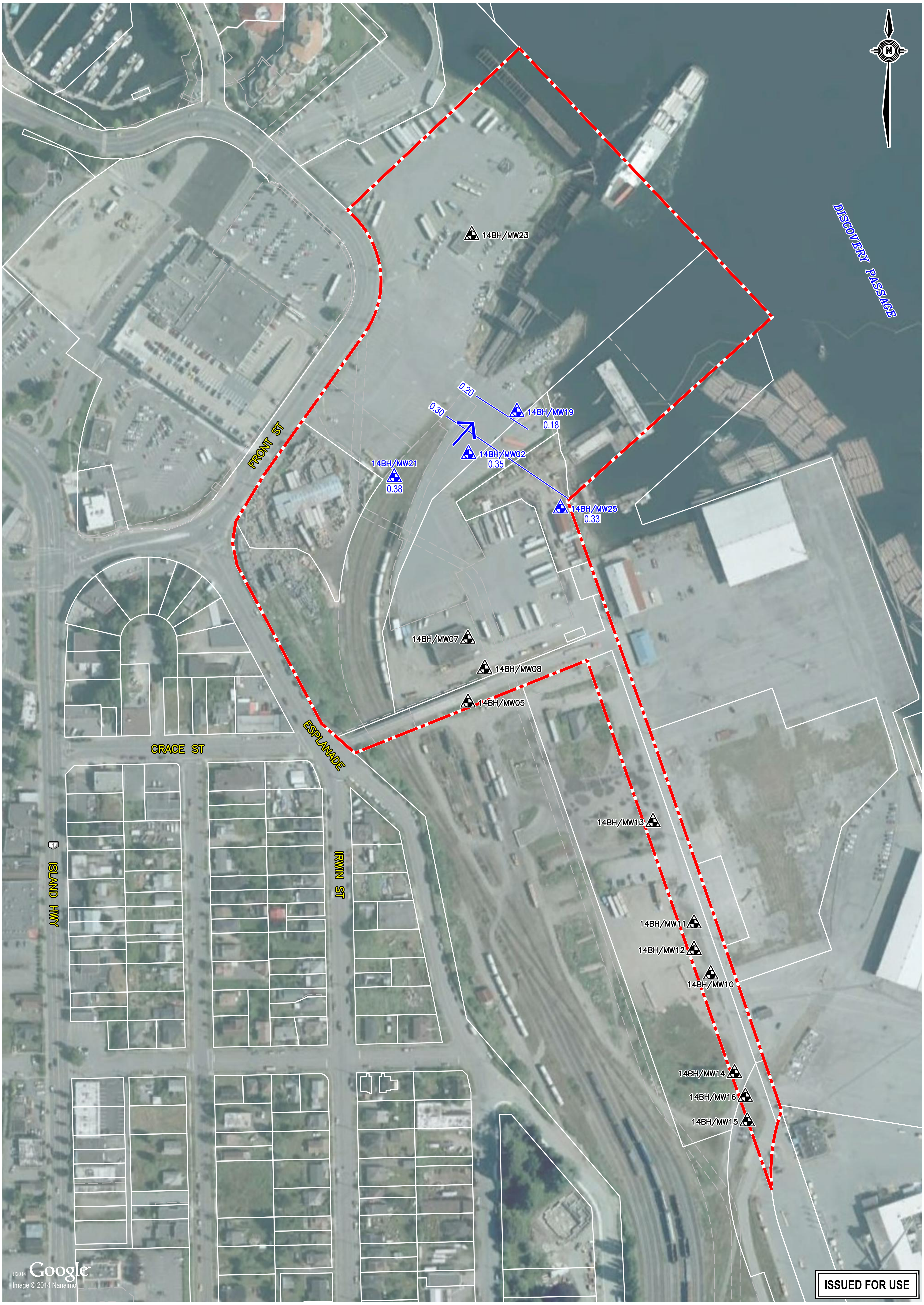
DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

GEOLOGICAL CROSS-SECTIONS
A-A' AND B-B'

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	LP	0
OFFICE	DATE		
VANC	October 28, 2014		

Figure 3b

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\Water Determination Letter\ENVIND03511-01.001_FIG 4a-4b_R0 - WDL.dwg [FIGURE 4A] October 28, 2014 - 7:09:46 am (BY: FOURNIER, SAMUEL)



LEGEND

- Subject Property
- Groundwater Flow Direction
- Borehole & Monitoring Well
- 0.35 Groundwater Elevations (m-asl)
- * Borehole & Monitoring Well not used for Interpretation
- Groundwater Contours Measured at Low Tide - September 22, 2014

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

GROUNDWATER PIEZOMETRIC CONTOURS - LOW TIDE

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0

OFFICE	DATE
VANC	October 28, 2014

Figure 4a

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\Water Determination Letter\ENVIND03511-01.001_FIG 4a-4b_R0 - WDL.dwg [FIGURE 4B] October 28, 2014 - 7:10:23 am (BY: FOURNIER, SAMUEL)

LEGEND

- Subject Property
- Groundwater Flow Direction
- Borehole & Monitoring Well
- 0.35 Groundwater Elevations (m-asl)
- Borehole & Monitoring Well not used for Interpretation
- Groundwater Contours Measured at High Tide - September 22, 2014

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

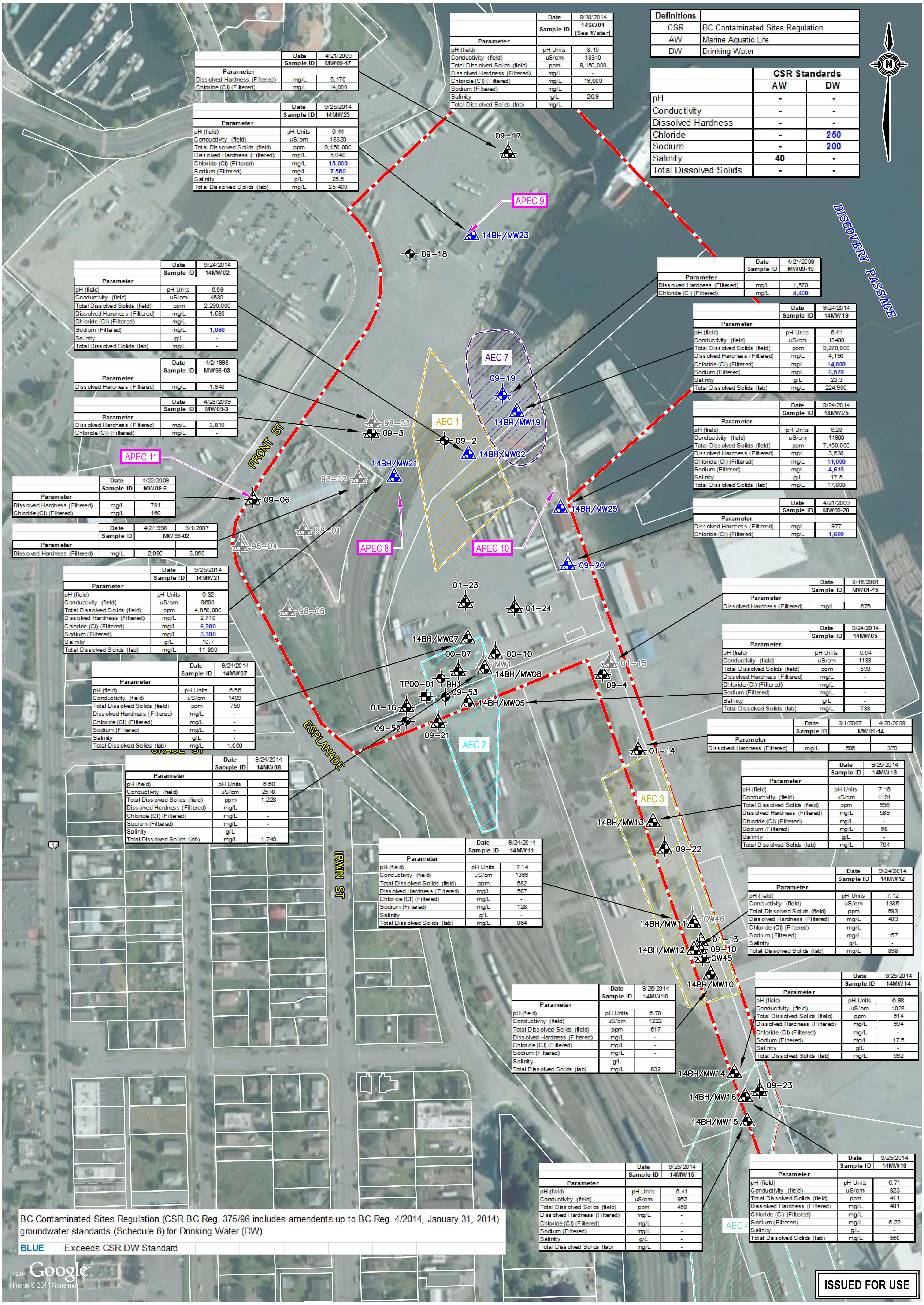
GROUNDWATER PIEZOMETRIC CONTOURS - HIGH TIDE

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0

OFFICE	DATE
VANC	October 28, 2014

Figure 4b

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\Water Determination Letter\ENVIND03511-01.001_FIG 2, 3, 5_R0 - WDL.dwg [FIGURE 5] October 28, 2014 - 7:11:50 am (BY: FOURNIER, SAMUEL)



Definitions	
CSR	BC Contaminated Sites Regulation
AW	Marine Aquatic Life
DW	Drinking Water

	CSR Standards	
	AW	DW
pH	-	-
Conductivity	-	-
Dissolved Hardness	-	-
Chloride	-	250
Sodium	-	200
Salinity	40	-
Total Dissolved Solids	-	-

	Date	4/21/2009
	Sample ID	MW09-17
Parameter		
Dissolved Hardness (Filtered)	mg/L	5,170
Chloride (Cl) (Filtered)	mg/L	14,000

	Date	9/30/2014
	Sample ID	14SW01 (Sea Water)
Parameter		
pH (field)	pH Units	8.15
Conductivity (field)	uS/cm	18310
Total Dissolved Solids (field)	ppm	9,150,000
Dissolved Hardness (Filtered)	mg/L	-
Chloride (Cl) (Filtered)	mg/L	16,000
Sodium (Filtered)	mg/L	-
Salinity	g/L	26.9
Total Dissolved Solids (lab)	mg/L	-

	Date	9/25/2014
	Sample ID	14MW23
Parameter		
pH (field)	pH Units	6.44
Conductivity (field)	uS/cm	18320
Total Dissolved Solids (field)	ppm	9,150,000
Dissolved Hardness (Filtered)	mg/L	5,040
Chloride (Cl) (Filtered)	mg/L	15,000
Sodium (Filtered)	mg/L	7,550
Salinity	g/L	25.5
Total Dissolved Solids (lab)	mg/L	25,400

	Date	9/24/2014
	Sample ID	14MW02
Parameter		
pH (field)	pH Units	6.59
Conductivity (field)	uS/cm	4580
Total Dissolved Solids (field)	ppm	2,290,000
Dissolved Hardness (Filtered)	mg/L	1,580
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	1,060
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	-

	Date	4/21/2009
	Sample ID	MW09-19
Parameter		
Dissolved Hardness (Filtered)	mg/L	1,570
Chloride (Cl) (Filtered)	mg/L	4,400

	Date	9/24/2014
	Sample ID	14MW19
Parameter		
pH (field)	pH Units	6.41
Conductivity (field)	uS/cm	18400
Total Dissolved Solids (field)	ppm	9,270,000
Dissolved Hardness (Filtered)	mg/L	4,190
Chloride (Cl) (Filtered)	mg/L	14,000
Sodium (Filtered)	mg/L	6,570
Salinity	g/L	23.3
Total Dissolved Solids (lab)	mg/L	224,900

	Date	4/2/1998
	Sample ID	MW98-03
Parameter		
Dissolved Hardness (Filtered)	mg/L	1,940

	Date	4/28/2009
	Sample ID	MW09-3
Parameter		
Dissolved Hardness (Filtered)	mg/L	3,810
Chloride (Cl) (Filtered)	mg/L	-

	Date	9/24/2014
	Sample ID	14MW25
Parameter		
pH (field)	pH Units	6.28
Conductivity (field)	uS/cm	14900
Total Dissolved Solids (field)	ppm	7,450,000
Dissolved Hardness (Filtered)	mg/L	3,630
Chloride (Cl) (Filtered)	mg/L	11,000
Sodium (Filtered)	mg/L	4,610
Salinity	g/L	17.5
Total Dissolved Solids (lab)	mg/L	17,800

	Date	4/22/2009
	Sample ID	MW09-6
Parameter		
Dissolved Hardness (Filtered)	mg/L	781
Chloride (Cl) (Filtered)	mg/L	160

	Date	4/21/2009
	Sample ID	MW09-20
Parameter		
Dissolved Hardness (Filtered)	mg/L	977
Chloride (Cl) (Filtered)	mg/L	1,600

	Date	4/2/1998	3/1/2007
	Sample ID	MW 98-02	
Parameter			
Dissolved Hardness (Filtered)	mg/L	2,090	3,050

	Date	9/25/2014
	Sample ID	14MW21
Parameter		
pH (field)	pH Units	6.32
Conductivity (field)	uS/cm	9690
Total Dissolved Solids (field)	ppm	4,850,000
Dissolved Hardness (Filtered)	mg/L	2,710
Chloride (Cl) (Filtered)	mg/L	6,200
Sodium (Filtered)	mg/L	3,390
Salinity	g/L	10.7
Total Dissolved Solids (lab)	mg/L	11,800

	Date	8/16/2001
	Sample ID	MW01-15
Parameter		
Dissolved Hardness (Filtered)	mg/L	676

	Date	9/24/2014
	Sample ID	14MW05
Parameter		
pH (field)	pH Units	6.64
Conductivity (field)	uS/cm	1188
Total Dissolved Solids (field)	ppm	593
Dissolved Hardness (Filtered)	mg/L	-
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	-
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	788

	Date	9/24/2014
	Sample ID	14MW07
Parameter		
pH (field)	pH Units	6.66
Conductivity (field)	uS/cm	1499
Total Dissolved Solids (field)	ppm	750
Dissolved Hardness (Filtered)	mg/L	-
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	-
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	1,060

	Date	3/1/2007	4/20/2009
	Sample ID	MW 01-14	
Parameter			
Dissolved Hardness (Filtered)	mg/L	506	379

	Date	9/24/2014
	Sample ID	14MW08
Parameter		
pH (field)	pH Units	6.50
Conductivity (field)	uS/cm	2578
Total Dissolved Solids (field)	ppm	1,228
Dissolved Hardness (Filtered)	mg/L	-
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	-
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	1,740

	Date	9/25/2014
	Sample ID	14MW13
Parameter		
pH (field)	pH Units	7.16
Conductivity (field)	uS/cm	1191
Total Dissolved Solids (field)	ppm	596
Dissolved Hardness (Filtered)	mg/L	589
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	68
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	764

	Date	9/24/2014
	Sample ID	14MW11
Parameter		
pH (field)	pH Units	7.14
Conductivity (field)	uS/cm	1366
Total Dissolved Solids (field)	ppm	682
Dissolved Hardness (Filtered)	mg/L	507
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	128
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	864

	Date	9/24/2014
	Sample ID	14MW12
Parameter		
pH (field)	pH Units	7.12
Conductivity (field)	uS/cm	1385
Total Dissolved Solids (field)	ppm	693
Dissolved Hardness (Filtered)	mg/L	483
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	157
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	898

	Date	9/25/2014
	Sample ID	14MW10
Parameter		
pH (field)	pH Units	6.70
Conductivity (field)	uS/cm	1222
Total Dissolved Solids (field)	ppm	617
Dissolved Hardness (Filtered)	mg/L	-
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	-
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	832

	Date	9/25/2014
	Sample ID	14MW14
Parameter		
pH (field)	pH Units	6.98
Conductivity (field)	uS/cm	1028
Total Dissolved Solids (field)	ppm	514
Dissolved Hardness (Filtered)	mg/L	594
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	17.5
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	692

	Date	9/25/2014
	Sample ID	14MW15
Parameter		
pH (field)	pH Units	6.41
Conductivity (field)	uS/cm	952
Total Dissolved Solids (field)	ppm	459
Dissolved Hardness (Filtered)	mg/L	-
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	-
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	-

	Date	9/25/2014
	Sample ID	14MW16
Parameter		
pH (field)	pH Units	6.71
Conductivity (field)	uS/cm	823
Total Dissolved Solids (field)	ppm	411
Dissolved Hardness (Filtered)	mg/L	481
Chloride (Cl) (Filtered)	mg/L	-
Sodium (Filtered)	mg/L	6.22
Salinity	g/L	-
Total Dissolved Solids (lab)	mg/L	560

BC Contaminated Sites Regulation (CSR BC Reg. 375/96 includes amendents up to BC Reg. 4/2014, January 31, 2014) groundwater standards (Schedule 6) for Drinking Water (DW).

BLUE Exceeds CSR DW Standard

ISSUED FOR USE

LEGEND

- Subject Property
- Borehole
- Monitoring Well
- Test Pit
- SNC AEC Boundary
- Borehole & Monitoring Well
- Destroyed Monitoring Well installed prior to 2001

SCALE 1:2500

20 0 20 60 100m

NOTE

LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT

CITY OF NANAIMO
THE HARBOUR CITY

TETRA TECH EBA

DETAILED SITE INVESTIGATION
1 PORT DRIVE, NANAIMO, BC

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS TDS, HARDNESS, AND SALINITY PARAMETERS

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01	SF	KG	0
OFFICE	DATE		
VANC	October 28, 2014		

Figure 5

APPENDIX A
LEGAL LAND TITLE

CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN

Land Title District VICTORIA
Land Title Office VICTORIA

Title Number CA3049626
From Title Number CA3049625

Application Received 2013-03-27

Application Entered 2013-04-05

Registered Owner in Fee Simple
Registered Owner/Mailing Address: CITY OF NANAIMO
455 WALLACE STREET
NANAIMO, BC
V9R 5J6

Taxation Authority CITY OF NANAIMO

Description of Land
Parcel Identifier: 029-036-500
Legal Description:
LOT A SECTION 1 AND PART OF THE BED OF THE PUBLIC HARBOUR OF NANAIMO NANAIMO DISTRICT PLAN EPP27507

Legal Notations
NOTICE OF INTEREST, BUILDERS LIEN ACT (S.3(2)), SEE CA3049787
FILED 2013-03-27

PERSONAL PROPERTY SECURITY ACT NOTICE, SEE EM112094

Charges, Liens and Interests
Nature: STATUTORY RIGHT OF WAY
Registration Number: J6271
Registration Date and Time: 1979-12-03 13:30
Registered Owner: NANAIMO PORT AUTHORITY
Transfer Number: CA1696213
Remarks: PART SHOWN OUTLINED IN RED ON PLAN 3756 RW
FOR CHANGE OF ADDRESS SEE CA3413191

Nature:	STATUTORY RIGHT OF WAY
Registration Number:	J6272
Registration Date and Time:	1979-12-03 13:30
Registered Owner:	NANAIMO PORT AUTHORITY
Transfer Number:	CA1696214
Remarks:	PART SHOWN OUTLINED IN RED ON PLAN 719 RW FOR CHANGE OF ADDRESS SEE CA3413192

Nature:	STATUTORY RIGHT OF WAY
Registration Number:	EM109875
Registration Date and Time:	1998-11-18 09:55
Registered Owner:	SEASPAN FERRIES CORPORATION INCORPORATION NO. C902665
Transfer Number:	CA1907768
Remarks:	PART SHOWN ON PLAN VIP68067 MODIFIED BY ET1322 MODIFIED BY EW7033

Nature:	STATUTORY RIGHT OF WAY
Registration Number:	EN2815
Registration Date and Time:	1999-01-12 11:49
Registered Owner:	ISLAND CORRIDOR FOUNDATION
Transfer Number:	FB229230
Remarks:	INTER ALIA PART IN PLAN VIP68412

Nature:	STATUTORY RIGHT OF WAY
Registration Number:	ET1322
Registration Date and Time:	2002-01-04 14:43
Remarks:	MODIFICATION OF EM109875

Nature:	MORTGAGE
Registration Number:	ET60234
Registration Date and Time:	2002-05-31 11:03
Registered Owner:	THE BANK OF NOVA SCOTIA
Remarks:	INTER ALIA AS TO THE MORTGAGE OF SRW EN2815

Nature:	ASSIGNMENT OF RENTS
Registration Number:	ET60235
Registration Date and Time:	2002-05-31 11:03
Registered Owner:	THE BANK OF NOVA SCOTIA
Remarks:	INTER ALIA AS TO SRW EN2815

Nature:	STATUTORY RIGHT OF WAY
Registration Number:	EW7033
Registration Date and Time:	2004-01-20 11:49
Remarks:	MODIFICATION OF EM109875

Nature:	STATUTORY RIGHT OF WAY
Registration Number:	FB15111
Registration Date and Time:	2007-02-15 14:33
Registered Owner:	CITY OF NANAIMO
Remarks:	INTER ALIA CANCELLED AS TO ALL EXCEPT PART IN PLAN VIP84293 BY FB131821 21/12/2007

Nature:	MORTGAGE
Registration Number:	CA2919316
Registration Date and Time:	2012-12-17 12:38
Registered Owner:	COMPUTERSHARE TRUST COMPANY OF CANADA INCORPORATION NO. A-52313
Remarks:	INTER ALIA OF EM109875 EXTENSION OF EV14868

Nature:	ASSIGNMENT OF RENTS
Registration Number:	CA2919317
Registration Date and Time:	2012-12-17 12:38
Registered Owner:	COMPUTERSHARE TRUST COMPANY OF CANADA INCORPORATION NO. A-52313
Remarks:	INTER ALIA OF EM109875 EXTENSION OF EV14869

Nature:	EASEMENT
Registration Number:	CA3049628
Registration Date and Time:	2013-03-27 13:24
Remarks:	PART IN PLAN EPP28939; APPURTENANT TO LOT 1, PLAN 6675, EXCEPT PLANS 19380, 30712 AND EPP27507

Duplicate Indefeasible Title	NONE OUTSTANDING
Transfers	NONE
Pending Applications	NONE

>

*** NO MISC NOTES FOUND

PARCEL IDENTIFIER (PID): 029-036-500

SHORT LEGAL DESCRIPTION:S/EPP27507/////A
MARG:
TAXATION AUTHORITY:
1 CITY OF NANAIMO

FULL LEGAL DESCRIPTION: CURRENT
LOT A SECTION 1 AND PART OF THE BED OF THE PUBLIC HARBOUR OF NANAIMO
NANAIMO DISTRICT PLAN EPP27507

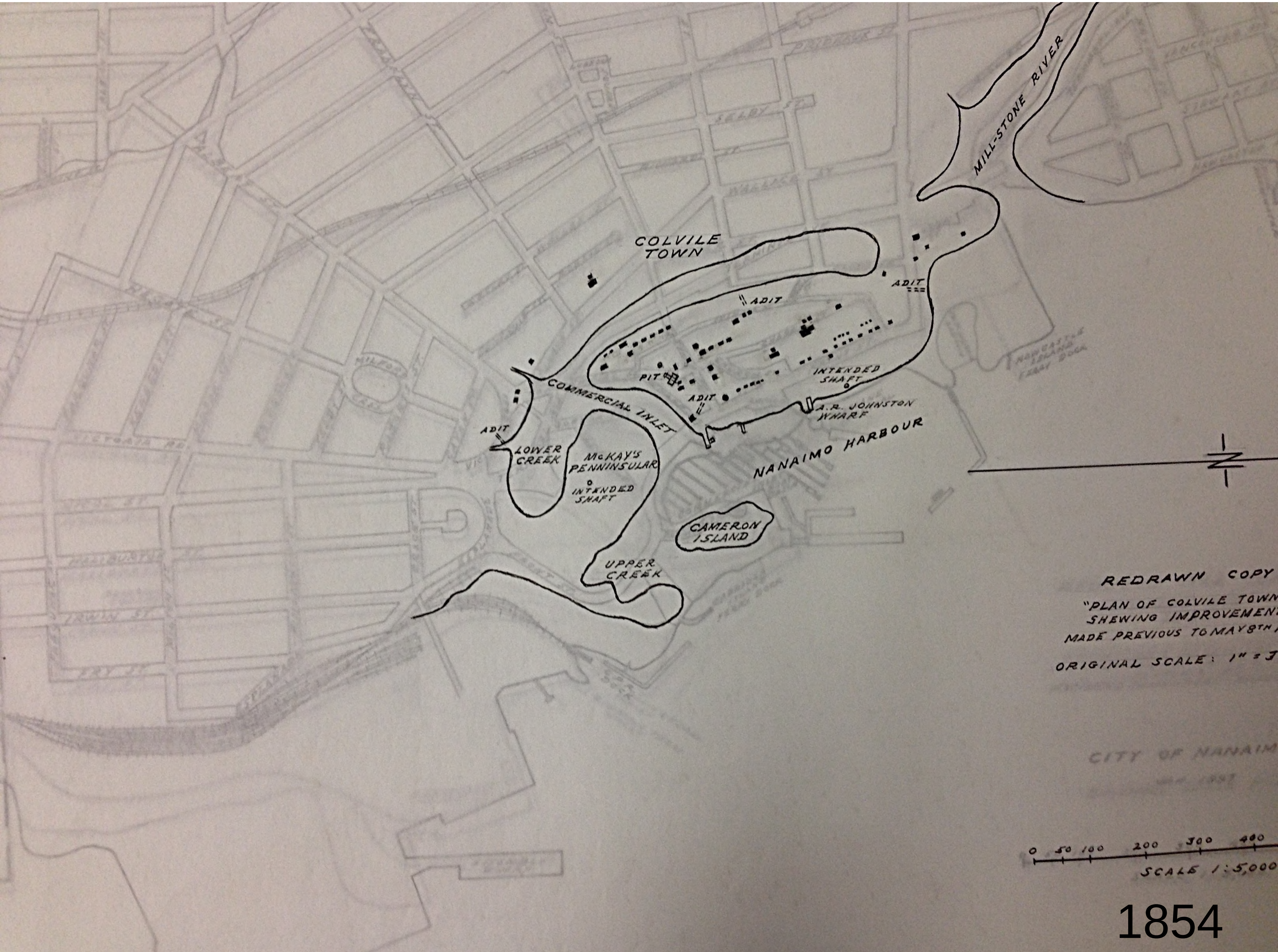
MISCELLANEOUS NOTES:

ASSOCIATED PLAN NUMBERS:
EASEMENT PLAN EPP28939
REFERENCE PLAN EPP27507

AFB/IFB: MN: N PE: 0 SL: 1 TI: 1

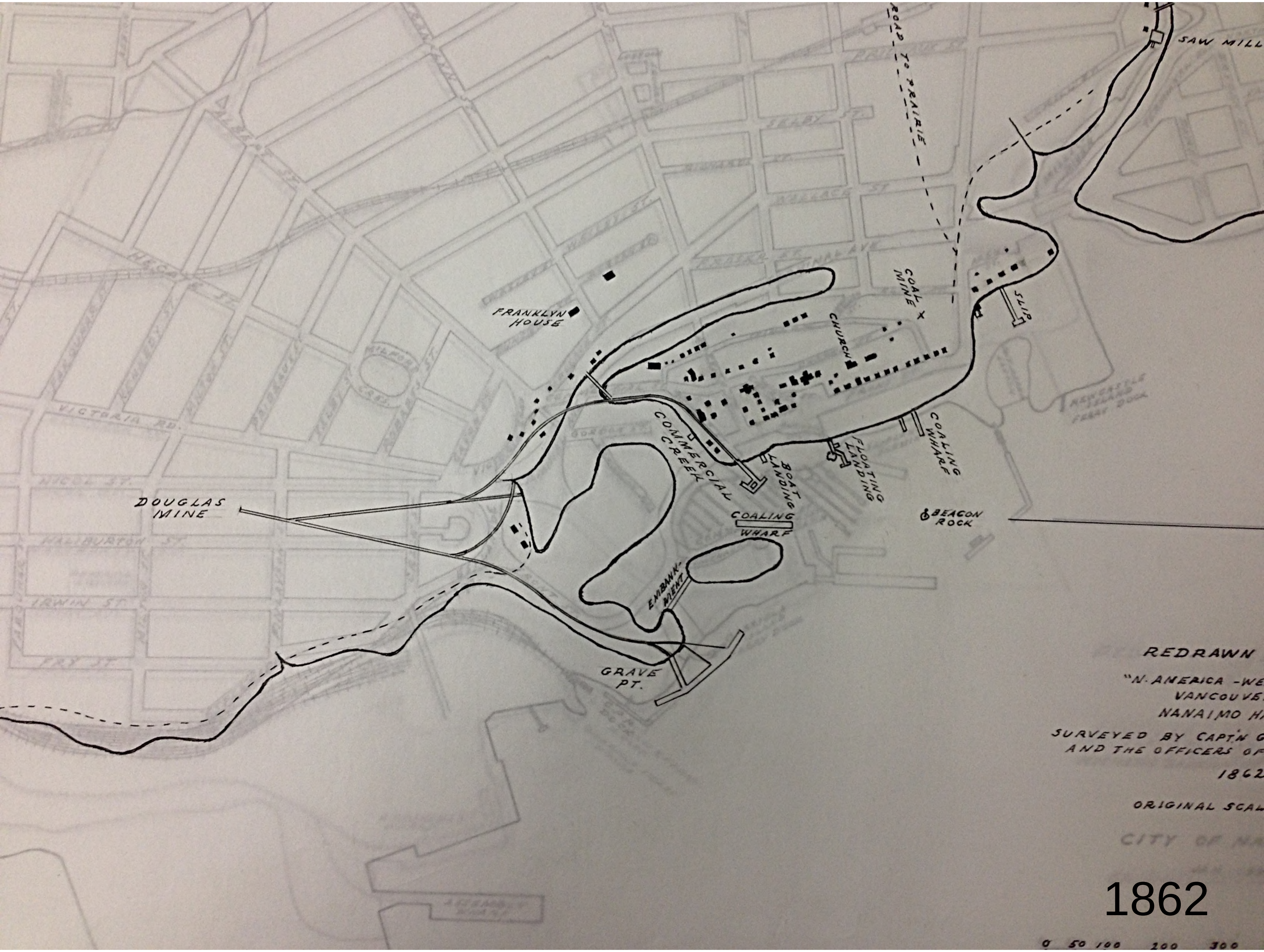
APPENDIX B

HISTORICAL SHORELINE AND INFILLING MAPS – NANAIMO, BC



COLVILE TOWN
MILL-STONE RIVER
ADIT
ADIT
ADIT
ADIT
PIT
INTENDED SHAFT
A.R. JOHNSTON WHARF
COMMERCIAL INLET
LOWER CREEK
McKAY'S PENNINSULAR
INTENDED SHAFT
NANAIMO HARBOUR
CAMERON ISLAND
UPPER CREEK
REDRAWN COPY
"PLAN OF COLVILE TOWN
SHEWING IMPROVEMENT
MADE PREVIOUS TO MAY 8TH
ORIGINAL SCALE: 1" = 3
0 50 100 200 300 400
SCALE 1:5,000

1854



ROAD TO PRAIRIE
SAW MILL
COAL MINE
SLIP
CHURCH
FRANKLYN HOUSE
COMMERCIAL CREEK
BOAT LANDING
FLOATING LANDING
COALING WHARF
DOUGLAS MINE
COALING WHARF
BEACON ROCK
EMBANKMENT
GRAVE PT.
VICTORIA RD.
NICOL ST.
HALIBURTON ST.
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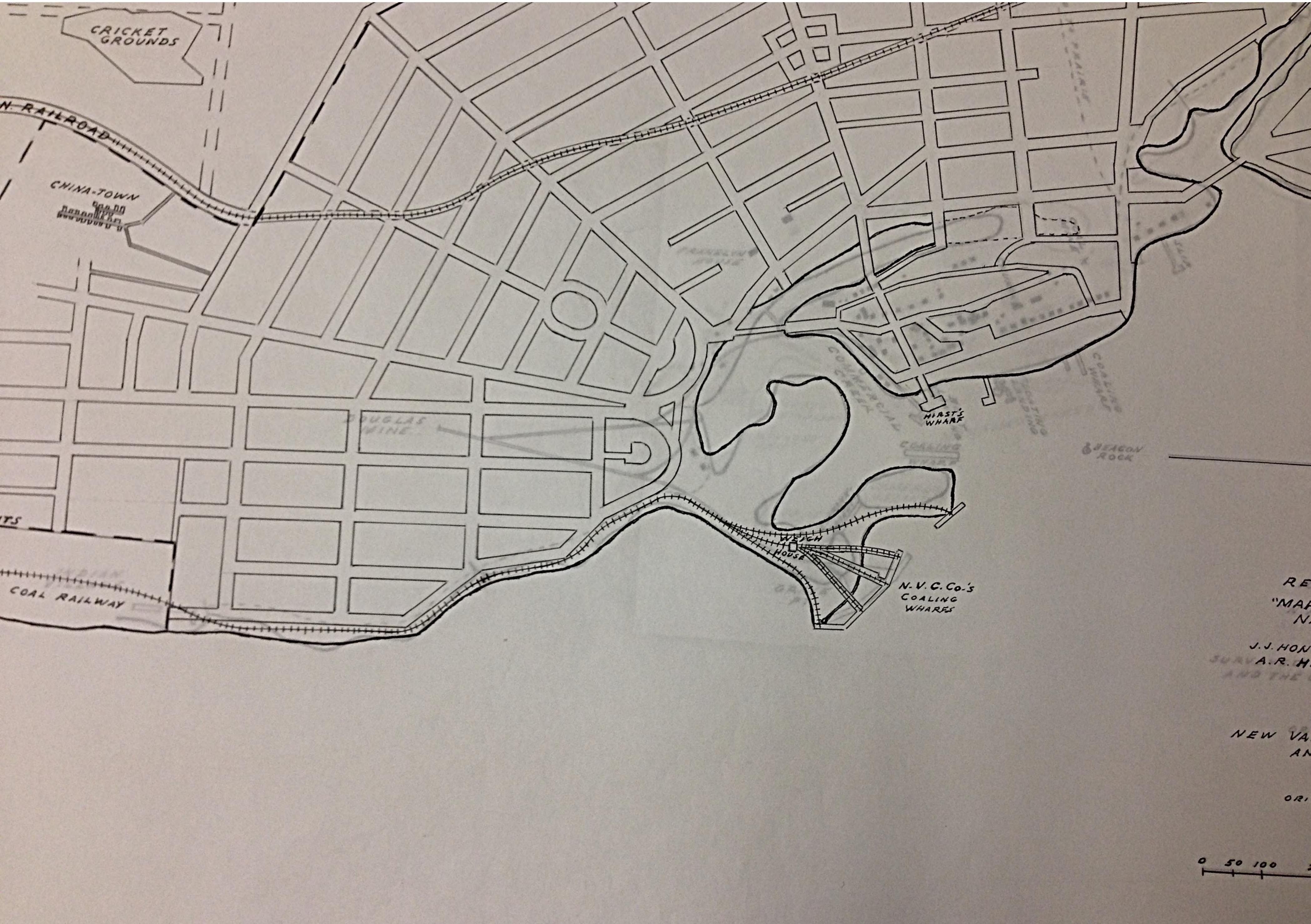
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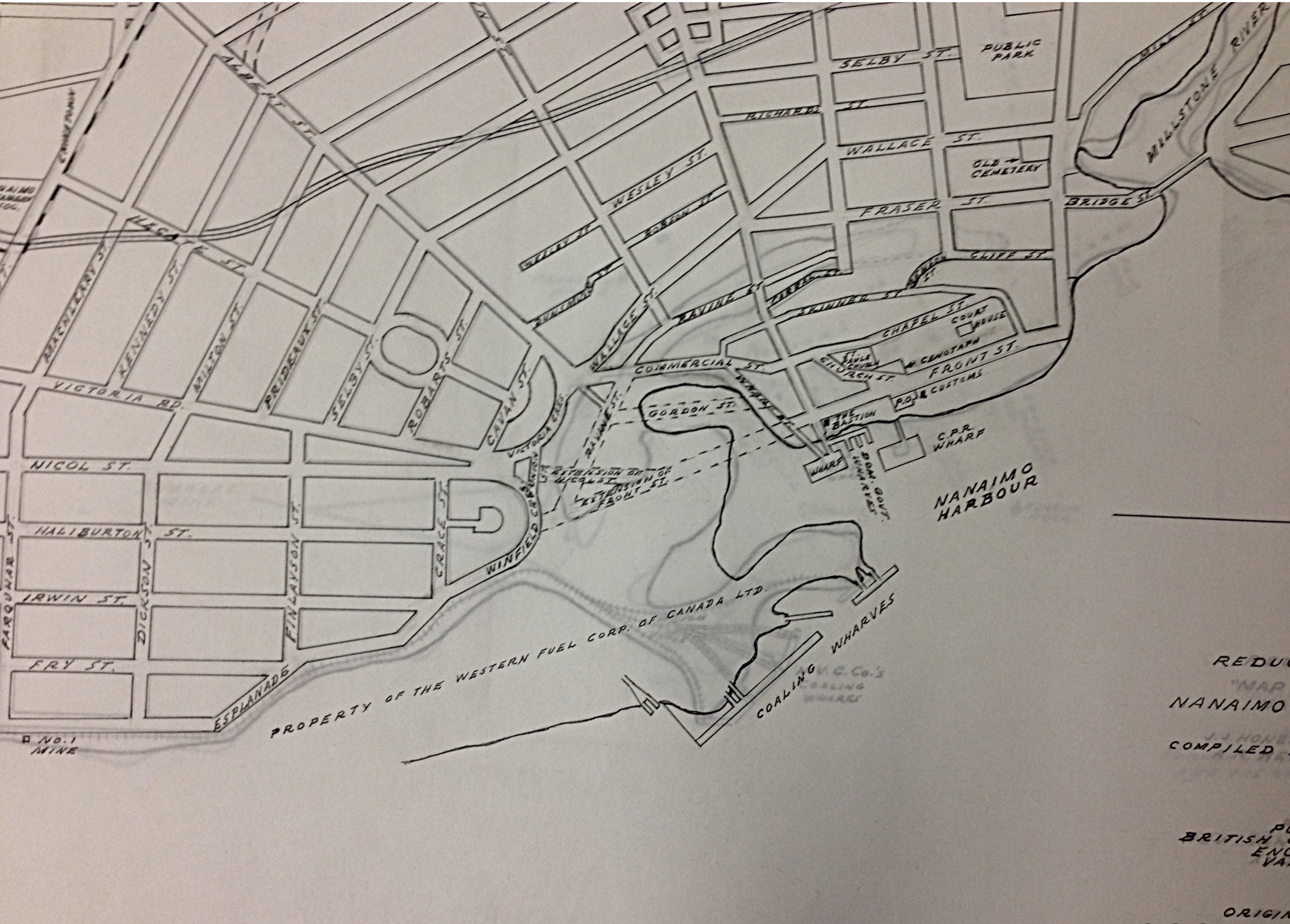
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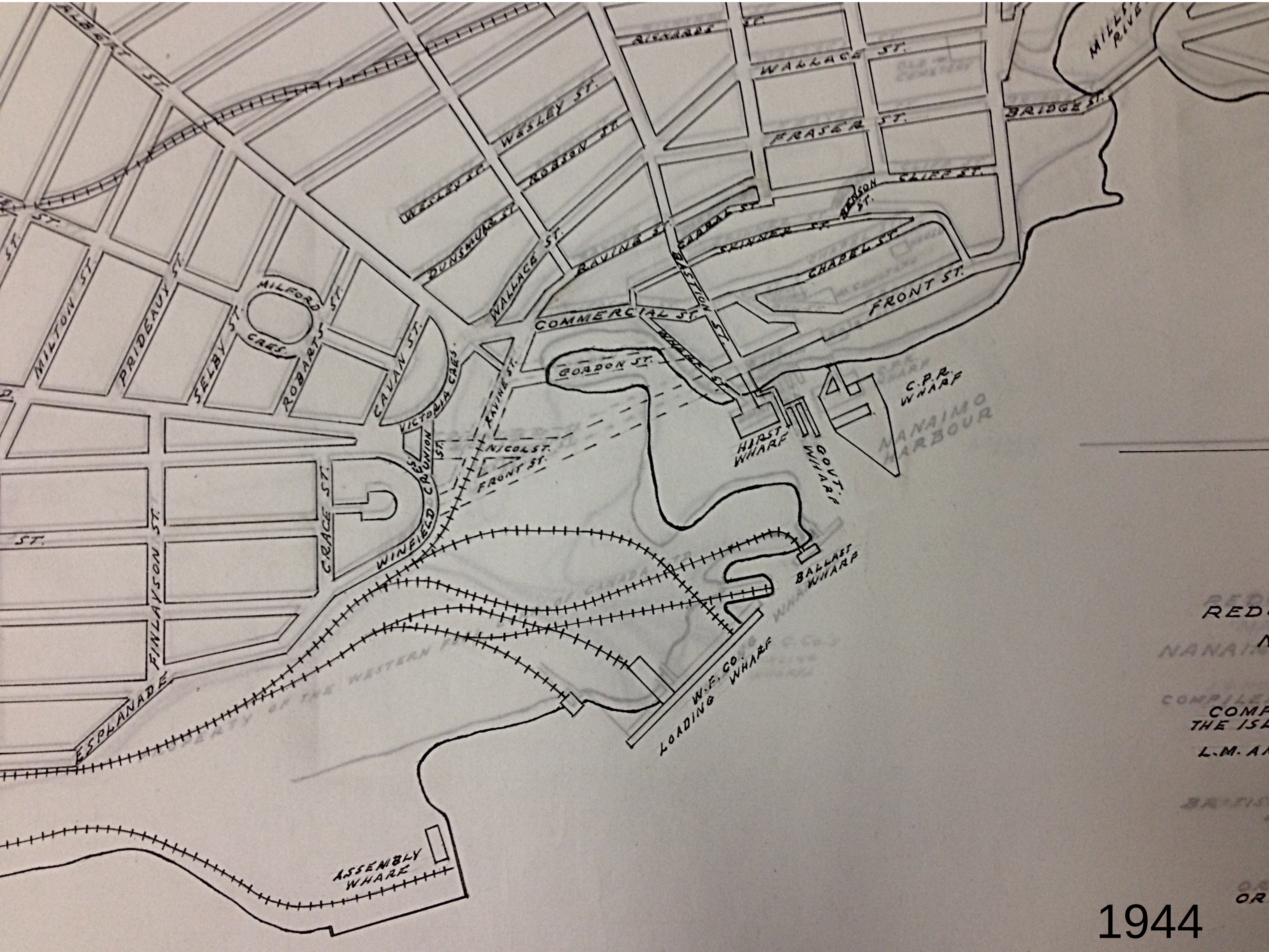
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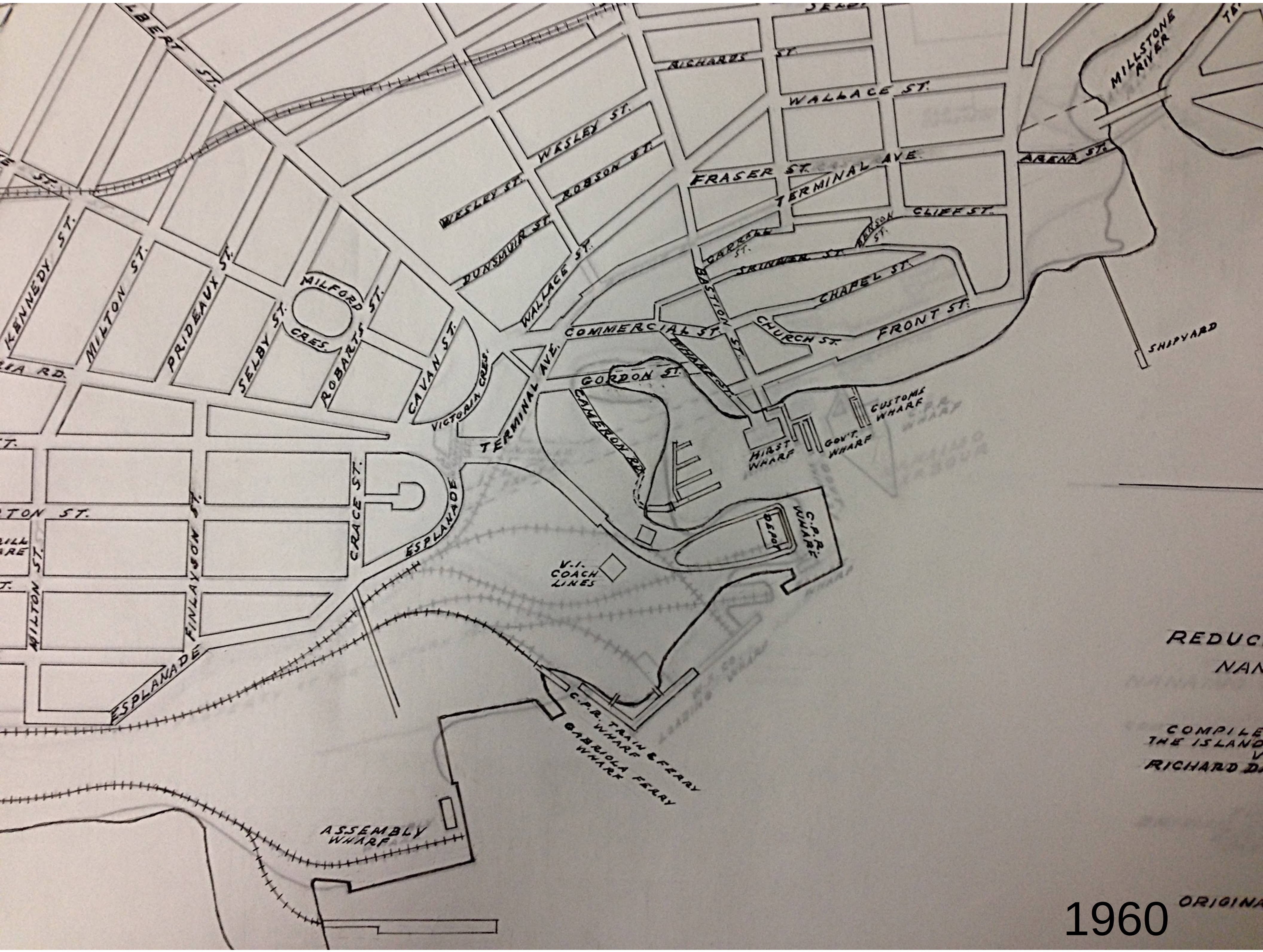
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HIRST WHARF
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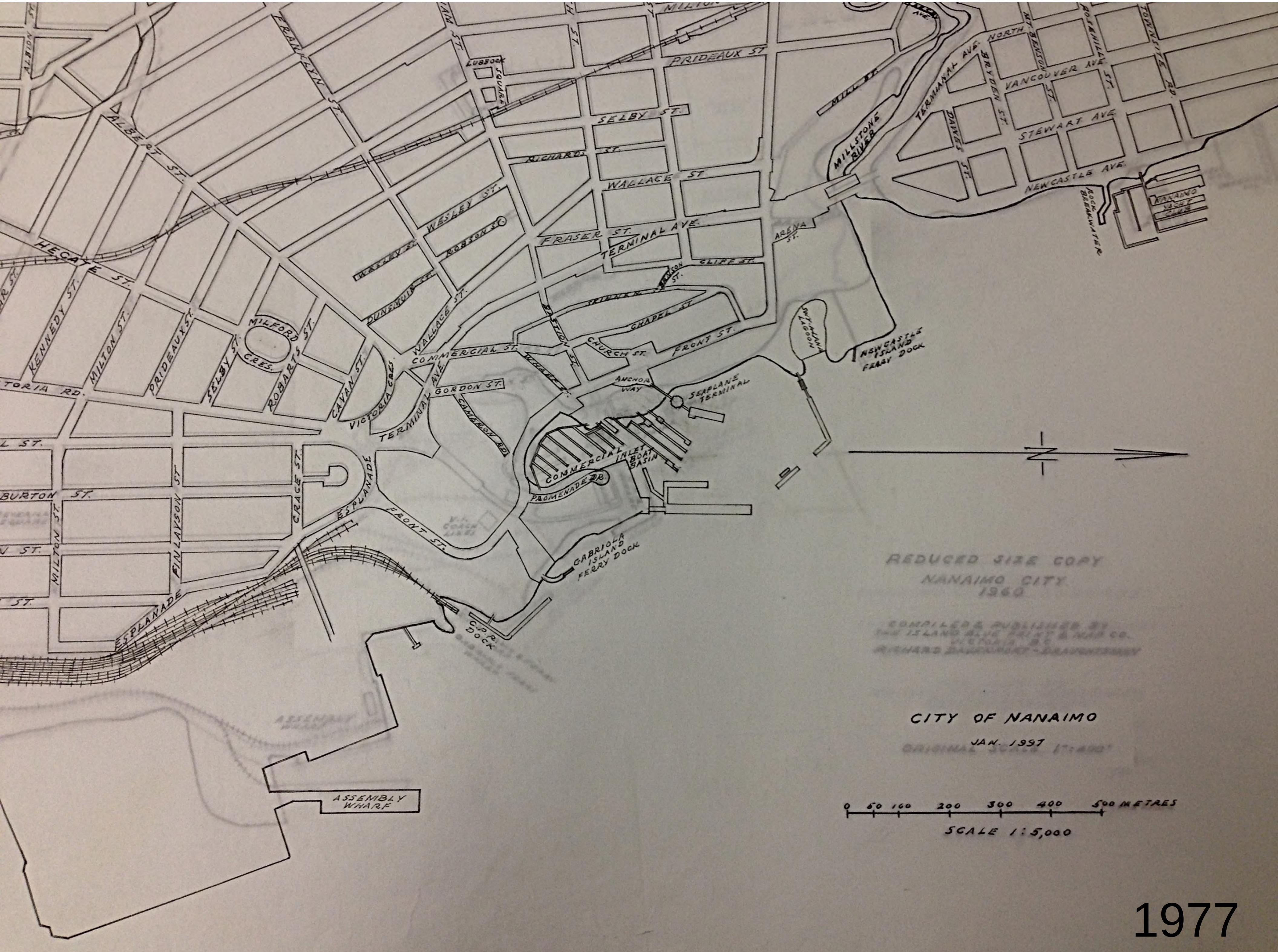
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WALLACE ST.
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MILL ST.
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BRYDEN ST.
VANCOUVER AVE.
STEWART AVE.
NEWCASTLE AVE.
DAWES ST.
ROCK BREAKWATER
NANAIMO YACHT CLUB
ARENA ST.
NEWCASTLE ISLAND FERRY DOCK
ANCHOR WAY
SEAPLANE TERMINAL
COMMERCIAL INLET BOAT BASIN
PROMENADE DR.
GABRIOLA ISLAND FERRY DOCK
C.P.R. DOCK
ASSEMBLY WHARF
FINLAYSON ST.
MILTON ST.
BURTON ST.
VICTORIA RD.

1977

APPENDIX C

BOREHOLE AND MONITORING WELL LOGS

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH/MW02
NANAIMO, BRITISH COLUMBIA	5446081.03N; 432182.76E; Zone 10	ELEVATION: 3.13 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	14MW02	Elevation (m)
0	ASPHALT - (80 mm thick)				Top of casing elevation = 3.04 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		3.0
	SILT (FILL) - sandy, dry, loose, light brown						
	SAND (COAL WASTE FILL) - some silt, trace to some gravel, fine to coarse grained sand, damp to moist, loose, dark brown to black	Disturbed	2-1	●			
1		Disturbed	2-2	●			2.0
2	- sticky, moist to wet	Disturbed	2-3	●			1.0
	SAND - silty, fine grained, saturated, mixed grey and black layers	Disturbed	2-4	●			
3 (▼ Sept22/14)						▼ Sept22/14	0.0
4		Disturbed	2-5	●			-1.0
	END OF BOREHOLE (4.57 metres) water - 2.87 metres below ground level at 17:34 on September 22, 2014 Monitoring well installed to 4.57 metres						
5							-2.0
6							-3.0
7							-4.0
8							-5.0
9							-6.0
10							-7.0
11							-8.0
12							

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 4.57 m
REVIEWED BY: CM	COMPLETE: 14/09/15
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW05
NANAIMO, BRITISH COLUMBIA	5445905.53N; 432182.11E; Zone 10	ELEVATION: 5.29 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	SILT AND SAND (FILL) - trace gravel, fine grained sand, dry, very loose, brown				Top of casing elevation = 6.19 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a steel monument. Pipe stickup = 0.90 metres	5.0
1	SAND (FILL) - homogenous, fine grained, damp, loose, light brown	Disturbed	5-1	●		4.0
2	SILT AND SAND (FILL) - moist, soft, dark brown and black, some wood waste	Disturbed	5-2	●		
	SAND (FILL) - trace gravel, coarse grained sand, damp, pinkish brown					3.0
	SAND (COAL WASTE FILL) - some silt, coarse grained, damp to moist, loose, black	Disturbed	5-3	●		
3						2.0
4		Disturbed	5-4	●		1.0
	SAND AND SILT (FILL) - fine grained, moist, soft, dark brown, wood waste					
5 (▼ Sept22/14)	SAND (FILL) - silty, trace gravel, saturated, soft, black, hydrocarbon odour	Disturbed	5-5	●		0.0 (▼ Sept22/14)
6		Disturbed	5-6	●		-1.0
	SAND - some silt, fine grained, saturated, grey					
7		Disturbed	5-7	●		-2.0
	SILT - organics, saturated, soft, mottled					
	SAND - silty, fine grained, saturated, grey					
8	END OF BOREHOLE (7.62 metres) water - 4.90 metres below ground level at 18:08 on September 22, 2014 Monitoring well installed to 7.62 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)					-3.0
9						-4.0
10						-5.0
11						-6.0
12						

TETRA TECH EBA	LOGGED BY: MG	COMPLETION DEPTH: 7.62 m
	REVIEWED BY: CM	COMPLETE: 14/09/15
	DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW07
NANAIMO, BRITISH COLUMBIA	5445950.46N; 432181.94E; Zone 10	ELEVATION: 4.99 m

SAMPLE TYPE: DISTURBED | NO RECOVERY | SPT | A-CASING | SHELBY TUBE | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | DRILL CUTTINGS | SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	14MW07	Elevation (m)
0	ASPHALT - (70 mm thick) SAND (FILL) - some silt, some gravel, fine to coarse grained sand, damp, medium dense, brown - fine grained sand				Top of casing elevation = 4.93 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
1	SILT AND SAND (FILL) - moist, grey, orange streaks SILT AND SAND (COAL WASTE FILL) - some gravel, fine to medium grained sand, moist, medium dense, black		7-1				4.0
2	- 150 mm gravel seam - black coal						3.0
3			7-2				2.0
4			7-3				1.0
5 (Sept22/14)	GRAVEL (COAL WASTE FILL) - some medium to coarse grained sand, trace coal, small to medium grained gravel, black SAND - silty, fine grained, saturated, grey and brown, trace of seashells		7-4 7-5				0.0 (Sept22/14)
6	SILT - some fine grained sand, trace organics, moist to wet, soft, brown, rotting marine odour END OF BOREHOLE (6.10 metres) water - 4.57 metres below ground level at 18:04 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-1.0
7							-2.0
8							-3.0
9							-4.0
10							-5.0
11							-6.0
12							-7.0

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/17
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW08
NANAIMO, BRITISH COLUMBIA	5445929.4N; 432193.96E; Zone 10	ELEVATION: 4.88 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	14MW08	Elevation (m)
0	SILT (FILL) - some gravel, damp, soft, brown (150 mm thick)				Top of casing elevation = 4.80 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
	SAND (FILL) - homogenous, fine grained, damp, loose, light brown (250 mm thick)						
	SILT AND SAND (COAL WASTE FILL) - trace gravel, trace organics, fine to coarse grained sand, damp to moist, brown and black	Disturbed	8-1				4.0
1							
2		Disturbed	8-2				3.0
3	- trace to some gravel						2.0
4		Disturbed	8-3				1.0
	- moist to wet						
5 (Sept22/14)	SAND - some gravel, medium to coarse grained sand, saturated, loose, brown	Disturbed	8-4				0.0 (Sept22/14)
	- some silt, fine grained sand, grey, some broken seashells	Disturbed	8-5				
6	SILT - saturated, soft, light brown						-1.0
	END OF BOREHOLE (6.10 metres) water - 4.49 metres below ground level at 19:53 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						
7							-2.0
8							-3.0
9							-4.0
10							-5.0
11							-6.0
12							-7.0

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/16
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW10A
NANAIMO, BRITISH COLUMBIA	5445715.71N; 432352.17E; Zone 10	ELEVATION: 4.17 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	NOTES & COMMENTS	14MW10A	Elevation (m)
0	SILT (FILL) - sandy, some gravel, damp, soft, brown		Top of casing elevation = 4.13 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4.0
1	SAND (FILL) - fine to medium grained, damp, loose, brown, strong solvent odour				3.0
2	- some silt, damp to moist, medium dense, mixed crushed seashells, solvent odour				2.0
3	- trace crushed seashells				1.0
4 (Sept22/14)	- homogenous, moist to wet, no visible seashells - larger broken shells			Sept22/14	0.0
5	SILT - some organics, saturated, soft, black, less odour SILT AND SAND - some gravel, fine to coarse grained sand, saturated, black				-1.0
6	END OF BOREHOLE (6.10 metres) water - 3.78 metres below ground level at 17:54 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)				-2.0
7					-3.0
8					-4.0
9					-5.0
10					-6.0
11					-7.0
12					

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/17
DRAWING NO:	Page 1 of 1

ENVIRONMENTAL ENVIND03511-01-003.GPJ EBA.GDT 14/10/23

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH/MW11
NANAIMO, BRITISH COLUMBIA	5445749.59N; 432341.26E; Zone 10	ELEVATION: 4.16 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	SILT (FILL) - sandy, some gravel, fine to coarse grained sand, damp, soft, brown (300 mm thick)			Top of casing elevation = 4.05 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.	4.0
	SAND (FILL) - some silt, homogenous, very fine grained, damp, dark grey	11-1			
1	- trace silt, medium dense, light brown and grey, orange streaks	11-2			3.0
	SILT (FILL) - trace fine grained sand, moist, soft, brown				
2	SAND (FILL) - trace silt, homogenous, fine grained, damp, loose, brown, broken seashells	11-3			2.0
3					1.0
4 (Sept22/14)	- moist, medium dense, grey, no visible seashells	11-4			0.0 (Sept22/14)
	SILT - gravelly, some sand, saturated, soft, dark brown to black	11-5			
5		11-6			-1.0
6	END OF BOREHOLE (6.10 metres) water - 3.77 metres below ground level at 17:43 on September 22, 2014 Monitoring well installed to 6.10 metres				-2.0
7					-3.0
8					-4.0
9					-5.0
10					-6.0
11					-7.0
12					

Well: 14MW11

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/17
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH/MW12
NANAIMO, BRITISH COLUMBIA	5445730.98N; 432341.76E; Zone 10	ELEVATION: 4.15 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	14MW12	Elevation (m)
0	SAND AND GRAVEL (FILL) - some silt, fine to coarse grained sand, damp, loose, brown (250 mm thick)				Top of casing elevation = 4.06 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4.0
	SAND (FILL) - fine to medium grained, damp, medium dense, brown, some crushed seashells	Disturbed	12-1	●			
1	- trace silt, homogenous, fine grained, damp, occasional orange streak						3.0
		Disturbed	12-2	●			
	SILT (FILL) - some very fine grained sand, moist, soft, grey and brown						
2	SAND (FILL) - trace silt, homogenous, fine grained, damp, medium dense, grey						2.0
		Disturbed	12-3	●			
3							1.0
Sept22/14 ▼	- moist to wet						▼ Sept22/14
4		Disturbed	12-4	●			0.0
	- silty - trace silt, saturated						
5	SILT - sandy, trace gravel, saturated, dark brown, trace broken seashells						-1.0
		Disturbed	12-5	●			
6	END OF BOREHOLE (6.10 metres) water - 3.73 metres below ground level at 17:49 on September 22, 2014 Monitoring well installed to 5.89 metres						-2.0
7							-3.0
8							-4.0
9							-5.0
10							-6.0
11							-7.0
12							

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/17
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH/MW13
NANAIMO, BRITISH COLUMBIA	5445821.13N; 432312.8E; Zone 10	ELEVATION: 4.33 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	14MW13	Elevation (m)
0	SAND AND GRAVEL (FILL) - some silt, fine to coarse grained sand, damp, loose, brown				Top of casing elevation = 4.25 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		4.0
	SAND (COAL WASTE FILL) - some silt, trace gravel, damp, medium dense, black and brown		13-1				
1	SAND (FILL) - homogenous, fine grained, damp, medium dense, brown - trace to some silt, dry, loose, grey and brown, some crushed seashells - fine to medium grained, damp, medium dense, brown		13-2				3.0
2							2.0
	SILT (FILL) - trace to some fine grained sand, moist, soft, dark grey, grey sand lenses, trace broken shells		13-3				
3	SAND - homogenous, fine to medium grained, moist, medium dense, dark grey		13-4				1.0
4 (Sept22/14)	SILT - some very fine grained sand, moist to saturated, soft, brown and grey						0.0 (Sept22/14)
5	GRAVEL - some sand, some silt, saturated, dark brown		13-5				-1.0
6	SILT - trace to some sand, moist to wet, soft, dark grey						-2.0
	END OF BOREHOLE (6.10 metres) water - 3.91 metres below ground level at 17:38 on September 22, 2014 Monitoring well installed to 6.10 metres						
7							-3.0
8							-4.0
9							-5.0
10							-6.0
11							-7.0
12							

TETRA TECH EBA	LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
	REVIEWED BY: CM	COMPLETE: 14/09/17
	DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW14
NANAIMO, BRITISH COLUMBIA	5445643.94N; 432370.32E; Zone 10	ELEVATION: 4.71 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	14MW14	Elevation (m)
0	SAND (FILL) - some silt, some gravel, fine to coarse grained sand, dry, loose, dark brown, mottled, broken brick inclusions	Disturbed	14-1	●	Top of casing elevation = 4.58 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
	- homogenous, fine grained sand, damp, light brown						4.0
1		Disturbed	14-2	●			
							3.0
2	- trace broken seashells						
	SILT (FILL) - some fine grained sand, moist, soft, grey, wood waste inclusions, thin sand lenses	Disturbed	14-3	●			2.0
3							
	SAND AND SILT (COAL WASTE FILL) - trace gravel, moist, dense, black	Disturbed	14-4	●			1.0
4	SAND - silty, homogenous, moist, medium dense, brown						
	- some silt, saturated, grey						
Sept22/14	SILT - sandy, trace of gravel, saturated, soft, dark brown					Sept22/14	0.0
5		Disturbed	14-5	●			
							-1.0
6	GRAVEL - silty, some sand, saturated, dark brown						
	END OF BOREHOLE (6.10 metres) water - 4.32 metres below ground level at 17:58 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						
7							-2.0
8							-3.0
9							-4.0
10							-5.0
11							-6.0
12							-7.0

TETRA TECH EBA

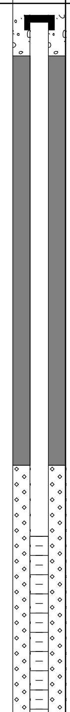
LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/18
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW15
NANAIMO, BRITISH COLUMBIA	5445609.83N; 432379.32E; Zone 10	ELEVATION: 4.85 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	14MW15	Elevation (m)
0	SAND AND GRAVEL (FILL) - some silt, fine to coarse grained sand, dry, loose, brown (280 mm thick)				Top of casing elevation = 4.75 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
	SAND (FILL) - some silt, fine grained, damp, brown						
	SAND (COAL WASTE FILL) - some silt, trace gravel, fine to coarse grained sand, damp, black	Disturbed	15-1	●			4.0
1							
2							3.0
	- silty, moist	Disturbed	15-2	●			2.0
3	SAND (FILL) - some silt, some gravel, trace coal, medium to coarse grained sand, dense, brown and black	Disturbed	15-3	●			
4							1.0
	SILT AND SAND - trace to some gravel, saturated, dark brown	Disturbed	15-4	●			
5	▼ Sept22/14					▼ Sept22/14	0.0
6		Disturbed	15-5	●			-1.0
	END OF BOREHOLE (6.10 metres) water - 4.48 metres below ground level at 18:01 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						
7							-2.0
8							-3.0
9							-4.0
10							-5.0
11							-6.0
12							-7.0



TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/18
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW16
NANAIMO, BRITISH COLUMBIA	5445627.18N; 432377.88E; Zone 10	ELEVATION: 4.82 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	14MW16	Elevation (m)
0	SILT AND SAND (COAL WASTE FILL) - gravelly, fine to coarse grained sand, damp, wood, crushed brick and sawdust				Top of casing elevation = 4.66 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
1		Disturbed	16-1				4.0
2		Disturbed	16-2				3.0
3	SAND (FILL) - gravelly, coarse grained sand, moist, loose, mixed broken seashells and broken brick	Disturbed	16-3				2.0
	SILT (FILL) - sandy, some gravel, trace coal, moist to wet, soft, black						
4	SILT - sandy, trace gravel, saturated, soft, dark brown	Disturbed	16-4				1.0
5 (Sept22/14)		Disturbed	16-5			Sept22/14	0.0
6	END OF BOREHOLE (6.10 metres) water - 4.45 metres below ground level at 18:01 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-1.0
7							-2.0
8							-3.0
9							-4.0
10							-5.0
11							-6.0
12							-7.0

TETRA TECH EBA

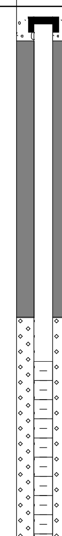
LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/18
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW19
NANAIMO, BRITISH COLUMBIA	5446110.68N; 432216.69E; Zone 10	ELEVATION: 2.6 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	14MW19	Elevation (m)
0	ASPHALT - (80 mm thick)				Top of casing elevation = 2.51 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
	SILT (FILL) - sandy, trace gravel, fine grained sand, damp, soft, light brown and brown						2.0
1		Disturbed	19-1	●			
		Disturbed	19-2	●			1.0
2	SAND (COAL WASTE FILL) - silty, fine to medium grained, moist, loose, black	Disturbed	19-3	●			
Sept22/14							0.0 Sept22/14
	SAND - trace to some gravel, coarse grained sand, saturated, dark brown						
3							-1.0
4		Disturbed	19-4	●			
	END OF BOREHOLE (4.57 metres) water - 2.33 metres below ground level at 17:26 on September 22, 2014 Monitoring well installed to 4.57 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-2.0
5							-3.0
6							-4.0
7							-5.0
8							-6.0
9							-7.0
10							-8.0
11							-9.0
12							



TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 4.57 m
REVIEWED BY: CM	COMPLETE: 14/09/15
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW21
NANAIMO, BRITISH COLUMBIA	5446064.11N; 432130.16E; Zone 10	ELEVATION: 3.47 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	14MW21	Elevation (m)
0	SILT, SAND AND GRAVEL (FILL) - dry, loose, brown, (300 mm thick)				Top of casing elevation = 3.26 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
	SAND (COAL WASTE FILL) - silty, trace gravel, fine to coarse grained sand, damp, medium dense, brown, black and orange specks, trace coal waste	Disturbed	21-1	●			3.0
1							
		Disturbed	21-2	●			2.0
2	- some silt, some gravel, black, trace crushed brick						
		Disturbed	21-3	●			1.0
3							
Sept22/14 ▼	SAND (FILL) - silty, coarse grained, saturated, soft, dark brown						▼ Sept22/14 0.0
	SAND - some silt, fine grained, saturated, medium dense, light brown						
4		Disturbed	21-4	●			
	- trace silt, grey						-1.0
5	END OF BOREHOLE (5.03 metres) water - 3.29 metres below grade level at 17:39 on September 22, 2014 Monitoring well installed to 4.88 metres Note: Stopped due to auger refusal on probable bedrock. Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						-2.0
6							
							-3.0
7							
							-4.0
8							
							-5.0
9							
							-6.0
10							
							-7.0
11							
							-8.0
12							

TETRA TECH EBA	LOGGED BY: MG	COMPLETION DEPTH: 5.03 m
	REVIEWED BY: CM	COMPLETE: 14/09/19
	DRAWING NO:	Page 1 of 1

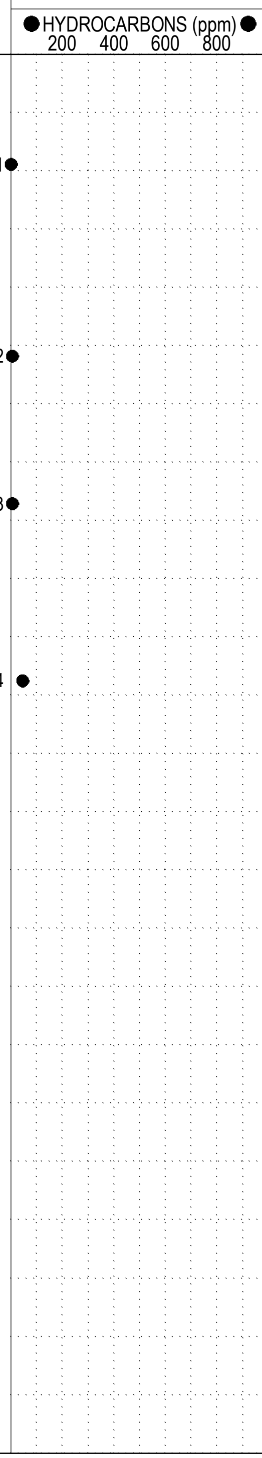
DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW23
NANAIMO, BRITISH COLUMBIA	5446235.48N; 432184.81E; Zone 10	ELEVATION: 4.53 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

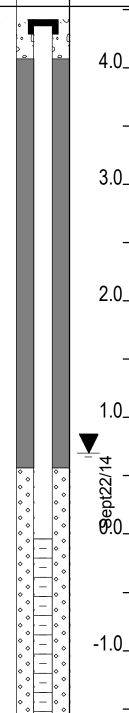
BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	NOTES & COMMENTS
0	SILT (COAL WASTE FILL) - sandy, some gravel, damp, mottled, trace coal waste, crushed bricks			Top of casing elevation = 4.43 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.
1		Disturbed	23-1	
2	SAND (COAL WASTE FILL) - gravelly, trace to some silt, trace coal, damp, medium dense, brown and black - loose, brown			
3		Disturbed	23-2	
3	SAND AND SILT (FILL) - some gravel, fine to coarse grained sand, damp, medium dense, dark brown			
4 (Sept22/14)	SAND (FILL) - silty, some gravel, moist to wet, dark brown	Disturbed	23-3	
5	SILT - some sand, trace gravel, saturated, stiff, brown	Disturbed	23-4	
6	SAND - some silt, trace to some gravel, saturated, dark brown			
6.10	END OF BOREHOLE (6.10 metres) water - 3.83 metres below grade level at 17:21 on September 22, 2014 Monitoring well installed to 6.10 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)			

HYDROCARBONS (ppm)



14MW23



Elevation (m): 4.0, 3.0, 2.0, 1.0, 0.0, -1.0, -2.0, -3.0, -4.0, -5.0, -6.0, -7.0

Depth (m): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/19
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM (WITH HOLLOW STEM REAM)	ENVIND03511-01.003-14BH/MW25
NANAIMO, BRITISH COLUMBIA	5446042.42N; 432247.47E; Zone 10	ELEVATION: 3.89 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	14MW25	Elevation (m)
0	SILT (FILL) - sandy, some gravel, dry, very loose, light brown				Top of casing elevation = 3.84 metres Monitoring well was set in a cement mixture at surface. Well was completed with 51 mm diameter PVC pipe, 10 slot (0.010") screen, end cap at the bottom, J-Plug at the top and is set inside a road box.		
	ORGANICS (FILL) - silty, damp, soft, black, mixed with sand, wood waste						
1		DISTURBED	25-1	●			3.0
	SILT AND SAND (COAL WASTE FILL) - some gravel, trace coal, moist, medium dense, black and brown, trace wood waste						
2		DISTURBED	25-2	●			2.0
	SILT (FILL) - gravelly, some sand, dry, dense, light brown						
	SAND AND SILT (FILL) - gravelly, damp to moist, dense, brown						
3		DISTURBED	25-3	●			1.0
Sept22/14	SAND - gravelly, some silt, saturated, dark brown					Sept22/14	
4		DISTURBED	25-4	●			0.0
5							-1.0
6		DISTURBED	25-5	●			-2.0
	END OF BOREHOLE (6.10 metres) slough - 5.49 metres at 0 hrs. water - 3.57 metres below ground level at 17:19 on September 22, 2014 Monitoring well installed to 5.49 metres Note: All samples were collected from solid stem auger flight (no split spoon samples or SPT blow counts)						
7							-3.0
8							-4.0
9							-5.0
10							-6.0
11							-7.0
12							-8.0

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/18
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH01
NANAIMO, BRITISH COLUMBIA	5446105.67N; 432176.21E; Zone 10	ELEVATION: 2.94 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	ASPHALT - (90 mm thick)					
	SAND (FILL) - some gravel, fine to medium grained sand, damp, very loose, dark brown to black	DISTURBED	1-1	●		
1						2.0
	- fine to coarse grained sand, damp to moist, black, coal fragments	DISTURBED	1-2	●		
2						1.0
		DISTURBED	1-3	●		
3	GRAVEL (FILL) - sandy, trace silt, medium grained gravel, saturated, medium dense, brown to black					0.0
4		DISTURBED	1-4	●		-1.0
5						-2.0
	SAND - silty, fine grained, saturated, grey	DISTURBED	1-5	●		
6						-3.0
	END OF BOREHOLE (6.10 metres)					
7						-4.0
8						-5.0
9						-6.0
10						-7.0
11						-8.0
12						-9.0

TETRA TECH EBA

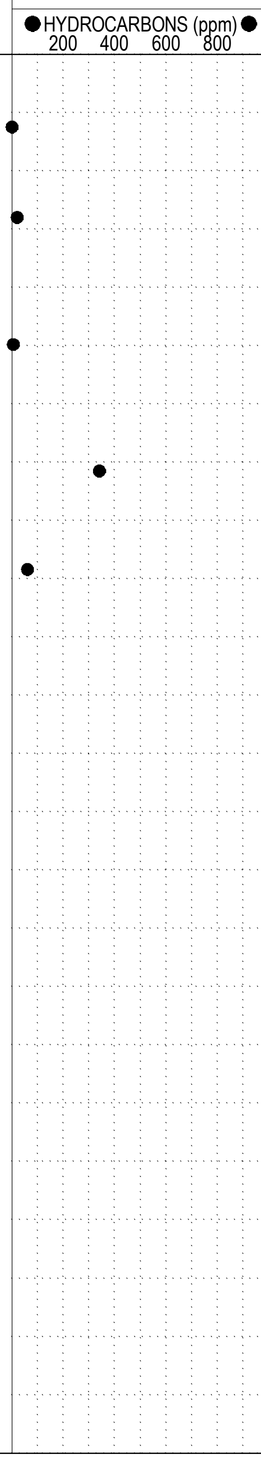
LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/15
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH03
NANAIMO, BRITISH COLUMBIA	5446074.67N; 432155.97E; Zone 10	ELEVATION: 3.26 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	NOTES & COMMENTS	Elevation (m)
0	ASPHALT - (135 mm thick)				3.0
	SAND (FILL) - silty, some gravel, fine to coarse grained sand, dry, loose, brown				
	SAND (COAL WASTE FILL) - silty, trace gravel, fine to coarse grained sand, damp, medium dense, black and brown	Disturbed	3-1		
1	- increased coal content	Disturbed	3-2		2.0
2					1.0
	SILT (FILL) - sandy, some small gravel, fine grained sand, moist, soft, black	Disturbed	3-3		
3	SAND - gravelly, coarse grained sand, saturated, loose, dark brown - silty, fine grained sand, soft, light brown and grey	Disturbed	3-4		0.0
4	SILT - trace organics, moist to wet, soft, grey and brown	Disturbed	3-5		-1.0
	END OF BOREHOLE (4.65 metres)				
5					-2.0
6					-3.0
7					-4.0
8					-5.0
9					-6.0
10					-7.0
11					-8.0
12					



TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 4.65 m
REVIEWED BY: CM	COMPLETE: 14/09/16
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH04
NANAIMO, BRITISH COLUMBIA	5446098.89N; 432150.81E; Zone 10	ELEVATION: 3.51 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	SILT (FILL) - some sand, trace gravel, dry, loose, brown, trace roots					
		DISTURBED	4-1	●		3.0
1	SAND (COAL WASTE FILL) - some silt to silty, trace gravel, damp to moist, loose, brown and black	DISTURBED	4-2	●		
						2.0
2						
		DISTURBED	4-3	●		1.0
3	- moist					
	SAND AND GRAVEL (COAL WASTE FILL) - fine to coarse gained, moist to wet, black					0.0
	SAND - trace silt, homogeneous, fine grained, moist to wet, grey and light brown	DISTURBED	4-4	●		
4						
						-1.0
	END OF BOREHOLE (4.57 metres)					
5						
						-2.0
6						
						-3.0
7						
						-4.0
8						
						-5.0
9						
						-6.0
10						
						-7.0
11						
						-8.0
12						

TETRA TECH EBA	LOGGED BY: MG	COMPLETION DEPTH: 4.57 m
	REVIEWED BY: CM	COMPLETE: 14/09/16
	DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH06
NANAIMO, BRITISH COLUMBIA	5445926.18N; 432160.47E; Zone 10	ELEVATION: 5.01 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	SAND (FILL) - trace silt, homogenous, fine grained, damp, loose, brown					5.0
1	SILT (FILL) - trace fine grained sand, damp, soft, brown					4.0
	SAND (COAL WASTE FILL) - trace to some silt, trace gravel, damp, medium dense, black, mottled	DISTURBED	6-1	●		
2		DISTURBED	6-2	●		3.0
	- mixed wood waste					
3						2.0
4	- piece of wood - hydrocarbon odour - cobble	DISTURBED	6-3	●		1.0
5	GRAVEL (FILL) - sandy, medium to coarse grained gravel, saturated, loose, black and grey, hydrocarbon odour	DISTURBED	6-4	●		0.0
6	SAND - silty, fine grained, saturated, soft, dark grey, hydrocarbon odour	DISTURBED	6-5	●		-1.0
7		DISTURBED	6-6	●		-2.0
8	END OF BOREHOLE (7.62 metres)					-3.0
9						-4.0
10						-5.0
11						-6.0
12						

TETRA TECH EBA	LOGGED BY: MG	COMPLETION DEPTH: 7.62 m
	REVIEWED BY: CM	COMPLETE: 14/09/17
	DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH09
NANAIMO, BRITISH COLUMBIA	5445897.73N; 432165.14E; Zone 10	ELEVATION: 5.42 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	SAND (FILL) - some silt, some gravel, some cobbles, dry, very loose, brown					5.0
1	SAND (COAL WASTE FILL) - some silt, trace gravel, fine grained sand, damp, loose, brown and black		9-1	●		4.0
2	- mixed ash layer for 150 mm		9-2	●		3.0
3	SAND (FILL) - some silt, trace of gravel, fine to medium grained sand, damp, brown					
	SILT (COAL WASTE FILL) - some sand, trace gravel, moist, soft, black					2.0
4	SAND (COAL WASTE FILL) - coarse grained, moist, black		9-3	●		1.0
5			9-4	●		
	- strong hydrocarbon odour		9-5	●		0.0
6						-1.0
7	SAND AND SILT (COAL WASTE FILL) - trace gravel and coal, sticky, saturated, dark brown, hydrocarbon odour		9-6	●		
	- slight hydrocarbon odour to 8.53 metres					-2.0
8			9-7	●		-3.0
9	SILT - some fine grained sand, saturated, dark brown and grey		9-8	●		
	END OF BOREHOLE (9.14 metres)					-4.0
10						-5.0
11						-6.0
12						

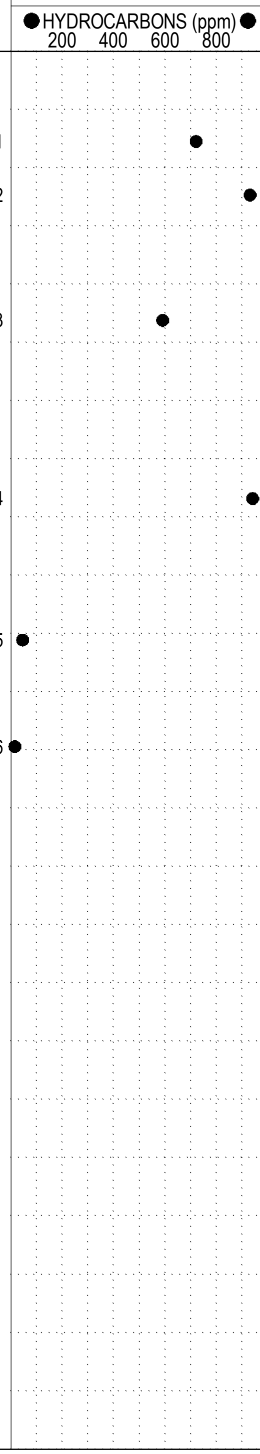
TETRA TECH EBA	LOGGED BY: MG	COMPLETION DEPTH: 9.14 m
	REVIEWED BY: CM	COMPLETE: 14/09/16
	DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH10
NANAIMO, BRITISH COLUMBIA	5445713.51N; 432353.27E; Zone 10	ELEVATION: 4.19 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	NOTES & COMMENTS	Elevation (m)
0	SILT (FILL) - sandy, some gravel, damp, soft, brown				4.0
1		DISTURBED	10-1		
	SAND (FILL) - fine to medium grained, damp, loose, brown, strong solvent odour	DISTURBED	10-2		3.0
	- some silt, damp to moist, medium dense, mixed crushed seashells, solvent odour				
2					2.0
		DISTURBED	10-3		
3	- trace crushed seashells				1.0
4	- homogenous, moist to wet, no visible seashells	DISTURBED	10-4		
	- larger broken shells				0.0
5		DISTURBED	10-5		-1.0
	SILT - some organics, saturated, soft, black, less odour				
	SILT AND SAND - some gravel, fine to coarse grained sand, saturated, black				
6		DISTURBED	10-6		-2.0
	END OF BOREHOLE (6.10 metres)				
7					-3.0
8					-4.0
9					-5.0
10					-6.0
11					-7.0
12					



TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/17
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH17
NANAIMO, BRITISH COLUMBIA	5446130.16N; 432197.01E; Zone 10	ELEVATION: 2.82 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	ASPHALT - (75 mm thick)					
	SILT (COAL WASTE FILL) - sandy, some gravel, soft, mottled					
		Disturbed	17-1	●		2.0
1		Disturbed	17-2	●		
2	SAND (COAL WASTE FILL) - trace to some silt, trace gravel, fine grained sand, moist, medium dense, black					1.0
	SAND (FILL) - silty, some gravel, saturated, medium dense, dark brown to black	Disturbed	17-3	●		0.0
3						
4	SAND - trace gravel, trace silt, medium grained sand, saturated, loose	Disturbed	17-4	●		-1.0
5	SAND AND GRAVEL - trace silt, saturated, loose, dark brown					-2.0
6		Disturbed	17-5			-3.0
	END OF BOREHOLE (6.10 metres)					
7						-4.0
8						-5.0
9						-6.0
10						-7.0
11						-8.0
12						-9.0

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/15
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH18
NANAIMO, BRITISH COLUMBIA	5446135.48N; 432224.72E; Zone 10	ELEVATION: 2.61 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	SAND (FILL) - some silt, fine grained, dry, loose, light brown (150 mm thick)					
	SAND AND SILT (COAL WASTE FILL) - moist, loose, black, coal fragments					
		DISTURBED	18-1	●		2.0
1						
		DISTURBED	18-2	●		1.0
2	SAND AND SILT (FILL) - some fine to coarse gravel, saturated, mottled, some wood waste					
		DISTURBED	18-3	●		0.0
3						
						-1.0
4	SILT (FILL) - trace to some gravel, saturated, stiff, light brown - occasional cobbles or boulders	DISTURBED	18-4	●		
	SAND (FILL) - trace silt, medium to coarse grained, saturated, loose, black, coal flakes					-2.0
5						
	SAND - trace gravel, saturated, loose, dark brown	DISTURBED	18-5	●		-3.0
	END OF BOREHOLE (5.49 metres)					
6						
						-4.0
7						
						-5.0
8						
						-6.0
9						
						-7.0
10						
						-8.0
11						
						-9.0
12						

TETRA TECH EBA	LOGGED BY: MG	COMPLETION DEPTH: 5.49 m
	REVIEWED BY: CM	COMPLETE: 14/09/15
	DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH20
NANAIMO, BRITISH COLUMBIA	5446112.56N; 432191.66E; Zone 10	ELEVATION: 2.93 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	ASPHALT - (70 mm thick)					
	SAND (FILL) - some gravel, fine to medium grained sand, dry, loose, brown					
	SAND (COAL WASTE FILL) - some silt to silty, some gravel, damp, medium dense, black and brown	Disturbed	20-1			
1	SAND AND GRAVEL (COAL WASTE FILL) - some silt, dry, loose to medium dense, mottled, coal waste inclusions					2.0
	SAND (COAL WASTE FILL) - some silt, trace to some gravel, damp, loose, black					
2		Disturbed	20-2			1.0
	- larger gravel					
3	- silty, some gravel, saturated, dark brown, trace coal waste, mixed coal waste	Disturbed	20-3			0.0
4		Disturbed	20-4			-1.0
5						-2.0
	SAND - silty, saturated, brown	Disturbed	20-5			
6						-3.0
	END OF BOREHOLE (6.10 metres)					
7						-4.0
8						-5.0
9						-6.0
10						-7.0
11						-8.0
12						-9.0

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/16
DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH22
NANAIMO, BRITISH COLUMBIA	5446051.5N; 432121.37E; Zone 10	ELEVATION: 3.64 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	HYDROCARBONS (ppm) 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	SILT AND SAND (FILL) - gravelly, dry, loose, brown					
	CONCRETE SLAB					3.0
1	SAND (FILL) - some silt, some gravel, fine to medium grained sand, damp, medium dense, light brown to tan		22-1	●		
	SAND (COAL WASTE FILL) - some silt, some gravel, damp, medium dense, black	Disturbed	22-2	●		2.0
2		Disturbed	22-3	●		1.0
3						
	SAND AND SILT (COAL WASTE FILL) - fine to coarse grained, saturated, soft, brown and black, trace coal waste	Disturbed	22-4	●		0.0
4	SAND - some silt, very fine grained, saturated, brown and grey	Disturbed	22-5	●		-1.0
	END OF BOREHOLE (4.57 metres)					
5						-2.0
6						-3.0
7						-4.0
8						-5.0
9						-6.0
10						-7.0
11						-8.0
12						

TETRA TECH EBA	LOGGED BY: MG	COMPLETION DEPTH: 4.57 m
	REVIEWED BY: CM	COMPLETE: 14/09/19
	DRAWING NO:	Page 1 of 1

DETAILED SITE INVESTIGATION	CITY OF NANAIMO	PROJECT NO. - BOREHOLE NO.
1 PORT DRIVE	DRILL: SOLID STEM AUGER	ENVIND03511-01.003-14BH24
NANAIMO, BRITISH COLUMBIA	5446069.67N; 432239.4E; Zone 10	ELEVATION: 3.02 m

SAMPLE TYPE: DISTURBED, NO RECOVERY, SPT, A-CASING, SHELBY TUBE, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, DRILL CUTTINGS, SAND

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NUMBER	● HYDROCARBONS (ppm) ● 200 400 600 800	NOTES & COMMENTS	Elevation (m)
0	SAND (FILL) - some gravel, trace silt, fine grained sand, damp, loose, brown					3.0
	SAND (COAL WASTE FILL) - some gravel, some silt, occasional cobbles, damp, medium dense, black	Disturbed	24-1	●		
1						2.0
	- black coal	Disturbed	24-2	●		
	SILT (FILL) - sandy, gravelly, dry, dense, light brown					
2	- wood piece					1.0
	SAND (COAL WASTE FILL) - some silt, trace gravel, moist, black	Disturbed	24-3	●		
	SILT (FILL) - some sand, some gravel, moist, hard, brown					
3	SAND - gravelly, trace silt, saturated, loose					0.0
	- wood waste					
		Disturbed	24-4	●		
4	- wood					-1.0
5						-2.0
		Disturbed	24-5	●		
6						-3.0
	END OF BOREHOLE (6.10 metres)					
7						-4.0
8						-5.0
9						-6.0
10						-7.0
11						-8.0
12						

TETRA TECH EBA

LOGGED BY: MG	COMPLETION DEPTH: 6.1 m
REVIEWED BY: CM	COMPLETE: 14/09/18
DRAWING NO:	Page 1 of 1

APPENDIX D
TETRA TECH EBA'S GENERAL CONDITIONS

GENERAL CONDITIONS

GEOENVIRONMENTAL REPORT

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of Tetra Tech EBA's client. Tetra Tech EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than Tetra Tech EBA's Client unless otherwise authorized in writing by Tetra Tech EBA. Any unauthorized use of the report is at the sole risk of the user.

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2.0 ALTERNATE REPORT FORMAT

Where Tetra Tech EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed Tetra Tech EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Tetra Tech EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of Tetra Tech EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Tetra Tech EBA. The Client warrants that Tetra Tech EBA's instruments of professional service will be used only and exactly as submitted by Tetra Tech EBA.

Electronic files submitted by Tetra Tech EBA have been prepared and submitted using specific software and hardware systems. Tetra Tech EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

3.0 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by Tetra Tech EBA in its reasonably exercised discretion.

4.0 INFORMATION PROVIDED TO TETRA TECH EBA BY OTHERS

During the performance of the work and the preparation of the report, Tetra Tech EBA may rely on information provided by persons other than the Client. While Tetra Tech EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, Tetra Tech EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

APPENDIX F
SOIL VAPOUR MODELLING

APEC	Borehole / Monitoring Well Location	Sample ID	Matrix	Soil Type	Depth (m)	Parameter	NAPL Present?	C_{vapour} (ug/m3)	$C_{vapour,s,l}$ (ug/m3)	Outdoor Air Attenuation Factor	$C_{outdoor}$ air (ug/m3)	CSR Standard (ug/m3)	Meet or Exceed?	Indoor Air Attenuation Factor	C_{indoor} air (ug/m3)	CSR Standard (ug/m3)	Meet or Exceed?
1	14BH01-5	14BH01-5	Soil	coarse-grained	5.33	Benzene	No	2227.633007		3.7E-07	8.2E-04	10	MEETS	2.1E-04	4.7E-01	10	MEETS
1	14BH01-5	14BH01-5	Soil	coarse-grained	5.33	Toluene	No	5145.411465		3.7E-07	1.9E-03	45000	MEETS	2.1E-04	1.1E+00	45000	MEETS
1	14BH01-5	14BH01-5	Soil	coarse-grained	5.33	Ethylbenzene	No	1182.112557		3.7E-07	4.4E-04	9000	MEETS	2.1E-04	2.5E-01	9000	MEETS
1	14BH01-5	14BH01-5	Soil	coarse-grained	5.33	Xylenes (total)	No	5551.448683		3.7E-07	2.1E-03	900	MEETS	2.1E-04	1.2E+00	900	MEETS
1	14BH01-5	14BH01-5	Soil	coarse-grained	5.33	VPHv	No	523825.389		3.7E-07	1.9E-01	11500	MEETS	2.1E-04	1.1E+02	11500	MEETS
1	14BH01-2	14BH01-2	Soil	coarse-grained	1.55	Naphthalene	No	10520.34837		1.2E-06	1.3E-02	25	MEETS	3.4E-04	3.6E+00	25	MEETS
1	14BH02-2	14BH02-2	Soil	coarse-grained	1.15	Naphthalene	No	3443.023103		1.5E-06	5.2E-03	25	MEETS	3.7E-04	1.3E+00	25	MEETS
1	14BH02-3	14BH02-3	Soil	coarse-grained	2.15	Naphthalene	No	1817.151082		9.2E-07	1.7E-03	25	MEETS	3.1E-04	5.6E-01	25	MEETS
1	14BH03-2	14BH03-2	Soil	coarse-grained	1.35	Naphthalene	No	6407.848552		1.5E-06	9.6E-03	25	MEETS	3.7E-04	2.4E+00	25	MEETS
1	14BH04-3	14BH04-3	Soil	coarse-grained	2.29	Naphthalene	No	2008.430143		9.2E-07	1.8E-03	25	MEETS	3.1E-04	6.2E-01	25	MEETS
1	BH09-2	BH09-2	Soil	coarse-grained	0.8	Naphthalene	No	9181.39494	12539.7352	1.0E-04	9.2E-01	25	MEETS	2.0E-02	2.5E+02	25	EXCEEDS
AEC 2	BH09-21	BH09-21-2	Soil	coarse-grained	0.8	Benzene	No	26731.59608	32392.8693	1.0E-04	2.7E+00	10	MEETS	2.0E-02	6.5E+02	10	EXCEEDS
AEC 2	BH09-21	BH09-21-2	Soil	coarse-grained	0.8	Ethylbenzene	No	8443.661121	10954.9068	1.0E-04	8.4E-01	9000	MEETS	2.0E-02	2.2E+02	9000	MEETS
AEC 2	BH09-21	BH09-21-2	Soil	coarse-grained	0.8	Toluene	No	50100.059	62887.6118	1.0E-04	5.0E+00	45000	MEETS	2.0E-02	1.3E+03	45000	MEETS
AEC 2	BH09-21	BH09-21-2	Soil	coarse-grained	0.8	Xylenes (total)	No	50467.7153	66059.7171	1.0E-04	5.0E+00	900	MEETS	2.0E-02	1.3E+03	900	EXCEEDS
AEC 2	BH09-21	BH09-21-2	Soil	coarse-grained	0.8	VPHv	No	1047650.778	1047650.78	1.0E-04	1.0E+02	11500	MEETS	2.0E-02	2.1E+04	11500	EXCEEDS
AEC 2	14BH09	14BH09-5	Soil	coarse-grained	5.18	Benzene	Yes	17821.06405		3.7E-07	6.6E-03	10	MEETS	2.1E-04	3.7E+00	10	MEETS
AEC 2	14BH09	14BH09-5	Soil	coarse-grained	5.18	Ethylbenzene	Yes	18576.05447		3.7E-07	6.9E-03	9000	MEETS	2.1E-04	3.9E+00	9000	MEETS
AEC 2	14BH09	14BH09-5	Soil	coarse-grained	5.18	Toluene	Yes	23018.94603		3.7E-07	8.5E-03	45000	MEETS	2.1E-04	4.8E+00	45000	MEETS
AEC 2	14BH09	14BH09-5	Soil	coarse-grained	5.18	Xylenes (total)	No	36336.75502		3.7E-07	1.3E-02	900	MEETS	2.1E-04	7.6E+00	900	MEETS
AEC 2	14BH09	14BH09-5	Soil	coarse-grained	5.18	VPHv	No	5762079.279		3.7E-07	2.1E+00	11500	MEETS	2.1E-04	1.2E+03	11500	MEETS
AEC 2	BH09-21	BH09-21-8	Soil	coarse-grained	4.9	Benzene	No	7796.715523		6.1E-07	4.8E-03	10	MEETS	2.7E-04	2.1E+00	10	MEETS
AEC 2	BH09-21	BH09-21-8	Soil	coarse-grained	4.9	Ethylbenzene	No	3377.464448		6.1E-07	2.1E-03	9000	MEETS	2.7E-04	9.1E-01	9000	MEETS
AEC 2	BH09-21	BH09-21-8	Soil	coarse-grained	4.9	Toluene	No	10832.44519		6.1E-07	6.6E-03	45000	MEETS	2.7E-04	2.9E+00	45000	MEETS
AEC 2	BH09-21	BH09-21-8	Soil	coarse-grained	4.9	Xylenes (total)	No	5046.77153		6.1E-07	3.1E-03	900	MEETS	2.7E-04	1.4E+00	900	MEETS
AEC 2	BH09-21	BH09-21-8	Soil	coarse-grained	4.9	VPHv	No	5238253.89		6.1E-07	3.2E+00	11500	MEETS	2.7E-04	1.4E+03	11500	MEETS
AEC 2	14BH09	14BH09-4	Soil	coarse-grained	4.77	Benzene	Yes	19380.40716		6.1E-07	1.2E-02	10	MEETS	2.7E-04	5.2E+00	10	MEETS
AEC 2	14BH09	14BH09-4	Soil	coarse-grained	4.77	Ethylbenzene	Yes	25330.98336		6.1E-07	1.5E-02	9000	MEETS	2.7E-04	6.8E+00	9000	MEETS
AEC 2	14BH09	14BH09-4	Soil	coarse-grained	4.77	Toluene	Yes	46037.89205		6.1E-07	2.8E-02	45000	MEETS	2.7E-04	1.2E+01	45000	MEETS
AEC 2	14BH09	14BH09-4	Soil	coarse-grained	4.77	Xylenes (total)	No	60561.25836		6.1E-07	3.7E-02	900	MEETS	2.7E-04	1.6E+01	900	MEETS
AEC 2	14BH09	14BH09-4	Soil	coarse-grained	4.77	VPHv	No	523825.389		6.1E-07	3.2E-01	11500	MEETS	2.7E-04	1.4E+02	11500	MEETS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	VPHv	No	16762412.45		1.5E-06	2.5E+01	11500	MEETS	3.7E-04	6.2E+03	11500	MEETS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	Benzene	Yes	3118.686209		1.5E-06	4.7E-03	10	MEETS	3.7E-04	1.2E+00	10	MEETS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	Toluene	Yes	9613.795105		1.5E-06	1.4E-02	45000	MEETS	3.7E-04	3.6E+00	45000	MEETS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	Ethylbenzene	Yes	194204.2058		1.5E-06	2.9E-01	9000	MEETS	3.7E-04	7.2E+01	9000	MEETS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	Xylenes (total)	No	1160757.452		1.5E-06	1.7E+00	900	MEETS	3.7E-04	4.3E+02	900	MEETS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	etrachloroethane, 1,1,1,2	No	1498.915047		1.5E-06	2.2E-03	10	MEETS	3.7E-04	5.5E-01	10	MEETS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	Trimethylbenzene, 1,2,4-	No	1314914.365		1.5E-06	2.0E+00	55	MEETS	3.7E-04	4.9E+02	55	EXCEEDS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	Trimethylbenzene, 1,3,5-	No	749029.4368		1.5E-06	1.1E+00	55	MEETS	3.7E-04	2.8E+02	55	EXCEEDS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	Decane, n-	Yes	446402105.7		1.5E-06	6.7E+02	25000	MEETS	3.7E-04	1.7E+05	25000	EXCEEDS
3	14BH10	14BH10-2	Soil	coarse-grained	1.12	umene (isopropylbenzene	No	148569.2578		1.5E-06	2.2E-01	4000	MEETS	3.7E-04	5.5E+01	4000	MEETS
4	14BH15-2	14BH15-2	Soil	coarse-grained	2.5	Naphthalene	No	363.4302164		9.2E-07	3.3E-04	25	MEETS	3.1E-04	1.1E-01	25	MEETS
4	14BH16-1	14BH16-1	Soil	coarse-grained	1	Naphthalene	No	956.3953063		1.5E-06	1.4E-03	25	MEETS	3.7E-04	3.5E-01	25	MEETS
7	14BH17-2	14BH17-2	Soil	coarse-grained	1.05	Naphthalene	No	1147.674368		1.5E-06	1.7E-03	25	MEETS	3.7E-04	4.2E-01	25	MEETS
7	14BH17-3	14BH17-3	Soil	coarse-grained	2.34	Naphthalene	No	4686.337001		9.2E-07	4.3E-03	25	MEETS	3.1E-04	1.5E+00	25	MEETS
7	14BH18-3	14BH18-3	Soil	coarse-grained	2.57	Naphthalene	No	4781.976531		9.2E-07	4.4E-03	25	MEETS	3.1E-04	1.5E+00	25	MEETS
7	14BH19-3	14BH19-3	Soil	coarse-grained	1.9	Naphthalene	No	10520.34837		1.2E-06	1.3E-02	25	MEETS	3.4E-04	3.6E+00	25	MEETS
7	14BH20-2	14BH20-2	Soil	coarse-grained	1.8	Naphthalene	No	4208.139348		1.2E-06	5.0E-03	25	MEETS	3.4E-04	1.4E+00	25	MEETS
7	BH09-19	BH09-19	Soil	coarse-grained	0.8	Naphthalene	No	17215.11551	23512.0034	1.0E-04	1.7E+00	25	MEETS	2.0E-02	4.7E+02	25	EXCEEDS
APEC 8	14BH21	14BH21-3	Soil	coarse-grained	2.13	naphthalene	No	3347.383572		9.2E-07	3.1E-03	25	MEETS	3.1E-04	1.0E+00	25	MEETS
APEC 8	14BH22	14BH22-3	Soil	coarse-grained	2.08	Naphthalene	No	2869.185919		9.2E-07	2.6E-03	25	MEETS	3.1E-04	8.9E-01	25	MEETS
APEC 9	14BH23	14BH23-3	Soil	coarse-grained	3.78	Benzene	No	245039.6307		6.1E-07	1.5E-01	10	MEETS	2.7E-04	6.6E+01	10	EXCEEDS
APEC 9	14BH23	14BH23-3	Soil	coarse-grained	3.78	Ethylbenzene	Yes	287084.4781		6.1E-07	1.8E-01	9000	MEETS	2.7E-04	7.8E+01	9000	MEETS
APEC 9	14BH23	14BH23-3	Soil	coarse-grained	3.78	Toluene	Yes	88013.61716		6.1E-07	5.4E-02	45000	MEETS	2.7E-04	2.4E+01	45000	MEETS
APEC 9	14BH23	14BH23-3	Soil	coarse-grained	3.78	Xylenes (total)	No	302806.2918		6.1E-07	1.8E-01	900	MEETS	2.7E-04	8.2E+01	900	MEETS
APEC 9	14BH23	14BH23-3	Soil	coarse-grained	3.78	VPHv	No	3090569.795		6.1E-07	1.9E+00	11500	MEETS	2.7E-04	8.3E+02	11500	MEETS
APEC 9	14BH23	14BH23-3	Soil	coarse-grained	3.78	Naphthalene	No	6503.488083		6.1E-07	4.0E-03	25	MEETS	2.7E-04	1.8E+00	25	MEETS
APEC 10	14BH24	14BH24-2	soil	coarse-grained	1.2	Naphthalene	No	5642.732307		1.5E-06	8.5E-03	25	MEETS	3.7E-04	2.1E+00	25	MEETS
APEC 10	14BH25	14BH25-2	soil	coarse-grained	1.85	Naphthalene	No	870.3197287		1.2E-06	1.0E-03	25	MEETS	3.4E-04	3.0E-01	25	MEETS
APEC 11	14BH9-6	14BH9-6-2	Soil	coarse-grained	0.8	Benzene	No	400973.9412	485893.039	1.0E-04	4.0E+01	10	EXCEEDS	2.0E-02	9.7E+03	10	EXCEEDS
APEC 11	14BH9-6	14BH9-6-2	Soil	coarse-grained	0.8	Ethylbenzene	No	83592.2451	108453.577	1.0E-04	8.4E+00	9000	MEETS	2.0E-02	2.2E+03	9000	MEETS
APEC 11	14BH9-6	14BH9-6-2	Soil	coarse-grained	0.8	Toluene	No	406216.6946	509899.555	1.0E-04	4.1E+01	45000	MEETS	2.0E-02	1.0E+04	45000	MEETS
APEC 11	14BH9-6	14BH9-6-2	Soil	coarse-grained	0.8	Xylenes (total)	No	348227.2356	455812.048	1.0E-04	3.5E+01	900	MEETS	2.0E-02	9.1E+03	900	EXCEEDS
APEC 11	14BH9-6	14BH9-6-2	Soil	coarse-grained	0.8	VPHv	No	3876307.878	3876307.88	1.0E-04	3.9E+02	11500	MEETS	2.0E-02	7.8E+04	11500	EXCEEDS
outlier	BH09-3	BH09-3-2	Soil	coarse-grained	0.8	Naphthalene	No	9277.034471	12670.3574	1.0E-04	9.3E-01	25	MEETS	2.0E-02	2.5E+02	25	EXCEEDS
outlier	BH09-6	BH09-6-2	Soil	coarse-grained	0.8	Naphthalene	No	11476.74368	15674.669	1.0E-04	1.1E+00	25	MEETS	2.0E-02	3.1E+02	25	EXCEEDS
outlier	14BH9-20	14BH9-20-3	Soil	coarse-grained	1.2	Naphthalene	No	27735.46388		1.5E-06	4.2E-02	25	MEETS	3.7E-04	1.0E+01	25	MEETS
coal waste	groundwater		groundwater	coarse-grained	2	Naphthalene	#N/A	#N/A		9.2E-07		25	EXCEEDS	3.1E-04		25	EXCEEDS

APEC	Borehole / Monitoring Well Location	Sample ID	Matrix	Soil Type	Depth (m)	Parameter	Sample Location	Measured Concentration Soil: mg/kg Groundwater: mg/L Vapour: mg/m^3	LNAPL or DNAPL Substance?	Molecular Weight of Compound	Temperature Corrected Henry's Law Constant	Shallow Indoor Temp. Corrected Henry's Law Constant
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	VPHv	Subsurface	160	LNAPL	120	0.51	0.51
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	Benzene	Subsurface	0.79	LNAPL	78.112	0.119005133	0.145651364
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	Toluene	Subsurface	2.3	LNAPL	92.139	0.131098084	0.165740899
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	Ethylbenzene	Subsurface	0.88	LNAPL	106.165	0.154989333	0.202120883
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	Xylenes (total)	Subsurface	9	LNAPL	106.165	0.12714118	0.166949034
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	Naphthalene	Subsurface	6.1	DNAPL	128.171	0.006472079	0.008840036
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	Trichlorobenzene, 1,2,4-	Subsurface	5.2	DNAPL	181.447	0.040596484	0.055929898
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	Trimethylbenzene, 1,3,5-	Subsurface	1.4	LNAPL	120.191	0.109441739	0.153054196
APEC 11	14TP01	14TP01-1	Soil	coarse-grained	1	Decane, n-	Subsurface	4.5	LNAPL	142.282	65.61467783	92.42653701
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	VPHv	Subsurface	60	LNAPL	120	0.51	0.51
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Benzene	Subsurface	1.6	LNAPL	78.112	0.119005133	0.145651364
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Toluene	Subsurface	4.5	LNAPL	92.139	0.131098084	0.165740899
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Ethylbenzene	Subsurface	0.8	LNAPL	106.165	0.154989333	0.202120883
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Xylenes (total)	Subsurface	8.9	LNAPL	106.165	0.12714118	0.166949034
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Naphthalene	Subsurface	3	DNAPL	128.171	0.006472079	0.008840036
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Trimethylbenzene, 1,2,4-	Subsurface	3.2	LNAPL	120.191	0.094389905	0.125115764
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Trimethylbenzene, 1,3,5-	Subsurface	0.69	LNAPL	120.191	0.109441739	0.153054196
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Hexane, n-	Subsurface	1.6	LNAPL	284.782	0.010622725	0.017637025
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Dibromoethane, 1,2-	Subsurface	0.025	DNAPL	187.861	0.011465767	0.015121565
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Dichloroethane, 1,2-	Subsurface	0.025	DNAPL	98.959	0.024997813	0.030949461
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Butadiene, 1,3-	Subsurface	0.1	LNAPL	54.091	2.083077373	2.345293336
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Decane, n-	Subsurface	2.6	LNAPL	142.282	65.61467783	92.42653701
APEC 12	14BH28	14BH28-2	Soil	coarse-grained	0.8	Aethyl t-butyl ether (MTBE	Subsurface	0.1	LNAPL	88.148	0.016597682	0.019697952
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	VPHv	Subsurface	10	LNAPL	120	0.51	0.51
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Benzene	Subsurface	0.005	LNAPL	78.112	0.119005133	0.145651364
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Toluene	Subsurface	0.02	LNAPL	92.139	0.131098084	0.165740899
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Ethylbenzene	Subsurface	0.01	LNAPL	106.165	0.154989333	0.202120883
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Xylenes (total)	Subsurface	0.04	LNAPL	106.165	0.12714118	0.166949034
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Naphthalene	Subsurface	0.05	DNAPL	128.171	0.006472079	0.008840036
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Trimethylbenzene, 1,2,4-	Subsurface	0.2	LNAPL	120.191	0.094389905	0.125115764
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Trimethylbenzene, 1,3,5-	Subsurface	0.2	LNAPL	120.191	0.109441739	0.153054196
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Hexane, n-	Subsurface	0.5	LNAPL	284.782	0.010622725	0.017637025
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Dibromoethane, 1,2-	Subsurface	0.025	DNAPL	187.861	0.011465767	0.015121565
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Dichloroethane, 1,2-	Subsurface	0.025	DNAPL	98.959	0.024997813	0.030949461
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Butadiene, 1,3-	Subsurface	0.1	LNAPL	54.091	2.083077373	2.345293336
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Decane, n-	Subsurface	2	LNAPL	142.282	65.61467783	92.42653701
AEC 3	14BH34	14BH34-2	Soil	coarse-grained	1.15	Aethyl t-butyl ether (MTBE	Subsurface	0.1	LNAPL	88.148	0.016597682	0.019697952
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	VPHv	Subsurface	10	LNAPL	120	0.51	0.51
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Benzene	Subsurface	0.0061	LNAPL	78.112	0.119005133	0.145651364
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Toluene	Subsurface	0.02	LNAPL	92.139	0.131098084	0.165740899
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Ethylbenzene	Subsurface	0.01	LNAPL	106.165	0.154989333	0.202120883
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Xylenes (total)	Subsurface	0.04	LNAPL	106.165	0.12714118	0.166949034
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Naphthalene	Subsurface	0.05	DNAPL	128.171	0.006472079	0.008840036
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Trimethylbenzene, 1,2,4-	Subsurface	0.2	LNAPL	120.191	0.094389905	0.125115764
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Trimethylbenzene, 1,3,5-	Subsurface	0.2	LNAPL	120.191	0.109441739	0.153054196
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Hexane, n-	Subsurface	0.5	LNAPL	284.782	0.010622725	0.017637025
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Dibromoethane, 1,2-	Subsurface	0.025	DNAPL	187.861	0.011465767	0.015121565
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Dichloroethane, 1,2-	Subsurface	0.025	DNAPL	98.959	0.024997813	0.030949461
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Butadiene, 1,3-	Subsurface	0.1	LNAPL	54.091	2.083077373	2.345293336
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Decane, n-	Subsurface	2	LNAPL	142.282	65.61467783	92.42653701
AEC 3	14BH35	14BH35-3	Soil	coarse-grained	2.18	Aethyl t-butyl ether (MTBE	Subsurface	0.1	LNAPL	88.148	0.016597682	0.019697952

Vapour Pressure	Mole Fraction (Groundwater)	Solubility	Temperature Corrected Henry's Law Constant (10 degrees C)	Vapour Concentration (No NAPL)	Vapour Concentration (NAPL 1)	Vapour Concentration (NAPL 2)	Mole Fraction (Soil)	Soil Saturation Value	Soil Saturation Value (Indoor)	Total Porosity	Water Filled Porosity	Air Filled Porosity	Koc	Vapour Concentration (No NAPL)
46900	-	70.83	0.51	81600	-	-	0.843348828	689.6057496	689.6057496	0.375	0.054	0.321	1600	8381.206224
12700	-	1780	0.11030354	87.13979645	-	-	0.006397022	950.9157752	960.4314773	0.375	0.054	0.321	79.43282347	175.9830075
3800	-	515	0.165740899	381.204067	-	-	0.015788935	498.6169756	502.1963362	0.375	0.054	0.321	151.3561248	311.4327992
1270	-	152	0.140283866	123.4498024	-	-	0.005242879	279.0066812	280.4439578	0.375	0.054	0.321	295.1209227	74.30421786
1065.245723	-	160	0.114782143	1033.03929	-	-	0.053620351	403.0812319	404.359064	0.375	0.054	0.321	410	454.2094377
10.4	-	31	0.005758285	35.12554122	-	-	0.030102916	209.7819348	209.796662	0.375	0.054	0.321	1122.018454	5.834011368
40	-	40	0.055929898	290.8354708	-	-	0.018126838	590.8059265	590.9289772	0.375	0.054	0.321	2454.708916	14.29245767
325	-	50	0.096495137	135.0931917	-	-	0.007367576	241.0838079	241.5212953	0.375	0.054	0.321	794.3282347	31.77700641
175	-	0.052	57.69193208	259613.6944	-	-	0.020004655	1.222920127	1.502634847	0.375	0.054	0.321	1720	12555.05922
46900	-	70.83	0.51	30600	-	-	0.672294165	689.6057496	689.6057496	0.375	0.054	0.321	1600	3142.952334
12700	-	1780	0.11030354	176.4856637	-	-	0.027541752	950.9157752	960.4314773	0.375	0.054	0.321	79.43282347	356.421281
3800	-	515	0.165740899	745.8340442	-	-	0.065668691	498.6169756	502.1963362	0.375	0.054	0.321	151.3561248	609.3250419
1270	-	152	0.140283866	112.2270931	-	-	0.010132065	279.0066812	280.4439578	0.375	0.054	0.321	295.1209227	67.54928897
1065.245723	-	160	0.114782143	1021.561075	-	-	0.112719221	403.0812319	404.359064	0.375	0.054	0.321	410	449.1626662
10.4	-	31	0.005758285	17.27485634	-	-	0.031471745	209.7819348	209.796662	0.375	0.054	0.321	1122.018454	2.869185919
270	-	57	0.084916182	271.7317838	-	-	0.035798709	654.6707231	655.0220925	0.375	0.054	0.321	1905.460718	26.2982873
325	-	50	0.096495137	66.58164449	-	-	0.007719097	241.0838079	241.5212953	0.375	0.054	0.321	794.3282347	15.66152459
0.0023	-	9.5	0.017637025	28.21924025	-	-	0.007554344	2792.080142	2792.09351	0.375	0.054	0.321	48977.88194	0.057829793
1500	-	4152	0.01033308	0.258327006	-	-	0.000178934	1237.129168	1240.174429	0.375	0.054	0.321	43.65158322	0.962022905
10540	-	8600	0.023069703	0.576742576	-	-	0.000339683	1629.514	1639.782824	0.375	0.054	0.321	25.11886432	3.298240955
281000	-	735	1.9916575	199.16575	-	-	0.002485789	900.0935898	938.7597918	0.375	0.054	0.321	128.8249552	170.1002969
175	-	0.052	57.69193208	149999.0234	-	-	0.024570428	1.222920127	1.502634847	0.375	0.054	0.321	1720	7254.034218
33500	-	42000	0.01556042	1.556042042	-	-	0.001525376	3386.876222	3412.999872	0.375	0.054	0.321	7.26	20.58246651
46900	-	70.83	0.51	5100	-	-	#N/A	689.6057496	689.6057496	0.375	0.054	0.321	1600	523.825389
12700	-	1780	0.11030354	0.551517699	-	-	#N/A	950.9157752	960.4314773	0.375	0.054	0.321	79.43282347	1.113816503
3800	-	515	0.165740899	3.314817974	-	-	#N/A	498.6169756	502.1963362	0.375	0.054	0.321	151.3561248	2.708111297
1270	-	152	0.140283866	1.402838664	-	-	#N/A	279.0066812	280.4439578	0.375	0.054	0.321	295.1209227	0.844366112
1065.245723	-	160	0.114782143	4.591285731	-	-	#N/A	403.0812319	404.359064	0.375	0.054	0.321	410	2.018708612
10.4	-	31	0.005758285	0.287914272	-	-	#N/A	209.7819348	209.796662	0.375	0.054	0.321	1122.018454	0.047819765
270	-	57	0.084916182	16.98323648	-	-	#N/A	654.6707231	655.0220925	0.375	0.054	0.321	1905.460718	1.643642956
325	-	50	0.096495137	19.29902739	-	-	#N/A	241.0838079	241.5212953	0.375	0.054	0.321	794.3282347	4.539572345
0.0023	-	9.5	0.017637025	8.818512579	-	-	#N/A	2792.080142	2792.09351	0.375	0.054	0.321	48977.88194	0.01807181
1500	-	4152	0.01033308	0.258327006	-	-	#N/A	1237.129168	1240.174429	0.375	0.054	0.321	43.65158322	0.962022905
10540	-	8600	0.023069703	0.576742576	-	-	#N/A	1629.514	1639.782824	0.375	0.054	0.321	25.11886432	3.298240955
281000	-	735	1.9916575	199.16575	-	-	#N/A	900.0935898	938.7597918	0.375	0.054	0.321	128.8249552	170.1002969
175	-	0.052	57.69193208	115383.8642	-	-	#N/A	1.222920127	1.502634847	0.375	0.054	0.321	1720	5580.026321
33500	-	42000	0.01556042	1.556042042	-	-	#N/A	3386.876222	3412.999872	0.375	0.054	0.321	7.26	20.58246651
46900	-	70.83	0.51	5100	-	-	#N/A	689.6057496	689.6057496	0.375	0.054	0.321	1600	523.825389
12700	-	1780	0.11030354	0.672851593	-	-	#N/A	950.9157752	960.4314773	0.375	0.054	0.321	79.43282347	1.358856134
3800	-	515	0.165740899	3.314817974	-	-	#N/A	498.6169756	502.1963362	0.375	0.054	0.321	151.3561248	2.708111297
1270	-	152	0.140283866	1.402838664	-	-	#N/A	279.0066812	280.4439578	0.375	0.054	0.321	295.1209227	0.844366112
1065.245723	-	160	0.114782143	4.591285731	-	-	#N/A	403.0812319	404.359064	0.375	0.054	0.321	410	2.018708612
10.4	-	31	0.005758285	0.287914272	-	-	#N/A	209.7819348	209.796662	0.375	0.054	0.321	1122.018454	0.047819765
270	-	57	0.084916182	16.98323648	-	-	#N/A	654.6707231	655.0220925	0.375	0.054	0.321	1905.460718	1.643642956
325	-	50	0.096495137	19.29902739	-	-	#N/A	241.0838079	241.5212953	0.375	0.054	0.321	794.3282347	4.539572345
0.0023	-	9.5	0.017637025	8.818512579	-	-	#N/A	2792.080142	2792.09351	0.375	0.054	0.321	48977.88194	0.01807181
1500	-	4152	0.01033308	0.258327006	-	-	#N/A	1237.129168	1240.174429	0.375	0.054	0.321	43.65158322	0.962022905
10540	-	8600	0.023069703	0.576742576	-	-	#N/A	1629.514	1639.782824	0.375	0.054	0.321	25.11886432	3.298240955
281000	-	735	1.9916575	199.16575	-	-	#N/A	900.0935898	938.7597918	0.375	0.054	0.321	128.8249552	170.1002969
175	-	0.052	57.69193208	115383.8642	-	-	#N/A	1.222920127	1.502634847	0.375	0.054	0.321	1720	5580.026321
33500	-	42000	0.01556042	1.556042042	-	-	#N/A	3386.876222	3412.999872	0.375	0.054	0.321	7.26	20.58246651

Vapour Concentration (NAPL)	Shallow Indoor Vapour Concentration (No NAPL)	Shallow Indoor Vapour Concentration (NAPL)	NAPL Present?	C_{vapour} (ug/m3)	$C_{vapour,s,l}$ (ug/m3)	Outdoor Air Attenuation Factor	$C_{outdoor}$ air (ug/m3)	CSR Standard (ug/m3)	Meet or Exceed?	Indoor Air Attenuation Factor	C_{indoor} air (ug/m3)	CSR Standard (ug/m3)	Meet or Exceed?
2005460.02	8381.206224	1975957.753	No	8381206.224		1.5E-06	1.3E+01	3000	MEETS	3.7E-04	3.1E+03	3000	EXCEEDS
2681.340669	213.2530561	2641.89554	No	175983.0075		1.5E-06	2.6E-01	4	MEETS	3.7E-04	6.5E+01	4	EXCEEDS
2335.783659	390.9229924	2301.422009	No	311432.7992		1.5E-06	4.7E-01	15000	MEETS	3.7E-04	1.2E+02	15000	MEETS
298.6809859	96.40317999	294.2870981	No	74304.21786		1.5E-06	1.1E-01	3000	MEETS	3.7E-04	2.7E+01	3000	MEETS
2562.202743	594.5374537	2524.510249	No	454209.4377		1.5E-06	6.8E-01	300	MEETS	3.7E-04	1.7E+02	300	MEETS
16.95447544	7.967956724	16.70505861	No	5834.011368		1.5E-06	8.8E-03	9	MEETS	3.7E-04	2.2E+00	9	MEETS
55.58844405	19.68666165	54.77068397	No	14292.45767		1.5E-06	2.1E-02	10	MEETS	3.7E-04	5.3E+00	10	MEETS
121.5997214	44.35962359	119.8108712	No	31777.00641		1.5E-06	4.8E-02	20	MEETS	3.7E-04	1.2E+01	20	MEETS
210.4610562	14393.25708	207.3649694	Yes	12555059.22		1.5E-06	1.9E+01	8000	MEETS	3.7E-04	4.6E+03	8000	MEETS
1598696.798	3142.952334	1575178.413	No	3142952.334	3142952.33	1.0E-04	3.1E+02	3000	MEETS	2.0E-02	6.3E+04	3000	EXCEEDS
11544.2498	431.9049237	11374.42266	No	356421.281	431904.924	1.0E-04	3.6E+01	4	EXCEEDS	2.0E-02	8.6E+03	4	EXCEEDS
9714.895256	764.8493329	9571.979697	No	609325.0419	764849.333	1.0E-04	6.1E+01	15000	MEETS	2.0E-02	1.5E+04	15000	EXCEEDS
577.21249	87.63925453	568.7211329	No	67549.28897	87639.2545	1.0E-04	6.8E+00	3000	MEETS	2.0E-02	1.8E+03	3000	MEETS
5386.191845	587.931482	5306.955724	No	449162.6662	587931.482	1.0E-04	4.5E+01	300	MEETS	2.0E-02	1.2E+04	300	EXCEEDS
17.72542292	3.918667241	17.46466471	No	2869.185919	3918.66724	1.0E-04	2.9E-01	9	MEETS	2.0E-02	7.8E+01	9	EXCEEDS
490.8578656	34.84022241	483.6368689	No	26298.2873	34840.2224	1.0E-04	2.6E+00	20	MEETS	2.0E-02	7.0E+02	20	EXCEEDS
127.4014773	21.86295734	125.5272776	No	15661.52459	21862.9573	1.0E-04	1.6E+00	20	MEETS	2.0E-02	4.4E+02	20	EXCEEDS
0.002090691	0.096014973	0.002059935	No	57.82979297	96.0149728	1.0E-04	5.8E-03	2000	MEETS	2.0E-02	1.9E+00	2000	MEETS
21.30459486	1.265643291	20.99118355	No	962.0229048	1265.64329	1.0E-04	9.6E-02	-	-	2.0E-02	2.5E+01	-	-
149.7002865	4.057936171	147.4980497	No	3298.240955	4057.93617	1.0E-04	3.3E-01	1	MEETS	2.0E-02	8.1E+01	1	EXCEEDS
15964.24308	183.6242473	15729.39354	No	170100.2969	183624.247	1.0E-04	1.7E+01	6	EXCEEDS	2.0E-02	3.7E+03	6	EXCEEDS
258.495751	8316.104093	254.693027	Yes	7254034.218	8316104.09	1.0E-04	7.3E+02	8000	MEETS	2.0E-02	1.7E+05	8000	EXCEEDS
1903.210474	24.24008308	1875.212397	No	20582.46651	24240.0831	1.0E-04	2.1E+00	9000	MEETS	2.0E-02	4.8E+02	9000	MEETS
-	523.825389	-	No	523825.389		1.5E-06	7.9E-01	3000	MEETS	3.7E-04	1.9E+02	3000	MEETS
-	1.349702887	-	No	1113.816503		1.5E-06	1.7E-03	4	MEETS	3.7E-04	4.1E-01	4	MEETS
-	3.399330369	-	No	2708.111297		1.5E-06	4.1E-03	15000	MEETS	3.7E-04	1.0E+00	15000	MEETS
-	1.095490682	-	No	844.3661121		1.5E-06	1.3E-03	3000	MEETS	3.7E-04	3.1E-01	3000	MEETS
-	2.642388683	-	No	2018.708612		1.5E-06	3.0E-03	300	MEETS	3.7E-04	7.5E-01	300	MEETS
-	0.065311121	-	No	47.81976531		1.5E-06	7.2E-05	9	MEETS	3.7E-04	1.8E-02	9	MEETS
-	2.1775139	-	No	1643.642956		1.5E-06	2.5E-03	20	MEETS	3.7E-04	6.1E-01	20	MEETS
-	6.337089085	-	No	4539.572345		1.5E-06	6.8E-03	20	MEETS	3.7E-04	1.7E+00	20	MEETS
-	0.030004679	-	No	18.0718103		1.5E-06	2.7E-05	2000	MEETS	3.7E-04	6.7E-03	2000	MEETS
-	1.265643291	-	No	962.0229048		1.5E-06	1.4E-03	-	-	3.7E-04	3.6E-01	-	-
-	4.057936171	-	No	3298.240955		1.5E-06	4.9E-03	1	MEETS	3.7E-04	1.2E+00	1	EXCEEDS
-	183.6242473	-	No	170100.2969		1.5E-06	2.6E-01	6	MEETS	3.7E-04	6.3E+01	6	EXCEEDS
-	6397.003148	-	Yes	5580026.321		1.5E-06	8.4E+00	8000	MEETS	3.7E-04	2.1E+03	8000	MEETS
-	24.24008308	-	No	20582.46651		1.5E-06	3.1E-02	9000	MEETS	3.7E-04	7.6E+00	9000	MEETS
-	523.825389	-	No	523825.389		9.2E-07	4.8E-01	3000	MEETS	3.1E-04	1.6E+02	3000	MEETS
-	1.646637522	-	No	1358.856134		9.2E-07	1.3E-03	4	MEETS	3.1E-04	4.2E-01	4	MEETS
-	3.399330369	-	No	2708.111297		9.2E-07	2.5E-03	15000	MEETS	3.1E-04	8.4E-01	15000	MEETS
-	1.095490682	-	No	844.3661121		9.2E-07	7.8E-04	3000	MEETS	3.1E-04	2.6E-01	3000	MEETS
-	2.642388683	-	No	2018.708612		9.2E-07	1.9E-03	300	MEETS	3.1E-04	6.3E-01	300	MEETS
-	0.065311121	-	No	47.81976531		9.2E-07	4.4E-05	9	MEETS	3.1E-04	1.5E-02	9	MEETS
-	2.1775139	-	No	1643.642956		9.2E-07	1.5E-03	20	MEETS	3.1E-04	5.1E-01	20	MEETS
-	6.337089085	-	No	4539.572345		9.2E-07	4.2E-03	20	MEETS	3.1E-04	1.4E+00	20	MEETS
-	0.030004679	-	No	18.0718103		9.2E-07	1.7E-05	2000	MEETS	3.1E-04	5.6E-03	2000	MEETS
-	1.265643291	-	No	962.0229048		9.2E-07	8.9E-04	-	-	3.1E-04	3.0E-01	-	-
-	4.057936171	-	No	3298.240955		9.2E-07	3.0E-03	1	MEETS	3.1E-04	1.0E+00	1	EXCEEDS
-	183.6242473	-	No	170100.2969		9.2E-07	1.6E-01	6	MEETS	3.1E-04	5.3E+01	6	EXCEEDS
-	6397.003148	-	Yes	5580026.321		9.2E-07	5.1E+00	8000	MEETS	3.1E-04	1.7E+03	8000	MEETS
-	24.24008308	-	No	20582.46651		9.2E-07	1.9E-02	9000	MEETS	3.1E-04	6.4E+00	9000	MEETS

APPENDIX G
LABORATORY ANALYTICAL CERTIFICATES

Success Through Science®

Your Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO
Your C.O.C. #: G079948, G079949

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/09/30

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B483823
Received: 2014/09/19, 08:10

Sample Matrix: Sediment
Samples Received: 20

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICPMS (total)	12	2014/09/24	2014/09/24	BBY7SOP-00001	EPA 6020a R1 m
Moisture	20	N/A	2014/09/26	BBY8SOP-00017	OMOE E3139 3.1 m
PAH in Soil by GC/MS (SIM)	5	2014/09/25	2014/09/26	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	13	2014/09/25	2014/09/27	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/09/25	2014/09/29	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/09/27	2014/09/28	BBY8SOP-00022	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	20	N/A	2014/09/29	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	12	2014/09/24	2014/09/24	BBY6SOP-00028	BCMOE BCLM Mar2005 m

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

PHYSICAL TESTING (SEDIMENT)

Maxxam ID		KQ5506	KQ5507	KQ5508	KQ5509	KQ5510	KQ5511	KQ5512		
Sampling Date		2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18		
COC Number		G079948	G079948	G079948	G079948	G079948	G079948	G079948		
	Units	**14SED01**	**14SED02**	**14SED03**	**14SED04**	**14SED05**	**14SED06**	**14SED07**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	27	33	21	23	29	18	24	0.30	7653594
RDL = Reportable Detection Limit										

Maxxam ID		KQ5513	KQ5514	KQ5515	KQ5516	KQ5517	KQ5518	KQ5519		
Sampling Date		2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18		
COC Number		G079948	G079948	G079948	G079948	G079948	G079949	G079949		
	Units	**14SED08**	**14SED09**	**14SED10**	**14SED11**	**14SED12**	**14SED13**	**14SED14**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	30	31	23	27	39	28	31	0.30	7653594
RDL = Reportable Detection Limit										

Maxxam ID		KQ5520	KQ5520	KQ5521	KQ5522	KQ5523	KQ5524	KQ5525		
Sampling Date		2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18		
COC Number		G079949	G079949	G079949	G079949	G079949	G079949	G079949		
	Units	**14SED15**	**14SED15 Lab-Dup**	**14SED16**	**14SED17**	**14SED18**	**14SED-DUP1**	**14SED-DUP2**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	26	24	33	33	43	26	33	0.30	7653594
RDL = Reportable Detection Limit										
Lab-Dup = Laboratory Initiated Duplicate										

Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

CSR/CCME METALS IN SOIL (SEDIMENT)

Maxxam ID		KQ5506	KQ5507	KQ5509	KQ5511	KQ5513		KQ5516		
Sampling Date		2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18		2014/09/18		
COC Number		G079948	G079948	G079948	G079948	G079948		G079948		
	Units	**14SED01**	**14SED02**	**14SED04**	**14SED06**	**14SED08**	**QC Batch**	**14SED11**	**RDL**	**QC Batch**
Physical Properties										
Soluble (2:1) pH	pH	7.67	8.20	8.22	7.86	8.26	7650915	7.99	N/A	7650856
Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	13000	14800	13600	12900	12800	7650867	11300	100	7650845
Total Antimony (Sb)	mg/kg	0.12	0.16	0.19	0.10	0.20	7650867	0.13	0.10	7650845
Total Arsenic (As)	mg/kg	4.10	4.07	4.04	3.30	4.29	7650867	3.48	0.50	7650845
Total Barium (Ba)	mg/kg	40.7	41.8	41.9	31.5	42.1	7650867	38.3	0.10	7650845
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	<0.40	<0.40	7650867	<0.40	0.40	7650845
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	7650867	<0.10	0.10	7650845
Total Cadmium (Cd)	mg/kg	0.420	0.719	0.378	0.294	0.538	7650867	0.376	0.050	7650845
Total Calcium (Ca)	mg/kg	7740	17200	11200	7880	56500	7650867	7560	100	7650845
Total Chromium (Cr)	mg/kg	18.9	23.8	22.6	17.2	20.6	7650867	18.4	1.0	7650845
Total Cobalt (Co)	mg/kg	6.46	6.98	6.62	6.37	6.33	7650867	6.21	0.30	7650845
Total Copper (Cu)	mg/kg	40.3	39.8	47.5	23.0	32.5	7650867	28.0	0.50	7650845
Total Iron (Fe)	mg/kg	16100	18800	17000	15600	18000	7650867	15100	100	7650845
Total Lead (Pb)	mg/kg	15.8	6.97	6.86	3.61	6.11	7650867	4.65	0.10	7650845
Total Lithium (Li)	mg/kg	17.2	19.5	17.0	15.4	18.8	7650867	17.4	5.0	7650845
Total Magnesium (Mg)	mg/kg	6040	6740	6170	5960	6670	7650867	5480	100	7650845
Total Manganese (Mn)	mg/kg	209	232	220	217	214	7650867	214	0.20	7650845
Total Mercury (Hg)	mg/kg	0.065	0.071	0.069	<0.050	0.069	7650867	<0.050	0.050	7650845
Total Molybdenum (Mo)	mg/kg	1.04	1.61	1.00	0.76	1.68	7650867	0.80	0.10	7650845
Total Nickel (Ni)	mg/kg	18.3	20.7	25.8	16.2	19.5	7650867	18.2	0.80	7650845
Total Phosphorus (P)	mg/kg	455	537	443	425	481	7650867	423	10	7650845
Total Potassium (K)	mg/kg	926	1160	939	729	1110	7650867	790	100	7650845
Total Selenium (Se)	mg/kg	<0.50	<0.50	<0.50	<0.50	<0.50	7650867	<0.50	0.50	7650845
Total Silver (Ag)	mg/kg	<0.050	0.084	0.060	<0.050	0.075	7650867	<0.050	0.050	7650845
Total Sodium (Na)	mg/kg	2990	3600	2710	2390	5460	7650867	2450	100	7650845
Total Strontium (Sr)	mg/kg	47.7	84.8	59.8	37.5	291	7650867	46.5	0.10	7650845
Total Thallium (Tl)	mg/kg	0.220	0.217	0.220	0.187	0.182	7650867	0.214	0.050	7650845
Total Tin (Sn)	mg/kg	0.56	0.73	0.56	0.29	0.70	7650867	0.39	0.10	7650845
Total Titanium (Ti)	mg/kg	1190	1270	1100	1300	1030	7650867	1220	1.0	7650845
Total Uranium (U)	mg/kg	0.507	0.770	0.492	0.602	0.761	7650867	0.511	0.050	7650845
Total Vanadium (V)	mg/kg	45.0	52.8	45.9	43.9	45.0	7650867	44.6	2.0	7650845
Total Zinc (Zn)	mg/kg	40.5	53.2	44.7	32.7	50.7	7650867	39.2	1.0	7650845
Total Zirconium (Zr)	mg/kg	4.34	4.62	4.23	4.19	3.98	7650867	4.66	0.50	7650845

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

CSR/CCME METALS IN SOIL (SEDIMENT)

Maxxam ID		KQ5519		KQ5521	KQ5521		KQ5522	KQ5523		
Sampling Date		2014/09/18		2014/09/18	2014/09/18		2014/09/18	2014/09/18		
COC Number		G079949		G079949	G079949		G079949	G079949		
	Units	**14SED14**	**QC Batch**	**14SED16**	**14SED16 Lab-Dup**	**QC Batch**	**14SED17**	**14SED18**	**RDL**	**QC Batch**
Physical Properties										
Soluble (2:1) pH	pH	8.10	7650915	7.79	7.82	7650856	8.00	7.84	N/A	7650915
Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	13400	7650867	10700	11100	7650845	13900	13400	100	7650867
Total Antimony (Sb)	mg/kg	0.20	7650867	0.19	0.18	7650845	0.13	0.30	0.10	7650867
Total Arsenic (As)	mg/kg	4.13	7650867	5.10	4.98	7650845	4.05	5.52	0.50	7650867
Total Barium (Ba)	mg/kg	45.1	7650867	46.6	47.9	7650845	42.6	46.4	0.10	7650867
Total Beryllium (Be)	mg/kg	<0.40	7650867	<0.40	<0.40	7650845	<0.40	<0.40	0.40	7650867
Total Bismuth (Bi)	mg/kg	<0.10	7650867	<0.10	<0.10	7650845	<0.10	<0.10	0.10	7650867
Total Cadmium (Cd)	mg/kg	0.510	7650867	0.714	0.716	7650845	0.517	0.735	0.050	7650867
Total Calcium (Ca)	mg/kg	10100	7650867	8350	8230	7650845	10000	11200	100	7650867
Total Chromium (Cr)	mg/kg	21.2	7650867	23.8	24.2	7650845	21.0	25.1	1.0	7650867
Total Cobalt (Co)	mg/kg	6.47	7650867	6.26	6.43	7650845	6.84	6.53	0.30	7650867
Total Copper (Cu)	mg/kg	30.2	7650867	41.4	38.4	7650845	44.7	41.5	0.50	7650867
Total Iron (Fe)	mg/kg	16800	7650867	16100	16400	7650845	17800	18800	100	7650867
Total Lead (Pb)	mg/kg	7.79	7650867	9.46	9.04	7650845	7.01	11.7	0.10	7650867
Total Lithium (Li)	mg/kg	18.3	7650867	18.8	19.0	7650845	18.6	18.3	5.0	7650867
Total Magnesium (Mg)	mg/kg	6220	7650867	5850	6170	7650845	6510	6730	100	7650867
Total Manganese (Mn)	mg/kg	209	7650867	204	206	7650845	222	211	0.20	7650867
Total Mercury (Hg)	mg/kg	0.077	7650867	0.081	0.080	7650845	0.063	0.123	0.050	7650867
Total Molybdenum (Mo)	mg/kg	1.46	7650867	1.94	1.88	7650845	1.29	2.46	0.10	7650867
Total Nickel (Ni)	mg/kg	19.3	7650867	24.7	25.9	7650845	18.5	20.4	0.80	7650867
Total Phosphorus (P)	mg/kg	521	7650867	447	475	7650845	498	518	10	7650867
Total Potassium (K)	mg/kg	1010	7650867	940	960	7650845	1060	1200	100	7650867
Total Selenium (Se)	mg/kg	<0.50	7650867	<0.50	<0.50	7650845	<0.50	<0.50	0.50	7650867
Total Silver (Ag)	mg/kg	0.083	7650867	0.101	0.091	7650845	0.072	0.093	0.050	7650867
Total Sodium (Na)	mg/kg	3550	7650867	4350	4380	7650845	4270	6430	100	7650867
Total Strontium (Sr)	mg/kg	57.1	7650867	71.1	71.0	7650845	52.4	68.0	0.10	7650867
Total Thallium (Tl)	mg/kg	0.246	7650867	0.189	0.223	7650845	0.202	0.232	0.050	7650867
Total Tin (Sn)	mg/kg	0.65	7650867	0.99	1.01	7650845	0.72	1.48	0.10	7650867
Total Titanium (Ti)	mg/kg	1140	7650867	910	939	7650845	1260	1120	1.0	7650867
Total Uranium (U)	mg/kg	0.800	7650867	0.669	0.633	7650845	0.758	0.830	0.050	7650867
Total Vanadium (V)	mg/kg	47.3	7650867	42.6	43.4	7650845	48.7	46.5	2.0	7650867
Total Zinc (Zn)	mg/kg	45.6	7650867	53.9	55.3	7650845	46.1	63.1	1.0	7650867
Total Zirconium (Zr)	mg/kg	4.22	7650867	4.26	4.31	7650845	4.39	4.62	0.50	7650867

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

CSR/CCME METALS IN SOIL (SEDIMENT)

Maxxam ID		KQ5524	KQ5525		
Sampling Date		2014/09/18	2014/09/18		
COC Number		G079949	G079949		
	Units	14SED-DUP1	14SED-DUP2	RDL	QC Batch
Physical Properties					
Soluble (2:1) pH	pH	7.79	8.09	N/A	7651113
Total Metals by ICPMS					
Total Aluminum (Al)	mg/kg	12400	13200	100	7651107
Total Antimony (Sb)	mg/kg	0.38	0.20	0.10	7651107
Total Arsenic (As)	mg/kg	3.92	4.85	0.50	7651107
Total Barium (Ba)	mg/kg	40.2	48.5	0.10	7651107
Total Beryllium (Be)	mg/kg	<0.40	<0.40	0.40	7651107
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	0.10	7651107
Total Cadmium (Cd)	mg/kg	0.495	0.754	0.050	7651107
Total Calcium (Ca)	mg/kg	7730	11600	100	7651107
Total Chromium (Cr)	mg/kg	20.4	22.6	1.0	7651107
Total Cobalt (Co)	mg/kg	6.57	6.78	0.30	7651107
Total Copper (Cu)	mg/kg	30.7	41.9	0.50	7651107
Total Iron (Fe)	mg/kg	15800	17400	100	7651107
Total Lead (Pb)	mg/kg	4.38	10.0	0.10	7651107
Total Lithium (Li)	mg/kg	17.2	19.5	5.0	7651107
Total Magnesium (Mg)	mg/kg	5780	6470	100	7651107
Total Manganese (Mn)	mg/kg	212	226	0.20	7651107
Total Mercury (Hg)	mg/kg	0.059	0.084	0.050	7651107
Total Molybdenum (Mo)	mg/kg	1.00	1.86	0.10	7651107
Total Nickel (Ni)	mg/kg	18.8	20.8	0.80	7651107
Total Phosphorus (P)	mg/kg	465	499	10	7651107
Total Potassium (K)	mg/kg	853	1110	100	7651107
Total Selenium (Se)	mg/kg	<0.50	<0.50	0.50	7651107
Total Silver (Ag)	mg/kg	0.070	0.130	0.050	7651107
Total Sodium (Na)	mg/kg	2740	4370	100	7651107
Total Strontium (Sr)	mg/kg	44.0	75.4	0.10	7651107
Total Thallium (Tl)	mg/kg	0.221	0.241	0.050	7651107
Total Tin (Sn)	mg/kg	0.71	0.74	0.10	7651107
Total Titanium (Ti)	mg/kg	1170	1200	1.0	7651107
Total Uranium (U)	mg/kg	0.916	0.870	0.050	7651107
Total Vanadium (V)	mg/kg	45.9	48.3	2.0	7651107
Total Zinc (Zn)	mg/kg	42.1	51.6	1.0	7651107
Total Zirconium (Zr)	mg/kg	4.30	4.65	0.50	7651107

RDL = Reportable Detection Limit
N/A = Not Applicable

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Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

CSR PAH IN SOIL BY GC-MS (SEDIMENT)

Maxxam ID		KQ5506	KQ5507	KQ5508	KQ5509		KQ5510		KQ5511		
Sampling Date		2014/09/18	2014/09/18	2014/09/18	2014/09/18		2014/09/18		2014/09/18		
COC Number		G079948	G079948	G079948	G079948		G079948		G079948		
	Units	**14SED01**	**14SED02**	**14SED03**	**14SED04**	**RDL**	**14SED05**	**RDL**	**14SED06**	**RDL**	**QC Batch**
Polycyclic Aromatics											
Naphthalene	mg/kg	1.1	1.7	0.33	1.6	0.050	1.0	0.050	0.47	0.050	7655428
2-Methylnaphthalene	mg/kg	1.4	1.8	0.45	2.3	0.050	0.92	0.050	0.56	0.050	7655428
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	0.16	0.050	0.15	0.050	<0.050	0.050	7655428
Acenaphthene	mg/kg	0.44	0.68	0.12	1.1	0.050	0.98	0.050	0.16	0.050	7655428
Fluorene	mg/kg	0.39	0.55	0.10	1.1	0.050	0.94	0.050	0.13	0.050	7655428
Phenanthrene	mg/kg	1.0	1.6	0.24	7.4	0.050	5.4	0.050	0.32	0.050	7655428
Anthracene	mg/kg	0.44	0.35	0.082	0.95	0.050	0.63	0.050	0.10	0.050	7655428
Fluoranthene	mg/kg	1.7	2.6	0.29	11	0.050	17 (1)	0.50	0.37	0.050	7655428
Pyrene	mg/kg	1.7	1.9	0.32	6.4	0.050	9.1	0.050	0.38	0.050	7655428
Benzo(a)anthracene	mg/kg	0.42	0.45	0.073	1.1	0.050	1.2	0.050	0.089	0.050	7655428
Chrysene	mg/kg	0.53	0.58	0.070	1.9	0.050	2.4	0.050	0.092	0.050	7655428
Benzo(b&j)fluoranthene	mg/kg	0.45	0.47	0.065	1.1	0.050	1.9	0.050	0.076	0.050	7655428
Benzo(b)fluoranthene	mg/kg	0.28	0.31	<0.050	0.72	0.050	1.3	0.050	<0.050	0.050	7655428
Benzo(k)fluoranthene	mg/kg	0.13	0.13	<0.050	0.36	0.050	0.56	0.050	<0.050	0.050	7655428
Benzo(a)pyrene	mg/kg	0.22	0.22	<0.050	0.41	0.050	0.62	0.050	<0.050	0.050	7655428
Indeno(1,2,3-cd)pyrene	mg/kg	0.073	0.070	<0.050	0.13	0.050	0.23	0.050	<0.050	0.050	7655428
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	<0.050	0.050	0.061	0.050	<0.050	0.050	7655428
Benzo(g,h,i)perylene	mg/kg	0.081	0.073	<0.050	0.13	0.050	0.21	0.050	<0.050	0.050	7655428
Low Molecular Weight PAH`s	mg/kg	4.8	6.7	1.3	15	0.050	10	0.050	1.7	0.050	7649306
High Molecular Weight PAH`s	mg/kg	4.6	5.7	0.75	21	0.050	31	0.50	0.93	0.050	7649306
Total PAH	mg/kg	9.3	12	2.1	35	0.050	41	0.50	2.7	0.050	7649306
Surrogate Recovery (%)											
D10-ANTHRACENE (sur.)	%	94	96	101	86		87		97		7655428
D8-ACENAPHTHYLENE (sur.)	%	86	91	87	85		87		88		7655428
D8-NAPHTHALENE (sur.)	%	97	97	91	97		89		91		7655428
TERPHENYL-D14 (sur.)	%	92	92	88	86		85		90		7655428

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

CSR PAH IN SOIL BY GC-MS (SEDIMENT)

Maxxam ID		KQ5512	KQ5512		KQ5513	KQ5514	KQ5515	KQ5516		
Sampling Date		2014/09/18	2014/09/18		2014/09/18	2014/09/18	2014/09/18	2014/09/18		
COC Number		G079948	G079948		G079948	G079948	G079948	G079948		
	Units	**14SED07**	**14SED07 Lab-Dup**	**QC Batch**	**14SED08**	**14SED09**	**14SED10**	**14SED11**	**RDL**	**QC Batch**
Polycyclic Aromatics										
Naphthalene	mg/kg	0.68	0.69	7656338	0.80	0.59	0.77	0.58	0.050	7655428
2-Methylnaphthalene	mg/kg	1.0	0.91	7656338	0.81	0.59	1.2	0.80	0.050	7655428
Acenaphthylene	mg/kg	<0.050	<0.050	7656338	0.057	<0.050	<0.050	<0.050	0.050	7655428
Acenaphthene	mg/kg	0.31	0.32	7656338	0.53	0.29	0.29	0.27	0.050	7655428
Fluorene	mg/kg	0.36	0.37	7656338	0.55	0.26	0.24	0.25	0.050	7655428
Phenanthrene	mg/kg	0.86	0.94	7656338	2.6	0.73	0.62	0.66	0.050	7655428
Anthracene	mg/kg	0.25	0.27	7656338	1.7	0.25	0.18	0.23	0.050	7655428
Fluoranthene	mg/kg	1.3	1.2	7656338	4.7	2.2	0.70	0.84	0.050	7655428
Pyrene	mg/kg	1.2	1.1	7656338	3.0	0.99	0.70	0.81	0.050	7655428
Benzo(a)anthracene	mg/kg	0.33	0.27	7656338	0.85	0.45	0.16	0.19	0.050	7655428
Chrysene	mg/kg	0.40	0.28	7656338	1.1	0.45	0.16	0.22	0.050	7655428
Benzo(b&j)fluoranthene	mg/kg	0.39	0.25	7656338	0.76	0.39	0.14	0.18	0.050	7655428
Benzo(b)fluoranthene	mg/kg	0.26	0.16	7656338	0.50	0.25	0.090	0.12	0.050	7655428
Benzo(k)fluoranthene	mg/kg	0.13	0.080	7656338	0.24	0.11	<0.050	0.054	0.050	7655428
Benzo(a)pyrene	mg/kg	0.19	0.13	7656338	0.33	0.19	0.067	0.086	0.050	7655428
Indeno(1,2,3-cd)pyrene	mg/kg	0.064	<0.050	7656338	0.10	0.052	<0.050	<0.050	0.050	7655428
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	7656338	<0.050	<0.050	<0.050	<0.050	0.050	7655428
Benzo(g,h,i)perylene	mg/kg	0.091	0.062	7656338	0.099	0.051	<0.050	<0.050	0.050	7655428
Low Molecular Weight PAH`s	mg/kg	3.5		7649306	7.0	2.7	3.3	2.8	0.050	7649306
High Molecular Weight PAH`s	mg/kg	3.4		7649306	10	4.3	1.8	2.1	0.050	7649306
Total PAH	mg/kg	6.9		7649306	17	7.0	5.0	4.9	0.050	7649306
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	110	93	7656338	90	92	94	92		7655428
D8-ACENAPHTHYLENE (sur.)	%	100	88	7656338	84	86	87	85		7655428
D8-NAPHTHALENE (sur.)	%	111	92	7656338	87	88	93	90		7655428
TERPHENYL-D14 (sur.)	%	99	85	7656338	83	87	90	87		7655428

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

CSR PAH IN SOIL BY GC-MS (SEDIMENT)

Maxxam ID		KQ5517	KQ5518	KQ5519	KQ5520	KQ5521	KQ5522	KQ5523		
Sampling Date		2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18	2014/09/18		
COC Number		G079948	G079949	G079949	G079949	G079949	G079949	G079949		
	Units	**14SED12**	**14SED13**	**14SED14**	**14SED15**	**14SED16**	**14SED17**	**14SED18**	**RDL**	**QC Batch**
Polycyclic Aromatics										
Naphthalene	mg/kg	0.72	0.96	1.0	1.1	1.4	0.77	0.97	0.050	7655428
2-Methylnaphthalene	mg/kg	0.97	1.2	1.3	1.6	1.9	0.94	1.2	0.050	7655428
Acenaphthylene	mg/kg	<0.050	<0.050	0.053	<0.050	0.064	<0.050	0.061	0.050	7655428
Acenaphthene	mg/kg	0.39	0.50	0.48	0.47	0.68	0.54	0.51	0.050	7655428
Fluorene	mg/kg	0.37	0.40	0.44	0.37	0.63	0.54	0.51	0.050	7655428
Phenanthrene	mg/kg	1.1	0.97	1.2	0.99	1.6	1.7	1.2	0.050	7655428
Anthracene	mg/kg	0.39	0.31	0.50	0.31	0.71	0.40	0.64	0.050	7655428
Fluoranthene	mg/kg	1.5	1.4	2.9	1.0	2.3	2.0	2.4	0.050	7655428
Pyrene	mg/kg	1.3	2.0	3.0	1.2	2.5	1.7	2.8	0.050	7655428
Benzo(a)anthracene	mg/kg	0.53	0.31	0.63	0.31	0.66	0.44	0.74	0.050	7655428
Chrysene	mg/kg	0.69	0.36	0.96	0.38	0.89	0.49	1.1	0.050	7655428
Benzo(b&j)fluoranthene	mg/kg	0.60	0.37	0.83	0.26	0.79	0.41	0.97	0.050	7655428
Benzo(b)fluoranthene	mg/kg	0.40	0.24	0.54	0.17	0.52	0.27	0.64	0.050	7655428
Benzo(k)fluoranthene	mg/kg	0.18	0.11	0.25	0.076	0.24	0.12	0.28	0.050	7655428
Benzo(a)pyrene	mg/kg	0.29	0.18	0.38	0.13	0.39	0.19	0.44	0.050	7655428
Indeno(1,2,3-cd)pyrene	mg/kg	0.092	<0.050	0.12	<0.050	0.13	0.061	0.15	0.050	7655428
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.051	0.050	7655428
Benzo(g,h,i)perylene	mg/kg	0.097	0.054	0.13	<0.050	0.13	0.067	0.16	0.050	7655428
Low Molecular Weight PAH`s	mg/kg	3.9	4.3	5.0	4.8	7.1	4.9	5.1	0.050	7649306
High Molecular Weight PAH`s	mg/kg	4.3	4.2	7.9	3.0	6.8	4.9	7.5	0.050	7649306
Total PAH	mg/kg	8.2	8.5	13	7.9	14	9.7	13	0.050	7649306
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	92	90	88	89	89	94	91		7655428
D8-ACENAPHTHYLENE (sur.)	%	86	84	85	84	86	88	85		7655428
D8-NAPHTHALENE (sur.)	%	90	91	92	95	96	93	93		7655428
TERPHENYL-D14 (sur.)	%	89	89	86	89	89	91	84		7655428
RDL = Reportable Detection Limit										

Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

CSR PAH IN SOIL BY GC-MS (SEDIMENT)

Maxxam ID		KQ5524	KQ5525		
Sampling Date		2014/09/18	2014/09/18		
COC Number		G079949	G079949		
	Units	**14SED-DUP1**	**14SED-DUP2**	**RDL**	**QC Batch**
Polycyclic Aromatics					
Naphthalene	mg/kg	0.94	1.2	0.050	7655428
2-Methylnaphthalene	mg/kg	1.3	1.5	0.050	7655428
Acenaphthylene	mg/kg	<0.050	0.061	0.050	7655428
Acenaphthene	mg/kg	0.39	0.57	0.050	7655428
Fluorene	mg/kg	0.35	0.54	0.050	7655428
Phenanthrene	mg/kg	0.99	1.7	0.050	7655428
Anthracene	mg/kg	0.37	0.57	0.050	7655428
Fluoranthene	mg/kg	1.4	3.0	0.050	7655428
Pyrene	mg/kg	1.5	3.0	0.050	7655428
Benzo(a)anthracene	mg/kg	0.37	0.69	0.050	7655428
Chrysene	mg/kg	0.51	1.1	0.050	7655428
Benzo(b&j)fluoranthene	mg/kg	0.48	0.93	0.050	7655428
Benzo(b)fluoranthene	mg/kg	0.31	0.62	0.050	7655428
Benzo(k)fluoranthene	mg/kg	0.14	0.27	0.050	7655428
Benzo(a)pyrene	mg/kg	0.23	0.40	0.050	7655428
Indeno(1,2,3-cd)pyrene	mg/kg	0.082	0.12	0.050	7655428
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	0.050	7655428
Benzo(g,h,i)perylene	mg/kg	0.093	0.12	0.050	7655428
Low Molecular Weight PAH`s	mg/kg	4.3	6.1	0.050	7649306
High Molecular Weight PAH`s	mg/kg	4.0	8.2	0.050	7649306
Total PAH	mg/kg	8.3	14	0.050	7649306
Surrogate Recovery (%)					
D10-ANTHRACENE (sur.)	%	91	88		7655428
D8-ACENAPHTHYLENE (sur.)	%	84	85		7655428
D8-NAPHTHALENE (sur.)	%	93	92		7655428
TERPHENYL-D14 (sur.)	%	88	85		7655428
RDL = Reportable Detection Limit					

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.3°C
Package 2	6.7°C

Results relate only to the items tested.

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Maxxam Job #: B483823
Report Date: 2014/09/30

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7655428	D10-ANTHRACENE (sur.)	2014/09/26	93	60 - 130	118	60 - 130	119	%				
7655428	D8-ACENAPHTHYLENE (sur.)	2014/09/26	87	50 - 130	89	50 - 130	86	%				
7655428	D8-NAPHTHALENE (sur.)	2014/09/26	95	50 - 130	91	50 - 130	88	%				
7655428	TERPHENYL-D14 (sur.)	2014/09/26	90	60 - 130	88	60 - 130	86	%				
7656338	D10-ANTHRACENE (sur.)	2014/09/27	95	60 - 130	97	60 - 130	97	%				
7656338	D8-ACENAPHTHYLENE (sur.)	2014/09/27	97	50 - 130	97	50 - 130	100	%				
7656338	D8-NAPHTHALENE (sur.)	2014/09/27	99	50 - 130	100	50 - 130	100	%				
7656338	TERPHENYL-D14 (sur.)	2014/09/27	97	60 - 130	96	60 - 130	95	%				
7650845	Total Aluminum (Al)	2014/09/24					<100	mg/kg	3.8	35	108	70 - 130
7650845	Total Antimony (Sb)	2014/09/24	85	75 - 125	98	75 - 125	<0.10	mg/kg	NC	30	105	70 - 130
7650845	Total Arsenic (As)	2014/09/24	93	75 - 125	95	75 - 125	<0.50	mg/kg	2.3	30	102	70 - 130
7650845	Total Barium (Ba)	2014/09/24	NC	75 - 125	101	75 - 125	<0.10	mg/kg	2.7	35	106	70 - 130
7650845	Total Beryllium (Be)	2014/09/24	99	75 - 125	100	75 - 125	<0.40	mg/kg	NC	30		
7650845	Total Bismuth (Bi)	2014/09/24					<0.10	mg/kg	NC	30		
7650845	Total Cadmium (Cd)	2014/09/24	98	75 - 125	100	75 - 125	<0.050	mg/kg	0.34	30	113	70 - 130
7650845	Total Calcium (Ca)	2014/09/24					<100	mg/kg	1.4	30	99	70 - 130
7650845	Total Chromium (Cr)	2014/09/24	91	75 - 125	96	75 - 125	<1.0	mg/kg	1.7	30	111	70 - 130
7650845	Total Cobalt (Co)	2014/09/24	92	75 - 125	100	75 - 125	<0.30	mg/kg	2.6	30	96	70 - 130
7650845	Total Copper (Cu)	2014/09/24	NC	75 - 125	103	75 - 125	<0.50	mg/kg	7.6	30	96	70 - 130
7650845	Total Iron (Fe)	2014/09/24					<100	mg/kg	1.7	30	98	70 - 130
7650845	Total Lead (Pb)	2014/09/24	93	75 - 125	103	75 - 125	<0.10	mg/kg	4.5	35	102	70 - 130
7650845	Total Lithium (Li)	2014/09/24	101	75 - 125	99	75 - 125	<5.0	mg/kg	NC	30		
7650845	Total Magnesium (Mg)	2014/09/24					<100	mg/kg	5.4	30	96	70 - 130
7650845	Total Manganese (Mn)	2014/09/24	NC	75 - 125	101	75 - 125	<0.20	mg/kg	1.2	30	101	70 - 130
7650845	Total Mercury (Hg)	2014/09/24	107	75 - 125	95	75 - 125	<0.050	mg/kg	NC	35	111	70 - 130
7650845	Total Molybdenum (Mo)	2014/09/24	108	75 - 125	105	75 - 125	<0.10	mg/kg	3.0	35	118	70 - 130
7650845	Total Nickel (Ni)	2014/09/24	97	75 - 125	101	75 - 125	<0.80	mg/kg	4.8	30	103	70 - 130
7650845	Total Phosphorus (P)	2014/09/24					<10	mg/kg	6.0	30	93	70 - 130
7650845	Total Potassium (K)	2014/09/24					<100	mg/kg	2.2	35		
7650845	Total Selenium (Se)	2014/09/24	95	75 - 125	97	75 - 125	<0.50	mg/kg	NC	30		
7650845	Total Silver (Ag)	2014/09/24	93	75 - 125	103	75 - 125	<0.050	mg/kg	NC	35		
7650845	Total Sodium (Na)	2014/09/24					<100	mg/kg	0.74	35		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7650845	Total Strontium (Sr)	2014/09/24	NC	75 - 125	100	75 - 125	<0.10	mg/kg	0.24	35	110	70 - 130
7650845	Total Thallium (Tl)	2014/09/24	88	75 - 125	103	75 - 125	<0.050	mg/kg	NC	30	101	70 - 130
7650845	Total Tin (Sn)	2014/09/24	94	75 - 125	98	75 - 125	<0.10	mg/kg	1.6	35		
7650845	Total Titanium (Ti)	2014/09/24	NC	75 - 125	94	75 - 125	<1.0	mg/kg	3.1	35	111	70 - 130
7650845	Total Uranium (U)	2014/09/24	96	75 - 125	99	75 - 125	<0.050	mg/kg	5.5	30	103	70 - 130
7650845	Total Vanadium (V)	2014/09/24	NC	75 - 125	98	75 - 125	<2.0	mg/kg	1.9	30	111	70 - 130
7650845	Total Zinc (Zn)	2014/09/24	NC	75 - 125	102	75 - 125	<1.0	mg/kg	2.5	30	95	70 - 130
7650845	Total Zirconium (Zr)	2014/09/24					<0.50	mg/kg	1.1	30		
7650856	Soluble (2:1) pH	2014/09/24			100	97 - 103			0.38	N/A		
7650867	Total Aluminum (Al)	2014/09/24					<100	mg/kg	1.3	35	103	70 - 130
7650867	Total Antimony (Sb)	2014/09/24	93	75 - 125	102	75 - 125	<0.10	mg/kg	NC	30	109	70 - 130
7650867	Total Arsenic (As)	2014/09/24	102	75 - 125	97	75 - 125	0.51 ,RDL=0.50	mg/kg	1.3	30	102	70 - 130
7650867	Total Barium (Ba)	2014/09/24	NC	75 - 125	102	75 - 125	<0.10	mg/kg	0.79	35	107	70 - 130
7650867	Total Beryllium (Be)	2014/09/24	101	75 - 125	108	75 - 125	<0.40	mg/kg	NC	30		
7650867	Total Bismuth (Bi)	2014/09/24					<0.10	mg/kg	NC	30		
7650867	Total Cadmium (Cd)	2014/09/24	104	75 - 125	104	75 - 125	<0.050	mg/kg	3.5	30	104	70 - 130
7650867	Total Calcium (Ca)	2014/09/24					<100	mg/kg	6.1	30	96	70 - 130
7650867	Total Chromium (Cr)	2014/09/24	105	75 - 125	99	75 - 125	<1.0	mg/kg	2.0	30	108	70 - 130
7650867	Total Cobalt (Co)	2014/09/24	102	75 - 125	100	75 - 125	<0.30	mg/kg	4.5	30	90	70 - 130
7650867	Total Copper (Cu)	2014/09/24	102	75 - 125	104	75 - 125	<0.50	mg/kg	1.2	30	95	70 - 130
7650867	Total Iron (Fe)	2014/09/24					<100	mg/kg	2.2	30	95	70 - 130
7650867	Total Lead (Pb)	2014/09/24	106	75 - 125	106	75 - 125	<0.10	mg/kg	0.14	35	101	70 - 130
7650867	Total Lithium (Li)	2014/09/24	100	75 - 125	105	75 - 125	<5.0	mg/kg	NC	30		
7650867	Total Magnesium (Mg)	2014/09/24					<100	mg/kg	2.3	30	95	70 - 130
7650867	Total Manganese (Mn)	2014/09/24	NC	75 - 125	103	75 - 125	<0.20	mg/kg	2.2	30	100	70 - 130
7650867	Total Mercury (Hg)	2014/09/24	105	75 - 125	99	75 - 125	<0.050	mg/kg	NC	35	84	70 - 130
7650867	Total Molybdenum (Mo)	2014/09/24	109	75 - 125	109	75 - 125	<0.10	mg/kg	3.2	35	116	70 - 130
7650867	Total Nickel (Ni)	2014/09/24	NC	75 - 125	101	75 - 125	<0.80	mg/kg	0.54	30	99	70 - 130
7650867	Total Phosphorus (P)	2014/09/24					<10	mg/kg	3.0	30	91	70 - 130
7650867	Total Potassium (K)	2014/09/24					<100	mg/kg	0.20	35		
7650867	Total Selenium (Se)	2014/09/24	103	75 - 125	100	75 - 125	<0.50	mg/kg	NC	30		
7650867	Total Silver (Ag)	2014/09/24	99	75 - 125	100	75 - 125	<0.050	mg/kg	NC	35		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7650867	Total Sodium (Na)	2014/09/24					<100	mg/kg	NC	35		
7650867	Total Strontium (Sr)	2014/09/24	NC	75 - 125	103	75 - 125	<0.10	mg/kg	1.2	35	107	70 - 130
7650867	Total Thallium (Tl)	2014/09/24	91	75 - 125	102	75 - 125	<0.050	mg/kg	NC	30	99	70 - 130
7650867	Total Tin (Sn)	2014/09/24	99	75 - 125	98	75 - 125	<0.10	mg/kg	5.7	35		
7650867	Total Titanium (Ti)	2014/09/24	NC	75 - 125	97	75 - 125	<1.0	mg/kg	8.6	35	114	70 - 130
7650867	Total Uranium (U)	2014/09/24	105	75 - 125	101	75 - 125	<0.050	mg/kg	4.1	30	103	70 - 130
7650867	Total Vanadium (V)	2014/09/24	NC	75 - 125	97	75 - 125	<2.0	mg/kg	1.9	30	108	70 - 130
7650867	Total Zinc (Zn)	2014/09/24	NC	75 - 125	105	75 - 125	<1.0	mg/kg	2.0	30	96	70 - 130
7650867	Total Zirconium (Zr)	2014/09/24					<0.50	mg/kg	3.2	30		
7650915	Soluble (2:1) pH	2014/09/24			100	97 - 103			0.37	N/A		
7651107	Total Aluminum (Al)	2014/09/24					<100	mg/kg	6.7	35	126	70 - 130
7651107	Total Antimony (Sb)	2014/09/24	95	75 - 125	106	75 - 125	<0.10	mg/kg	NC	30	103	70 - 130
7651107	Total Arsenic (As)	2014/09/24	104	75 - 125	99	75 - 125	<0.50	mg/kg	2.0	30	101	70 - 130
7651107	Total Barium (Ba)	2014/09/24	NC	75 - 125	105	75 - 125	<0.10	mg/kg	0.25	35	105	70 - 130
7651107	Total Beryllium (Be)	2014/09/24	98	75 - 125	99	75 - 125	<0.40	mg/kg	NC	30		
7651107	Total Bismuth (Bi)	2014/09/24					<0.10	mg/kg	NC	30		
7651107	Total Cadmium (Cd)	2014/09/24	104	75 - 125	103	75 - 125	<0.050	mg/kg	10	30	105	70 - 130
7651107	Total Calcium (Ca)	2014/09/24					<100	mg/kg	1.5	30	105	70 - 130
7651107	Total Chromium (Cr)	2014/09/24	103	75 - 125	106	75 - 125	<1.0	mg/kg	4.9	30	120	70 - 130
7651107	Total Cobalt (Co)	2014/09/24	102	75 - 125	108	75 - 125	<0.30	mg/kg	3.3	30	99	70 - 130
7651107	Total Copper (Cu)	2014/09/24	NC	75 - 125	107	75 - 125	<0.50	mg/kg	6.9	30	98	70 - 130
7651107	Total Iron (Fe)	2014/09/24					<100	mg/kg	2.2	30	105	70 - 130
7651107	Total Lead (Pb)	2014/09/24	104	75 - 125	109	75 - 125	<0.10	mg/kg	2.9	35	106	70 - 130
7651107	Total Lithium (Li)	2014/09/24	98	75 - 125	100	75 - 125	<5.0	mg/kg	NC	30		
7651107	Total Magnesium (Mg)	2014/09/24					<100	mg/kg	0.90	30	104	70 - 130
7651107	Total Manganese (Mn)	2014/09/24	NC	75 - 125	107	75 - 125	<0.20	mg/kg	2.4	30	104	70 - 130
7651107	Total Mercury (Hg)	2014/09/24	102	75 - 125	110	75 - 125	<0.050	mg/kg	NC	35	86	70 - 130
7651107	Total Molybdenum (Mo)	2014/09/24	116	75 - 125	103	75 - 125	<0.10	mg/kg	2.4	35	116	70 - 130
7651107	Total Nickel (Ni)	2014/09/24	NC	75 - 125	106	75 - 125	<0.80	mg/kg	7.1	30	99	70 - 130
7651107	Total Phosphorus (P)	2014/09/24					<10	mg/kg	2.9	30	97	70 - 130
7651107	Total Potassium (K)	2014/09/24					<100	mg/kg	5.0	35		
7651107	Total Selenium (Se)	2014/09/24	103	75 - 125	104	75 - 125	<0.50	mg/kg	NC	30		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7651107	Total Silver (Ag)	2014/09/24	105	75 - 125	99	75 - 125	<0.050	mg/kg	NC	35		
7651107	Total Sodium (Na)	2014/09/24					<100	mg/kg	NC	35		
7651107	Total Strontium (Sr)	2014/09/24	NC	75 - 125	101	75 - 125	<0.10	mg/kg	0.26	35	108	70 - 130
7651107	Total Thallium (Tl)	2014/09/24	85	75 - 125	108	75 - 125	<0.050	mg/kg	NC	30	106	70 - 130
7651107	Total Tin (Sn)	2014/09/24	100	75 - 125	101	75 - 125	<0.10	mg/kg	2.4	35		
7651107	Total Titanium (Ti)	2014/09/24	NC	75 - 125	101	75 - 125	<1.0	mg/kg	1.8	35	124	70 - 130
7651107	Total Uranium (U)	2014/09/24	104	75 - 125	105	75 - 125	<0.050	mg/kg	8.2	30	108	70 - 130
7651107	Total Vanadium (V)	2014/09/24	NC	75 - 125	105	75 - 125	<2.0	mg/kg	7.7	30	118	70 - 130
7651107	Total Zinc (Zn)	2014/09/24	NC	75 - 125	105	75 - 125	<1.0	mg/kg	3.7	30	94	70 - 130
7651107	Total Zirconium (Zr)	2014/09/24					<0.50	mg/kg	0.82	30		
7651113	Soluble (2:1) pH	2014/09/24			99	97 - 103			0.73	N/A		
7653594	Moisture	2014/09/26					<0.30	%	7.6	20		
7655428	2-Methylnaphthalene	2014/09/26			96	50 - 130	<0.050	mg/kg				
7655428	Acenaphthene	2014/09/26			98	50 - 130	<0.050	mg/kg				
7655428	Acenaphthylene	2014/09/26			91	50 - 130	<0.050	mg/kg				
7655428	Anthracene	2014/09/26			98	60 - 130	<0.050	mg/kg				
7655428	Benzo(a)anthracene	2014/09/26			96	60 - 130	<0.050	mg/kg				
7655428	Benzo(a)pyrene	2014/09/26			96	60 - 130	<0.050	mg/kg				
7655428	Benzo(b&j)fluoranthene	2014/09/26			96	60 - 130	<0.050	mg/kg				
7655428	Benzo(b)fluoranthene	2014/09/26					<0.050	mg/kg				
7655428	Benzo(g,h,i)perylene	2014/09/26			90	60 - 130	<0.050	mg/kg				
7655428	Benzo(k)fluoranthene	2014/09/26			101	60 - 130	<0.050	mg/kg				
7655428	Chrysene	2014/09/26			97	60 - 130	<0.050	mg/kg				
7655428	Dibenz(a,h)anthracene	2014/09/26			81	60 - 130	<0.050	mg/kg				
7655428	Fluoranthene	2014/09/26			96	60 - 130	<0.050	mg/kg				
7655428	Fluorene	2014/09/26			94	50 - 130	<0.050	mg/kg				
7655428	Indeno(1,2,3-cd)pyrene	2014/09/26			89	60 - 130	<0.050	mg/kg				
7655428	Naphthalene	2014/09/26			94	50 - 130	<0.050	mg/kg				
7655428	Phenanthrene	2014/09/26			95	60 - 130	<0.050	mg/kg				
7655428	Pyrene	2014/09/26			96	60 - 130	<0.050	mg/kg				
7656338	2-Methylnaphthalene	2014/09/28	96	50 - 130	95	50 - 130	<0.050	mg/kg	NC	50		
7656338	Acenaphthene	2014/09/28	93	50 - 130	93	50 - 130	<0.050	mg/kg	NC	50		

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Maxxam Job #: B483823
Report Date: 2014/09/30

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7656338	Acenaphthylene	2014/09/28	92	50 - 130	94	50 - 130	<0.050	mg/kg	NC	50		
7656338	Anthracene	2014/09/28	94	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
7656338	Benzo(a)anthracene	2014/09/28	91	60 - 130	93	60 - 130	<0.050	mg/kg	NC	50		
7656338	Benzo(a)pyrene	2014/09/28	95	60 - 130	95	60 - 130	<0.050	mg/kg	NC	50		
7656338	Benzo(b&j)fluoranthene	2014/09/28	96	60 - 130	94	60 - 130	<0.050	mg/kg	NC	50		
7656338	Benzo(b)fluoranthene	2014/09/28					<0.050	mg/kg	NC	50		
7656338	Benzo(g,h,i)perylene	2014/09/28	88	60 - 130	88	60 - 130	<0.050	mg/kg	NC	50		
7656338	Benzo(k)fluoranthene	2014/09/28	97	60 - 130	102	60 - 130	<0.050	mg/kg	NC	50		
7656338	Chrysene	2014/09/28	94	60 - 130	95	60 - 130	<0.050	mg/kg	NC	50		
7656338	Dibenz(a,h)anthracene	2014/09/28	87	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
7656338	Fluoranthene	2014/09/28	92	60 - 130	90	60 - 130	<0.050	mg/kg	NC	50		
7656338	Fluorene	2014/09/28	93	50 - 130	93	50 - 130	<0.050	mg/kg	NC	50		
7656338	Indeno(1,2,3-cd)pyrene	2014/09/28	91	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
7656338	Naphthalene	2014/09/28	96	50 - 130	97	50 - 130	<0.050	mg/kg	NC	50		
7656338	Phenanthrene	2014/09/28	86	60 - 130	88	60 - 130	<0.050	mg/kg	NC	50		
7656338	Pyrene	2014/09/28	94	60 - 130	94	60 - 130	<0.050	mg/kg	NC	50		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B483823
Report Date: 2014/09/30

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DR, NANAIMO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B483823

CHAIN OF CUSTODY RECORD

Page: ___ of ___

G 079948

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: Tetra Tech EBA
Contact Name: Lora Paul
Address: #1-4376 Boban Dr
Nanaimo PC: V9T6A7
Phone / Fax#: 250 756 2256
E-mail: lora.paul@tetratech.com

Report To:

Company Name: Same as invoice
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

PO #:
Quotation #:
Project #: ENVIND03511-01
Proj. Name:
Location: 1 Port Dr. Nanaimo
Sampled By: S.Walker + K.Gabelhouse

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required: ______

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N), (Field Acidified? Y/N), Totals Metals Field Acidified? (Y/N), Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, ~~Metals~~, Metals, HOLD (all)

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	PAH	~~Metals~~	Metals
1	SD14-01	KQ5506	Sediment	14/18/09	X		X
2	SD14-02	KQ5507	"	"	X		X
3	SD14-03	KQ5508	"	"	X		
4	SD14-04	KQ5509	"	"	X		X
5	SD14-05	KQ5510	"	"	X		
6	SD14-06	KQ5511	"	"	X		X
7	SD14-07	KQ5512	"	"	X		
8	SD14-08	KQ5513	"	"	X		X
9	SD14-09	KQ5514	"	"	X		
10	SD14-10	KQ5515	"	"	X		
11	SD14-11	KQ5516	"	"	X		X
12	SD14-12	KQ5517	"	"	X		

Samples are from a Drinking Water Source? YES / NO

Does source supply multiple households? YES / NO

B483823

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
S.Walker	14/09/18	13:23	[signature]	2014/09/19	08:10	[ ]	5,4,4 / 6,9,5	NA — Yes / No

Laboratory Use Only

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (06/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B483823

CHAIN OF CUSTODY RECORD

Page: ___ of ___

G 079949

Invoice To: Require Report? Yes ☐ No ☐

Company Name: Tetra Tech EBA
Contact Name: Lora Paul
Address: #1-4376 Boban Dr
Nanaimo PC: V9T 6A7
Phone / Fax#: 250 756 2256
E-mail: lora.paul@tetratech.com

Report To:

Company Name: Same as invoice
Contact Name:
Address:
PC:
Ph:
Fax:
Email:

PO #:
Quotation #:
Project #: ENVIND03511-01
Proj. Name:
Location: 1 Port Dr. Nanaimo
Sampled By: S. Walker & E. Calbehouse

REGULATORY REQUIREMENTS SERVICE REQUESTED:

☐ CSR
☐ CCME
☐ BC Water Quality
☐ Other
DRINKING WATER

☐ Regular Turn Around Time (TAT) (5 days for most tests)
☐ RUSH (Please contact the lab)
☐ 1 Day ☐ 2 Day ☐ 3 Day
Date Required:

Special Instructions:
Return Cooler ☐ **Ship Sample Bottles (please specify)** ☐

ANALYSIS REQUESTED

BTEX/VPH, MTBE; VOC/VPH; EPH, TEH; PAH, LEPH/HEPH; CCME-PHC (Fractions 1-4 Plus BTEX); CCME-PHC (Fractions 2-4); CCME BTEX (Fraction 1 Plus BTEX); PCB; Phenols by 4AAP, Phenols by GCMS; TOG, MOG, SWOG; Dissolved Metals (Field Filtered? Y N); Metals (Field Acidified? Y N); Totals Metals Field Acidified? Y N; Nitrate, Nitrite, Ammonia; Chloride, Fluoride, Sulphate; Total Suspended Solids-TSS, TDS; pH, Conductivity, Alkalinity; BOD; COD; Coliform, Total & E.coli, Fecal; Asbestos; ~~Metals~~; Metals Totals; HOLD

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	PAH	~~Metals~~	Metals Totals
1	SD14-13	KQ5518	Sed.	Sep18/14	X	~~X~~	
2	SD14-14	KQ5519	"	"	X	~~X~~	X
3	SD14-15	KQ5520	"	"	X	~~X~~	
4	SD14-16	KQ5521	"	"	X	~~X~~	X
5	SD14-17	KQ5522	"	"	X	~~X~~	X
6	SD14-18	KQ5523	"	"	X	~~X~~	X
7	SD14-Dup1	KQ5524	"	"	X	~~X~~	X
8	SD14-Dup2	KQ5525	"	"	X		X
9							
10							
11							
12							

B483823

Samples are from a Drinking Water Source? YES ☐ NO ☐
Does source supply multiple households? YES ☐ NO ☐

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	*Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
[signature]	14/09/18	3:23	[signature] Berthier	2014/09/19	08:10	☐	5,4,4 / 6,9,5	LA — Yes ☐ No ☐

Laboratory Use Only

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Your Project #: ENVIND03511-01.003
Site Location: 1 PORT DRIVE, NANAIMO, BC
Your C.O.C. #: G089706

Attention:Kristy Gabelhouse

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/10/07
Report #: R1658130
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B488030
Received: 2014/10/01, 08:00

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride by Automated Colourimetry	1	N/A	2014/10/06	BBY6SOP-00011	SM 22 4500-Cl- G m
Elements by CRC ICPMS (total)	1	2014/10/02	2014/10/03	BBY7SOP-00002	EPA 6020A R1 m
Salinity by Conductivity Method	1	2014/10/02	2014/10/03	BBY6SOP-00026	SM 22 2520 B m

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
This report has been generated and distributed using a secure automated process.
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Maxxam Job #: B488030
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIND03511-01.003
Site Location: 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		KT1541		
Sampling Date		2014/09/30		
COC Number		G089706		
	Units	**14SW01**	**RDL**	**QC Batch**
Misc. Inorganics				
Salinity	g/L	26.9	0.010	7663842
Anions				
Dissolved Chloride (Cl)	mg/L	16000	50	7668826
RDL = Reportable Detection Limit				

Maxxam Job #: B488030
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIND03511-01.003
Site Location: 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Maxxam ID		KT1541		
Sampling Date		2014/09/30		
COC Number		G089706		
	Units	**14SW01**	**RDL**	**QC Batch**
Total Metals by ICPMS				
Total Sodium (Na)	ug/L	7630000	500	7663540
RDL = Reportable Detection Limit				

Maxxam Job #: B488030
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIND03511-01.003
Site Location: 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.7°C

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER) Comments

Sample KT1541-02 Elements by CRC ICPMS (total): RDL raised due to sample matrix interference.

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B488030
Report Date: 2014/10/07

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIND03511-01.003
Site Location: 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

			Spiked Blank		Method Blank	
QC Batch	**Parameter**	**Date**	**% Recovery**	**QC Limits**	**Value**	**Units**
7663540	Total Sodium (Na)	2014/10/03			<50	ug/L
7663842	Salinity	2014/10/03			<0.010	g/L
7668826	Dissolved Chloride (Cl)	2014/10/06	101	80 - 120	<0.50	mg/L

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B488030
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIND03511-01.003
Site Location: 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

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Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B488030

CHAIN OF CUSTODY RECORD

Page: 1 of 1

G 089706

Invoice To: Require Report? Yes [X] No [ ]

Company Name: Tetra Tech EBA Nanaimo
Contact Name: Darren Thomas
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail: darren.thomas@tetratech.com

Report To:

Company Name:
Contact Name: Kristy Lobelhase
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail: Kristy-Lobelhase@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: CITY of Nanaimo DS1
Location: 1 Port drive, Nanaimo, BC
Sampled By: Darren Thomas

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Analyses listed: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? N/Y), Field Acidified? (N/Y), Totals Metals Field Acidified? (N/Y), Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, Salinity, NaCl, HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	Salinity, NaCl	Samples are from a Drinking Water Source?	Does source supply multiple households?
1	Ocean	KT154	Water	Sept 30/2014	X		
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

YES / NO — Samples are from a Drinking Water Source?
YES / NO — Does source supply multiple households?

B488030

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
Darren Thomas	14/09/30	17:30	Noel Laurel Berthier	2014/10/01	08:00		8, 7, 8	NA (Yes / No)

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White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC
Your C.O.C. #: G077249, G077250

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/10/07
Report #: R1658131
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B484263
Received: 2014/09/20, 09:50

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE Soil LH, VH, F1 SIM/MS	1	2014/09/22	2014/09/26	BBY8SOP-00010	EPA 8260c R3 m
Elements by ICPMS (total)	7	2014/09/23	2014/09/23	BBY7SOP-00001	EPA 6020a R1 m
Moisture	1	N/A	2014/09/23	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	6	N/A	2014/09/26	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	1	N/A	2014/09/27	BBY8SOP-00017	OMOE E3139 3.1 m
PAH in Soil by GC/MS (SIM)	1	2014/09/22	2014/09/24	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	2	2014/09/26	2014/09/26	BBY8SOP-00022	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	1	N/A	2014/09/24	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	2	N/A	2014/09/29	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	7	2014/09/23	2014/09/23	BBY6SOP-00028	BCMOE BCLM Mar2005 m
EPH less PAH in Soil By GC/FID	1	N/A	2014/09/24	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	1	N/A	2014/10/07	BBY WI-00033	Auto Calc
BC Hydrocarbons in Soil by GC/FID	1	2014/09/22	2014/09/24	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	5	2014/09/25	2014/09/26	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	1	2014/10/01	2014/10/06	BBY8SOP-00029	BCMOE EPH s 07/99 m
Volatile HC-BTEX	1	N/A	2014/09/29	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B484263
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

PHYSICAL TESTING (SOIL)

Maxxam ID		KQ8569		KQ8570	KQ8570		KQ8571	KQ8573		
Sampling Date		2014/09/19		2014/09/19	2014/09/19		2014/09/19	2014/09/19		
COC Number		G077249		G077249	G077249		G077249	G077249		
	Units	**14BH21-2**	**QC Batch**	**14BH21-3**	**14BH21-3 Lab-Dup**	**QC Batch**	**14BH21-4**	**14BH22-2**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	9.0	7652364	9.3	9.8	7653676	17	22	0.30	7652364

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		KQ8573		KQ8574		KQ8578		KQ8579		
Sampling Date		2014/09/19		2014/09/19		2014/09/19		2014/09/19		
COC Number		G077249		G077249		G077249		G077249		
	Units	**14BH22-2 Lab-Dup**	**QC Batch**	**14BH22-3**	**QC Batch**	**14BH23-2**	**QC Batch**	**14BH23-3**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	21	7652364	12	7653676	9.3	7652364	22	0.30	7648837

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		KQ8582		
Sampling Date		2014/09/19		
COC Number		G077250		
	Units	**DUP.13**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	19	0.30	7652364

RDL = Reportable Detection Limit

Maxxam Job #: B484263
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

TOTAL PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		KQ8569		KQ8571	KQ8571		KQ8573		KQ8574		
Sampling Date		2014/09/19		2014/09/19	2014/09/19		2014/09/19		2014/09/19		
COC Number		G077249		G077249	G077249		G077249		G077249		
	Units	**14BH21-2**	**QC Batch**	**14BH21-4**	**14BH21-4 Lab-Dup**	**QC Batch**	**14BH22-2**	**QC Batch**	**14BH22-3**	**RDL**	**QC Batch**
Calculated Parameters											
LEPH (C10-C19 less PAH)	mg/kg							7669217	485	100	7669217
HEPH (C19-C32 less PAH)	mg/kg							7669217	696	100	7669217
Hydrocarbons											
EPH (C10-C19)	mg/kg	748	7654789	<100	<100	7653859	285	7654789	489	100	7668412
EPH (C19-C32)	mg/kg	893	7654789	<100	<100	7653859	361	7654789	696	100	7668412
Surrogate Recovery (%)											
O-TERPHENYL (sur.)	%	102	7654789	94	97	7653859	101	7654789	94		7668412

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		KQ8578	KQ8582		
Sampling Date		2014/09/19	2014/09/19		
COC Number		G077249	G077250		
	Units	**14BH23-2**	**DUP.13**	**RDL**	**QC Batch**
Hydrocarbons					
EPH (C10-C19)	mg/kg	492	403	100	7654789
EPH (C19-C32)	mg/kg	599	502	100	7654789
Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	102	100		7654789

RDL = Reportable Detection Limit

Maxxam Job #: B484263
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

BCCSR BTEX/VPH BY HS IN SOIL (SOIL)

Maxxam ID		KQ8579		
Sampling Date		2014/09/19		
COC Number		G077249		
	Units	**14BH23-3**	**RDL**	**QC Batch**
Volatiles				
VPH (VH6 to 10 - BTEX)	mg/kg	59	10	7648483
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	7654880
Benzene	mg/kg	1.1	0.0050	7654880
Toluene	mg/kg	3.4	0.020	7654880
Ethylbenzene	mg/kg	0.65	0.010	7654880
m & p-Xylene	mg/kg	3.6	0.040	7654880
o-Xylene	mg/kg	2.4	0.040	7654880
Styrene	mg/kg	<0.030	0.030	7654880
Xylenes (Total)	mg/kg	6.0	0.040	7654880
VH C6-C10	mg/kg	70	10	7654880
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	102		7654880
4-Bromofluorobenzene (sur.)	%	99		7654880
D10-ETHYLBENZENE (sur.)	%	85		7654880
D4-1,2-Dichloroethane (sur.)	%	101		7654880
RDL = Reportable Detection Limit				

Maxxam Job #: B484263
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KQ8579		
Sampling Date		2014/09/19		
COC Number		G077249		
	Units	14BH23-3	RDL	QC Batch
Polycyclic Aromatics				
Naphthalene	mg/kg	6.8	0.050	7650323
2-Methylnaphthalene	mg/kg	8.3	0.050	7650323
Acenaphthylene	mg/kg	<0.050	0.050	7650323
Acenaphthene	mg/kg	<0.11 (1)	0.11	7650323
Fluorene	mg/kg	<0.050	0.050	7650323
Phenanthrene	mg/kg	1.2	0.050	7650323
Anthracene	mg/kg	0.20	0.050	7650323
Fluoranthene	mg/kg	0.16	0.050	7650323
Pyrene	mg/kg	0.20	0.050	7650323
Benzo(a)anthracene	mg/kg	0.14	0.050	7650323
Chrysene	mg/kg	0.12	0.050	7650323
Benzo(b&j)fluoranthene	mg/kg	0.054	0.050	7650323
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	7650323
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	7650323
Benzo(a)pyrene	mg/kg	<0.050	0.050	7650323
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	7650323
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	7650323
Benzo(g,h,i)perylene	mg/kg	<0.11 (1)	0.11	7650323
Low Molecular Weight PAH`s	mg/kg	17	0.11	7647762
High Molecular Weight PAH`s	mg/kg	0.68	0.11	7647762
Total PAH	mg/kg	17	0.11	7647762
Calculated Parameters				
LEPH (C10-C19 less PAH)	mg/kg	417	100	7647763
HEPH (C19-C32 less PAH)	mg/kg	498	100	7647763
Hydrocarbons				
EPH (C10-C19)	mg/kg	425	100	7650315
EPH (C19-C32)	mg/kg	498	100	7650315
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	73		7650323
D8-ACENAPHTHYLENE (sur.)	%	79		7650323
D8-NAPHTHALENE (sur.)	%	91		7650323
TERPHENYL-D14 (sur.)	%	88		7650323
O-TERPHENYL (sur.)	%	80		7650315

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference.

Maxxam Job #: B484263
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KQ8569	KQ8570	KQ8574	KQ8575	KQ8578	KQ8579	KQ8582		
Sampling Date		2014/09/19	2014/09/19	2014/09/19	2014/09/19	2014/09/19	2014/09/19	2014/09/19		
COC Number		G077249	G077249	G077249	G077249	G077249	G077249	G077250		
	Units	**14BH21-2**	**14BH21-3**	**14BH22-3**	**14BH22-4**	**14BH23-2**	**14BH23-3**	**DUP.13**	**RDL**	**QC Batch**
Physical Properties										
Soluble (2:1) pH	pH	6.96	7.75	7.78	7.21	7.97	7.33	7.53	N/A	7649333
Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	14000	9980	10500	12700	15100	20300	19200	100	7649332
Total Antimony (Sb)	mg/kg	0.42	0.33	0.34	0.32	0.49	0.32	0.30	0.10	7649332
Total Arsenic (As)	mg/kg	8.52	4.56	5.18	6.05	6.05	5.38	5.27	0.50	7649332
Total Barium (Ba)	mg/kg	85.9	80.9	75.3	92.0	134	220	215	0.10	7649332
Total Beryllium (Be)	mg/kg	<0.40	<0.40	<0.40	0.43	0.50	0.57	0.51	0.40	7649332
Total Bismuth (Bi)	mg/kg	0.12	<0.10	<0.10	0.11	<0.10	<0.10	<0.10	0.10	7649332
Total Cadmium (Cd)	mg/kg	0.282	0.227	0.199	0.219	0.271	0.360	0.339	0.050	7649332
Total Calcium (Ca)	mg/kg	4500	20900	27100	2760	8900	12800	12100	100	7649332
Total Chromium (Cr)	mg/kg	78.3	75.8	75.3	75.5	66.8	61.3	62.0	1.0	7649332
Total Cobalt (Co)	mg/kg	17.3	11.2	9.74	14.7	17.7	15.0	14.7	0.30	7649332
Total Copper (Cu)	mg/kg	73.8	83.6	79.4	66.8	47.7	50.2	48.6	0.50	7649332
Total Iron (Fe)	mg/kg	33400	15600	16000	25200	29900	26600	25200	100	7649332
Total Lead (Pb)	mg/kg	8.06	6.06	6.48	7.91	15.6	9.11	9.36	0.10	7649332
Total Lithium (Li)	mg/kg	22.2	19.3	21.7	24.9	21.3	32.0	31.4	5.0	7649332
Total Magnesium (Mg)	mg/kg	7290	4950	5550	7280	8400	7720	7580	100	7649332
Total Manganese (Mn)	mg/kg	480	405	417	2110	707	485	521	0.20	7649332
Total Mercury (Hg)	mg/kg	0.558	0.312	0.400	0.321	0.322	0.173	0.160	0.050	7649332
Total Molybdenum (Mo)	mg/kg	3.12	2.64	2.49	4.23	1.60	2.43	2.25	0.10	7649332
Total Nickel (Ni)	mg/kg	145	111	102	128	112	108	106	0.80	7649332
Total Phosphorus (P)	mg/kg	157	111	130	252	489	638	663	10	7649332
Total Potassium (K)	mg/kg	950	745	729	944	1100	1290	1250	100	7649332
Total Selenium (Se)	mg/kg	1.07	0.86	0.79	1.08	0.71	0.74	0.64	0.50	7649332
Total Silver (Ag)	mg/kg	0.103	0.117	0.102	0.082	0.088	0.147	0.170	0.050	7649332
Total Sodium (Na)	mg/kg	206	263	357	1190	598	3730	3410	100	7649332
Total Strontium (Sr)	mg/kg	69.7	79.2	102	70.4	120	321	345	0.10	7649332
Total Thallium (Tl)	mg/kg	0.294	0.112	0.088	0.138	0.074	0.111	0.112	0.050	7649332
Total Tin (Sn)	mg/kg	0.52	0.40	0.45	0.45	0.96	0.69	0.91	0.10	7649332
Total Titanium (Ti)	mg/kg	262	472	461	355	214	495	469	1.0	7649332
Total Uranium (U)	mg/kg	0.497	0.340	0.343	0.563	0.389	2.79	2.74	0.050	7649332
Total Vanadium (V)	mg/kg	60.2	68.5	66.2	72.6	61.1	57.0	57.6	2.0	7649332
Total Zinc (Zn)	mg/kg	74.2	40.2	37.3	49.9	69.2	53.7	52.6	1.0	7649332
Total Zirconium (Zr)	mg/kg	4.11	3.99	3.81	4.23	4.56	10.2	9.92	0.50	7649332

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Job #: B484263
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

CSR PAH IN SOIL BY GC-MS (SOIL)

Maxxam ID		KQ8570		KQ8574		
Sampling Date		2014/09/19		2014/09/19		
COC Number		G077249		G077249		
	Units	**14BH21-3**	**RDL**	**14BH22-3**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Naphthalene	mg/kg	3.5	0.050	3.0	0.050	7654875
2-Methylnaphthalene	mg/kg	6.0	0.050	5.1	0.050	7654875
Acenaphthylene	mg/kg	<0.050	0.050	<0.050	0.050	7654875
Acenaphthene	mg/kg	<0.69 (1)	0.69	<0.60 (1)	0.60	7654875
Fluorene	mg/kg	<0.080 (1)	0.080	<0.070 (1)	0.070	7654875
Phenanthrene	mg/kg	1.1	0.050	0.97	0.050	7654875
Anthracene	mg/kg	0.24	0.050	0.20	0.050	7654875
Fluoranthene	mg/kg	0.21	0.050	0.17	0.050	7654875
Pyrene	mg/kg	0.28	0.050	0.23	0.050	7654875
Benzo(a)anthracene	mg/kg	0.16	0.050	0.13	0.050	7654875
Chrysene	mg/kg	0.12	0.050	0.099	0.050	7654875
Benzo(b&j)fluoranthene	mg/kg	0.061	0.050	<0.050	0.050	7654875
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7654875
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7654875
Benzo(a)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7654875
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7654875
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	<0.050	0.050	7654875
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	<0.050	0.050	7654875
Low Molecular Weight PAH`s	mg/kg	11	0.69	9.3	0.60	7647762
High Molecular Weight PAH`s	mg/kg	0.83	0.050	0.64	0.050	7647762
Total PAH	mg/kg	12	0.69	9.9	0.60	7647762
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	69		69		7654875
D8-ACENAPHTHYLENE (sur.)	%	78		78		7654875
D8-NAPHTHALENE (sur.)	%	83		86		7654875
TERPHENYL-D14 (sur.)	%	83		85		7654875

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference.

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.7°C

[Revision V2R 2014/10/07 SF] Included the EPH analysis of sample 14BH22-3

Results relate only to the items tested.

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Maxxam Job #: B484263
Report Date: 2014/10/07

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7650315	O-TERPHENYL (sur.)	2014/09/24	88	50 - 130	94	50 - 130	100	%				
7650323	D10-ANTHRACENE (sur.)	2014/09/23	93	60 - 130	101	60 - 130	103	%				
7650323	D8-ACENAPHTHYLENE (sur.)	2014/09/23	95	50 - 130	100	50 - 130	103	%				
7650323	D8-NAPHTHALENE (sur.)	2014/09/23	98	50 - 130	102	50 - 130	105	%				
7650323	TERPHENYL-D14 (sur.)	2014/09/23	101	60 - 130	108	60 - 130	108	%				
7653859	O-TERPHENYL (sur.)	2014/09/26	95	50 - 130	91	50 - 130	92	%				
7654789	O-TERPHENYL (sur.)	2014/09/26	105	50 - 130	110	50 - 130	107	%				
7654875	D10-ANTHRACENE (sur.)	2014/09/26	111	60 - 130	121	60 - 130	119	%				
7654875	D8-ACENAPHTHYLENE (sur.)	2014/09/26	112	50 - 130	118	50 - 130	117	%				
7654875	D8-NAPHTHALENE (sur.)	2014/09/26	112	50 - 130	118	50 - 130	115	%				
7654875	TERPHENYL-D14 (sur.)	2014/09/26	114	60 - 130	125	60 - 130	119	%				
7654880	1,4-Difluorobenzene (sur.)	2014/09/26	106	70 - 130	103	70 - 130	103	%				
7654880	4-Bromofluorobenzene (sur.)	2014/09/26	100	70 - 130	98	70 - 130	98	%				
7654880	D10-ETHYLBENZENE (sur.)	2014/09/26	88	50 - 130	81	50 - 130	87	%				
7654880	D4-1,2-Dichloroethane (sur.)	2014/09/26	102	70 - 130	97	70 - 130	103	%				
7668412	O-TERPHENYL (sur.)	2014/10/06	101	50 - 130	101	50 - 130	101	%				
7648837	Moisture	2014/09/23							2.4	20		
7649332	Total Aluminum (Al)	2014/09/23					<100	mg/kg	9.8	35	101	70 - 130
7649332	Total Antimony (Sb)	2014/09/23	97	75 - 125	86	75 - 125	<0.10	mg/kg	NC	30	98	70 - 130
7649332	Total Arsenic (As)	2014/09/23	85	75 - 125	97	75 - 125	<0.50	mg/kg	NC	30	97	70 - 130
7649332	Total Barium (Ba)	2014/09/23	91	75 - 125	97	75 - 125	<0.10	mg/kg	5.0	35	95	70 - 130
7649332	Total Beryllium (Be)	2014/09/23	88	75 - 125	97	75 - 125	<0.40	mg/kg	NC	30		
7649332	Total Bismuth (Bi)	2014/09/23					<0.10	mg/kg	NC	30		
7649332	Total Cadmium (Cd)	2014/09/23	96	75 - 125	104	75 - 125	<0.050	mg/kg	NC	30	102	70 - 130
7649332	Total Calcium (Ca)	2014/09/23					<100	mg/kg	6.3	30	92	70 - 130
7649332	Total Chromium (Cr)	2014/09/23	98	75 - 125	100	75 - 125	<1.0	mg/kg	NC	30	109	70 - 130
7649332	Total Cobalt (Co)	2014/09/23	89	75 - 125	100	75 - 125	<0.30	mg/kg	NC	30	96	70 - 130
7649332	Total Copper (Cu)	2014/09/23	82	75 - 125	104	75 - 125	<0.50	mg/kg	NC	30	92	70 - 130
7649332	Total Iron (Fe)	2014/09/23					<100	mg/kg	4.5	30	97	70 - 130
7649332	Total Lead (Pb)	2014/09/23	94	75 - 125	101	75 - 125	<0.10	mg/kg	3.7	35	99	70 - 130
7649332	Total Lithium (Li)	2014/09/23	100	75 - 125	99	75 - 125	<5.0	mg/kg	NC	30		
7649332	Total Magnesium (Mg)	2014/09/23					<100	mg/kg	6.5	30	95	70 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7649332	Total Manganese (Mn)	2014/09/23	NC	75 - 125	101	75 - 125	<0.20	mg/kg	4.7	30	98	70 - 130
7649332	Total Mercury (Hg)	2014/09/23	95	75 - 125	91	75 - 125	<0.050	mg/kg	NC	35	120	70 - 130
7649332	Total Molybdenum (Mo)	2014/09/23	103	75 - 125	87	75 - 125	<0.10	mg/kg	NC	35	109	70 - 130
7649332	Total Nickel (Ni)	2014/09/23	86	75 - 125	103	75 - 125	<0.80	mg/kg	NC	30	94	70 - 130
7649332	Total Phosphorus (P)	2014/09/23					<10	mg/kg	NC	30	93	70 - 130
7649332	Total Potassium (K)	2014/09/23					<100	mg/kg	NC	35		
7649332	Total Selenium (Se)	2014/09/23	85	75 - 125	101	75 - 125	<0.50	mg/kg	NC	30		
7649332	Total Silver (Ag)	2014/09/23	94	75 - 125	97	75 - 125	<0.050	mg/kg	NC	35		
7649332	Total Sodium (Na)	2014/09/23					<100	mg/kg	NC	35		
7649332	Total Strontium (Sr)	2014/09/23	NC	75 - 125	93	75 - 125	<0.10	mg/kg	5.5	35	96	70 - 130
7649332	Total Thallium (Tl)	2014/09/23	97	75 - 125	95	75 - 125	<0.050	mg/kg	NC	30	93	70 - 130
7649332	Total Tin (Sn)	2014/09/23	94	75 - 125	84 (1)	75 - 125	<0.10	mg/kg	NC	35		
7649332	Total Titanium (Ti)	2014/09/23	88	75 - 125	85	75 - 125	<1.0	mg/kg	11	35	107	70 - 130
7649332	Total Uranium (U)	2014/09/23	102	75 - 125	99	75 - 125	<0.050	mg/kg	5.5	30	98	70 - 130
7649332	Total Vanadium (V)	2014/09/23	98	75 - 125	102	75 - 125	<2.0	mg/kg	NC	30	108	70 - 130
7649332	Total Zinc (Zn)	2014/09/23	80	75 - 125	108	75 - 125	<1.0	mg/kg	NC	30	91	70 - 130
7649332	Total Zirconium (Zr)	2014/09/23					<0.50	mg/kg	NC	30		
7649333	Soluble (2:1) pH	2014/09/23			100	97 - 103			0.22	N/A		
7650315	EPH (C10-C19)	2014/09/24	83	50 - 130	83	50 - 130	<100	mg/kg	NC	40		
7650315	EPH (C19-C32)	2014/09/24	92	50 - 130	91	50 - 130	<100	mg/kg	NC	40		
7650323	2-Methylnaphthalene	2014/09/23	89	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7650323	Acenaphthene	2014/09/23	88	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7650323	Acenaphthylene	2014/09/23	86	50 - 130	93	50 - 130	<0.050	mg/kg	NC	50		
7650323	Anthracene	2014/09/23	84	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(a)anthracene	2014/09/23	84	60 - 130	94	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(a)pyrene	2014/09/23	77	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(b&j)fluoranthene	2014/09/23	83	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(b)fluoranthene	2014/09/23					<0.050	mg/kg				
7650323	Benzo(g,h,i)perylene	2014/09/23	74	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(k)fluoranthene	2014/09/23	90	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7650323	Chrysene	2014/09/23	87	60 - 130	96	60 - 130	<0.050	mg/kg	NC	50		
7650323	Dibenz(a,h)anthracene	2014/09/23	77	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7650323	Fluoranthene	2014/09/23	86	60 - 130	94	60 - 130	<0.050	mg/kg	NC	50		
7650323	Fluorene	2014/09/23	84	50 - 130	91	50 - 130	<0.050	mg/kg	NC	50		
7650323	Indeno(1,2,3-cd)pyrene	2014/09/23	78	60 - 130	92	60 - 130	<0.050	mg/kg	NC	50		
7650323	Naphthalene	2014/09/23	91	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7650323	Phenanthrene	2014/09/23	86	60 - 130	93	60 - 130	<0.050	mg/kg	NC	50		
7650323	Pyrene	2014/09/23	91	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7652364	Moisture	2014/09/26					<0.30	%	3.3	20		
7653676	Moisture	2014/09/26					<0.30	%	5.2	20		
7653859	EPH (C10-C19)	2014/09/26	78	50 - 130	79	50 - 130	<100	mg/kg	NC	40		
7653859	EPH (C19-C32)	2014/09/26	86	50 - 130	88	50 - 130	<100	mg/kg	NC	40		
7654789	EPH (C10-C19)	2014/09/26	NC	50 - 130	83	50 - 130	<100	mg/kg	7.4	40		
7654789	EPH (C19-C32)	2014/09/26	93	50 - 130	92	50 - 130	<100	mg/kg	NC	40		
7654875	2-Methylnaphthalene	2014/09/26	109	50 - 130	110	50 - 130	<0.050	mg/kg	NC	50		
7654875	Acenaphthene	2014/09/26	111	50 - 130	113	50 - 130	<0.050	mg/kg	NC	50		
7654875	Acenaphthylene	2014/09/26	108	50 - 130	109	50 - 130	<0.050	mg/kg	NC	50		
7654875	Anthracene	2014/09/26	108	60 - 130	115	60 - 130	<0.050	mg/kg	3.9	50		
7654875	Benzo(a)anthracene	2014/09/26	NC	60 - 130	115	60 - 130	<0.050	mg/kg	33	50		
7654875	Benzo(a)pyrene	2014/09/26	105	60 - 130	110	60 - 130	<0.050	mg/kg	27	50		
7654875	Benzo(b&j)fluoranthene	2014/09/26	NC	60 - 130	109	60 - 130	<0.050	mg/kg	13	50		
7654875	Benzo(b)fluoranthene	2014/09/26					<0.050	mg/kg	13	50		
7654875	Benzo(g,h,i)perylene	2014/09/26	107	60 - 130	105	60 - 130	<0.050	mg/kg	19	50		
7654875	Benzo(k)fluoranthene	2014/09/26	98	60 - 130	118	60 - 130	<0.050	mg/kg	5.6	50		
7654875	Chrysene	2014/09/26	NC	60 - 130	119	60 - 130	<0.050	mg/kg	22	50		
7654875	Dibenz(a,h)anthracene	2014/09/26	106	60 - 130	99	60 - 130	<0.050	mg/kg	NC	50		
7654875	Fluoranthene	2014/09/26	NC	60 - 130	118	60 - 130	<0.050	mg/kg	32	50		
7654875	Fluorene	2014/09/26	108	50 - 130	109	50 - 130	<0.050	mg/kg	NC	50		
7654875	Indeno(1,2,3-cd)pyrene	2014/09/26	108	60 - 130	105	60 - 130	<0.050	mg/kg	20	50		
7654875	Naphthalene	2014/09/26	107	50 - 130	107	50 - 130	<0.050	mg/kg	NC	50		
7654875	Phenanthrene	2014/09/26	NC	60 - 130	111	60 - 130	<0.050	mg/kg	2.7	50		
7654875	Pyrene	2014/09/26	NC	60 - 130	119	60 - 130	<0.050	mg/kg	17	50		
7654880	Benzene	2014/09/26	89	60 - 140	87	60 - 140	<0.0050	mg/kg				
7654880	Ethylbenzene	2014/09/26	89	60 - 140	88	60 - 140	<0.010	mg/kg				

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Maxxam Job #: B484263
Report Date: 2014/10/07

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7654880	m & p-Xylene	2014/09/26	84	60 - 140	82	60 - 140	<0.040	mg/kg				
7654880	Methyl-tert-butylether (MTBE)	2014/09/26					<0.10	mg/kg				
7654880	o-Xylene	2014/09/26	84	60 - 140	81	60 - 140	<0.040	mg/kg				
7654880	Styrene	2014/09/26					<0.030	mg/kg				
7654880	Toluene	2014/09/26	83	60 - 140	81	60 - 140	<0.020	mg/kg				
7654880	VH C6-C10	2014/09/26			110	60 - 140	<10	mg/kg				
7654880	Xylenes (Total)	2014/09/26					<0.040	mg/kg				
7668412	EPH (C10-C19)	2014/10/06	NC	50 - 130	75	50 - 130	<100	mg/kg	8.5	40		
7668412	EPH (C19-C32)	2014/10/06	NC	50 - 130	86	50 - 130	<100	mg/kg	NC	40		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Spike exceeds acceptance criteria for Sn. 10% of analytes failure in multielement scan is allowed.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B484263
Report Date: 2014/10/07

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Location: 1 PORT DRIVE DST; NANAIMO BC

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Rob Reinert, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

CHAIN OF CUSTODY RECORD

Page: 2 of 2

G 077250

Maxxam Job#:

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: Tetra Tech EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHAUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhause@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 Port Drive DSI
Location: Nanaimo BC
Sampled By: Mike Gallo

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

Analysis columns: MTBE; BTEX/VPH; VOC/VPH; TEH; EPH; LEPH/HEPH; PAH; CCME-PHC (Fractions 1-4 Plus BTEX); CCME-PHC (Fractions 2-4); CCME BTEX (Fraction 1 Plus BTEX); PCB; Phenols by GCMS; Phenols by 4AAP; SVOC; MOG; TOG; Dissolved Metals (Field Filtered? Y N); Field Acidified? Y N; Totals Metals Field Acidified? Y N; Ammonia; Nitrite; Nitrate; Sulphate; Fluoride; Chloride; TDS; Total Suspended Solids-TSS; Alkalinity; Conductivity; pH; BOD; COD; Fecal; Coliform Total & E coli; Asbestos; METALS; HOLD

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	EPH	METALS	HOLD
1	14BH23-4		Soil	Sep 19/14			X
2	DUP. 12		↓	↓			X
3	DUP. 13		↓	↓	X	X	X
4							
5							
6							
7							
8							
9							
10							
11							
12							

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
M Gallo	Sep 19/14	4:30			

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C)

Custody Seal Intact on Cooler? Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

Maxxam Job#: ______

G 077249

Invoice To: Require Report? Yes ☐ No ☐		Report To:	
Company Name:	TETRA TECHEBA INC.	Company Name:	TETRA TECHEBA INC.
Contact Name:		Contact Name:	LORA PAUL / KRISTY GABELHOUSE
Address:		Address:	1-4376 BOBAN DRIVE
	PC:		NANAIMO BC PC: V9T 6A7
Phone / Fax#:	Ph: Fax:	Phone / Fax#:	Ph: (250) 756-2256 Fax:
E-mail		E-mail	lora.paul@tetratech.com kristy.gabelhouse@tetratech.com

PO #:	
Quotation #:	
Project #:	ENVIND03511-01.003
Proj. Name:	1 PORT DRIVE DST
Location:	NANAIMO BC
Sampled By:	MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [x] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- DRINKING WATER

- [x] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required: ______

Special Instructions:

Return Cooler ☐ Ship Sample Bottles (please specify) ☐

ANALYSIS REQUESTED

Analysis checkboxes marked: BTEX/VPH [x], EPH [x], PAH [x], LEPH/HEPH [x], HOLD [x]

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH	VOC/VPH	EPH	PAH	METALS	CHLORINATED PHENOLS	PAH only	HOLD
1	14BH21-1		SOIL	Sep 19/14								X
2	14BH21-2		↓	↓			X		X			X
3	14BH21-3								X		X	X
4	14BH21-4						X					X
5	14BH22-1											X
6	14BH22-2						X					X
7	14BH22-3								X		X	X
8	14BH22-4								X			X
9	14BH22-5											X
10	14BH23-1											X
11	14BH23-2						X		X			X
12	14BH23-3		↓	↓	X			X	X			X

Other printed analysis columns (no marks): CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? N/Y), Metals (Field Acidified? N/Y), Totals Metals Field Acidified? (N/Y), Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, TEH, MTBE, LEPH/HEPH

Samples are from a Drinking Water Source? YES / NO

Does source supply multiple households? YES / NO

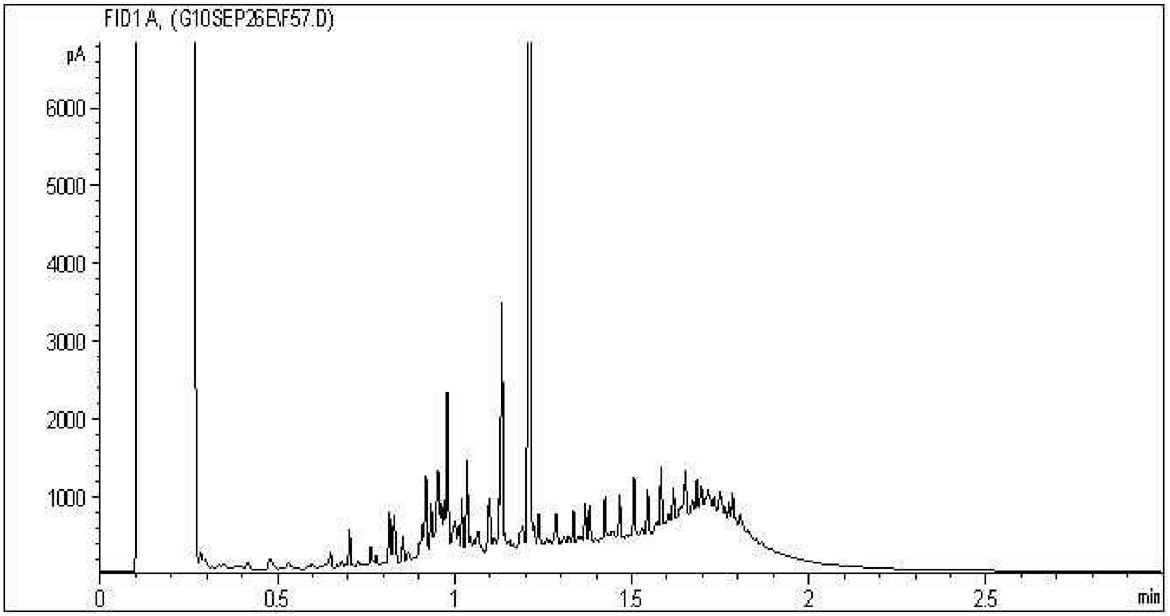
*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
M Gallo	Sep 19/14	4:30				☐		Yes ☐ No ☐

Laboratory Use Only

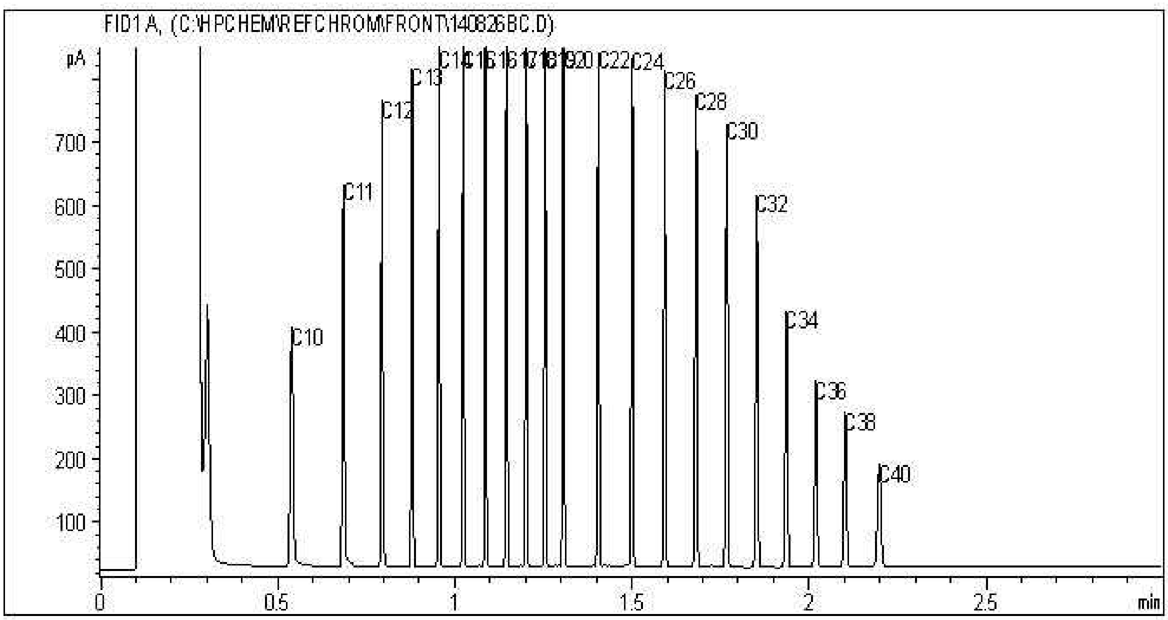
*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

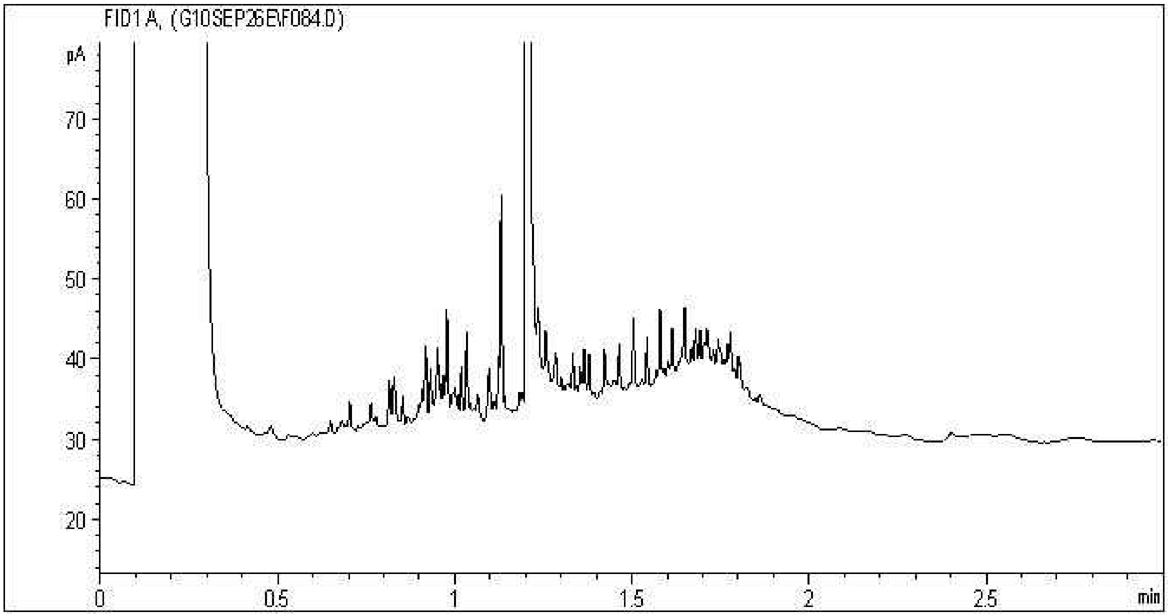
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

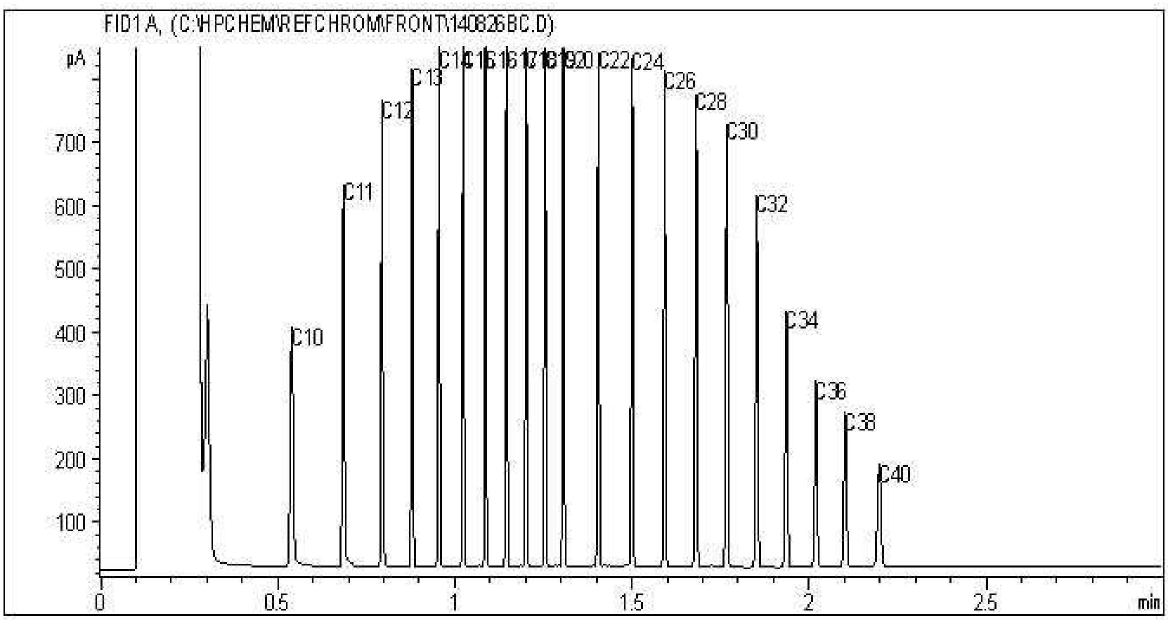
Maxxam Job #: B484263
Report Date: 2014/10/07
Maxxam Sample: KQ8571

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Reference: 1 PORT DRIVE DST; NANAIMO BC
Client ID: 14BH21-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

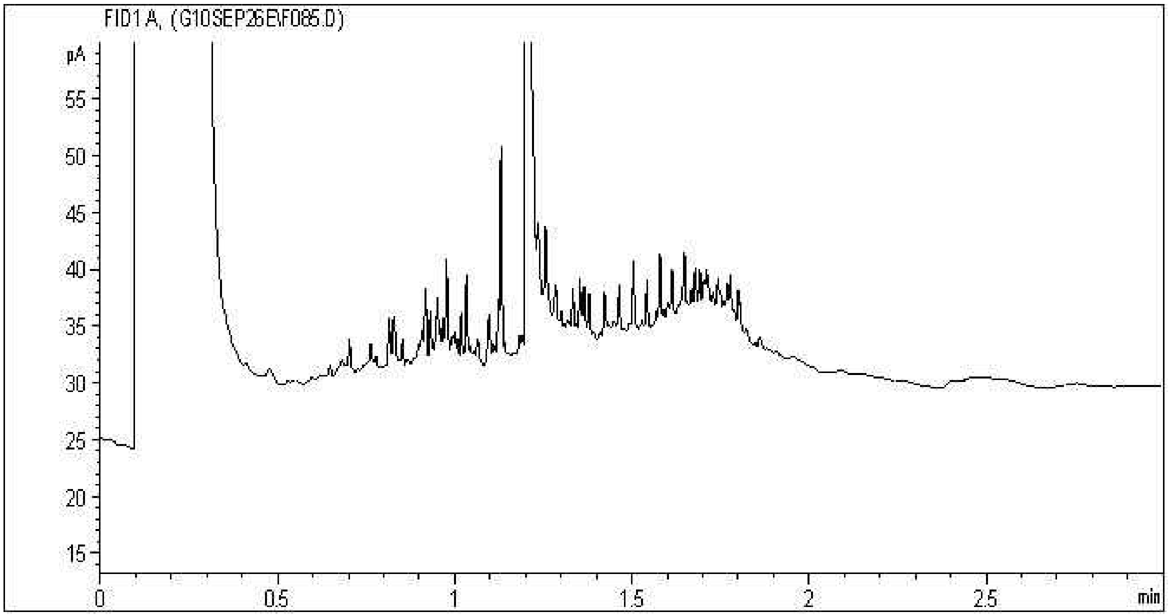
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

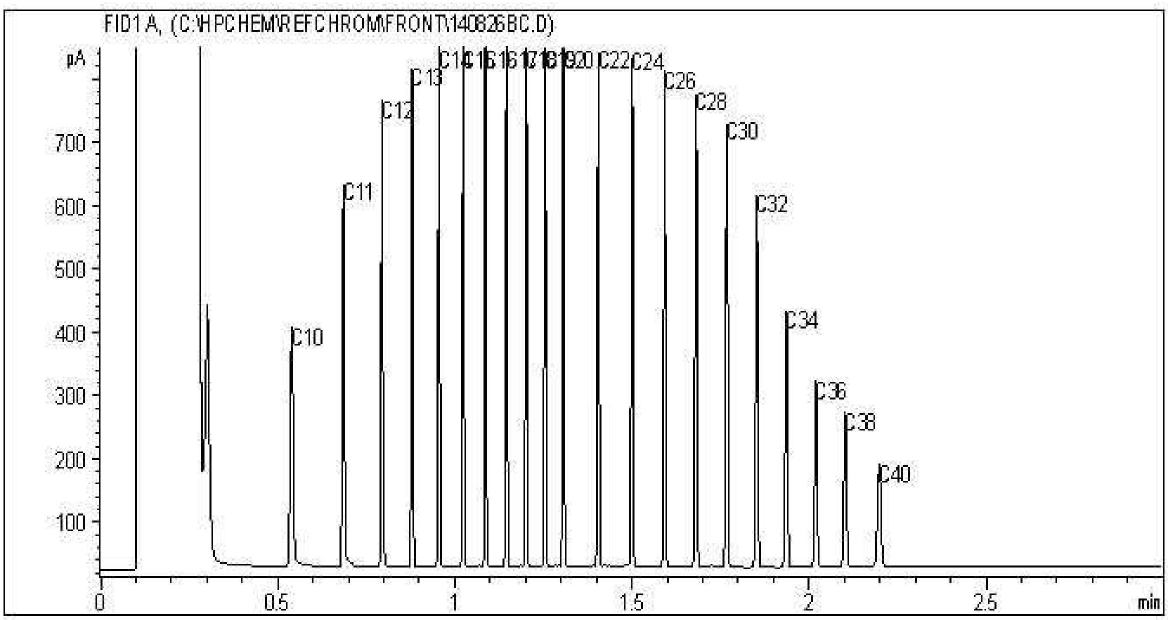
Maxxam Job #: B484263
Report Date: 2014/10/07
Maxxam Sample: KQ8571 Lab-Dup

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Reference: 1 PORT DRIVE DST; NANAIMO BC
Client ID: 14BH21-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

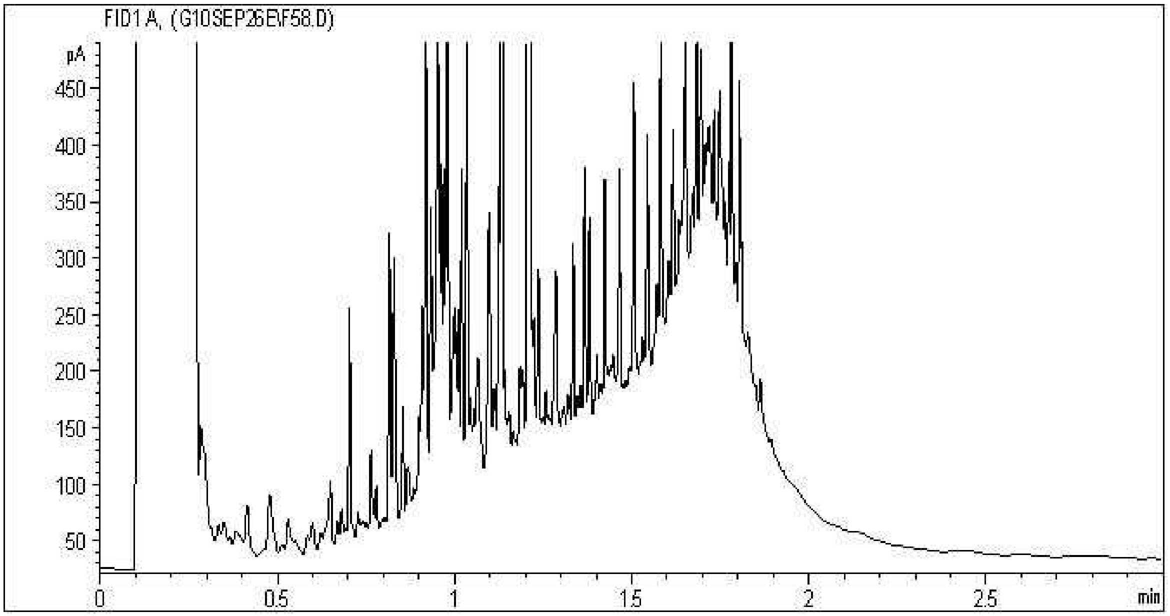
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

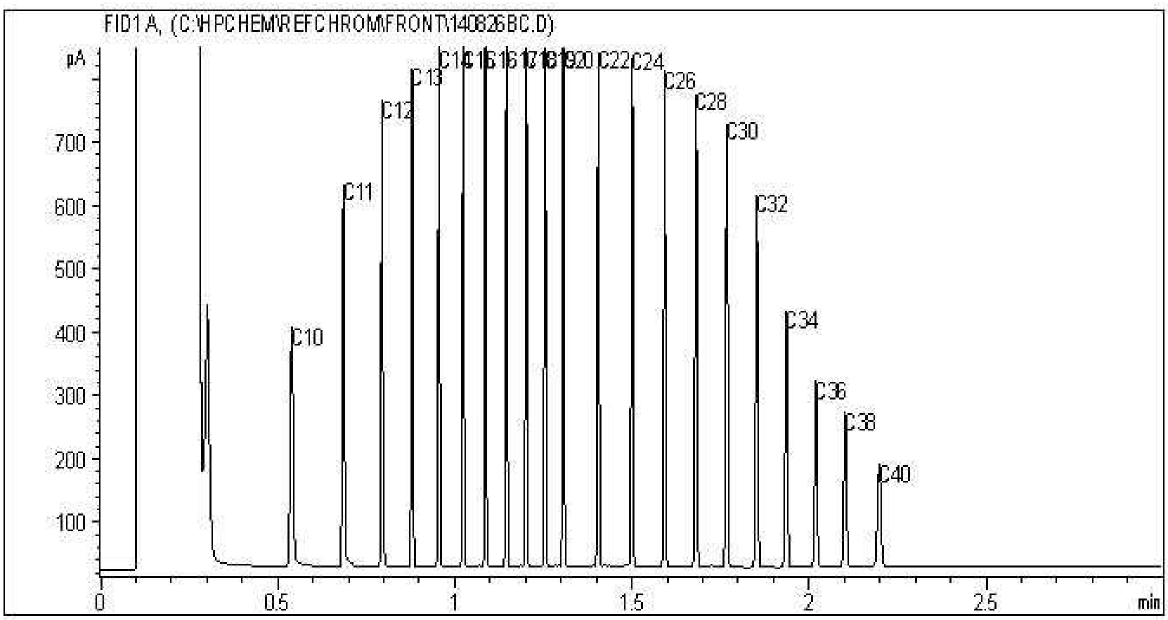
Maxxam Job #: B484263
Report Date: 2014/10/07
Maxxam Sample: KQ8573

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Reference: 1 PORT DRIVE DST; NANAIMO BC
Client ID: 14BH22-2

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram

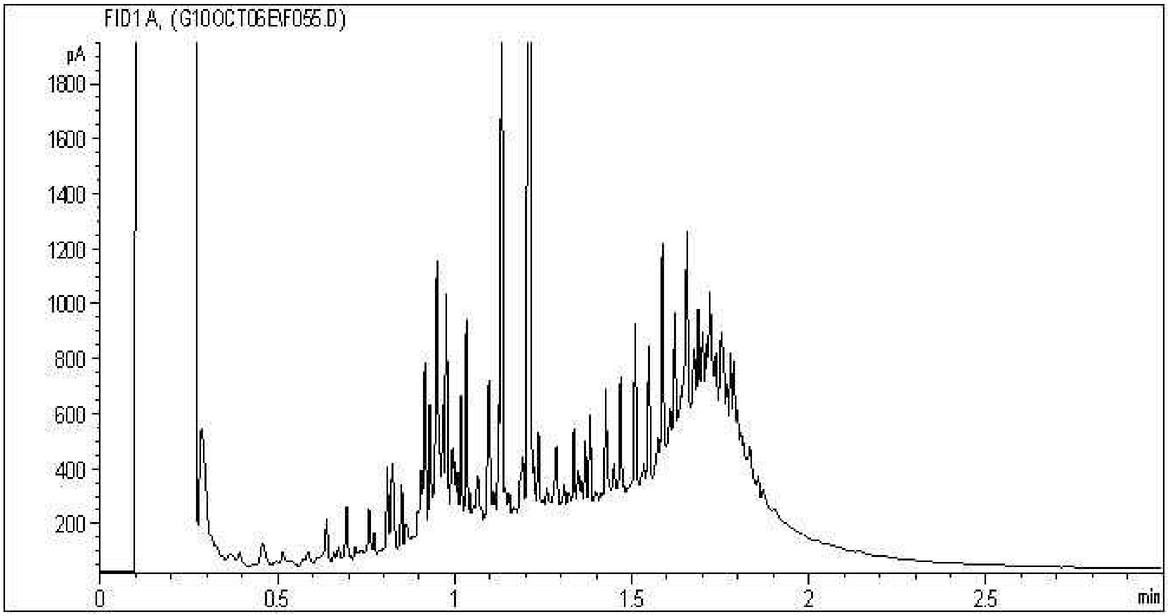


TYPICAL PRODUCT CARBON NUMBER RANGES

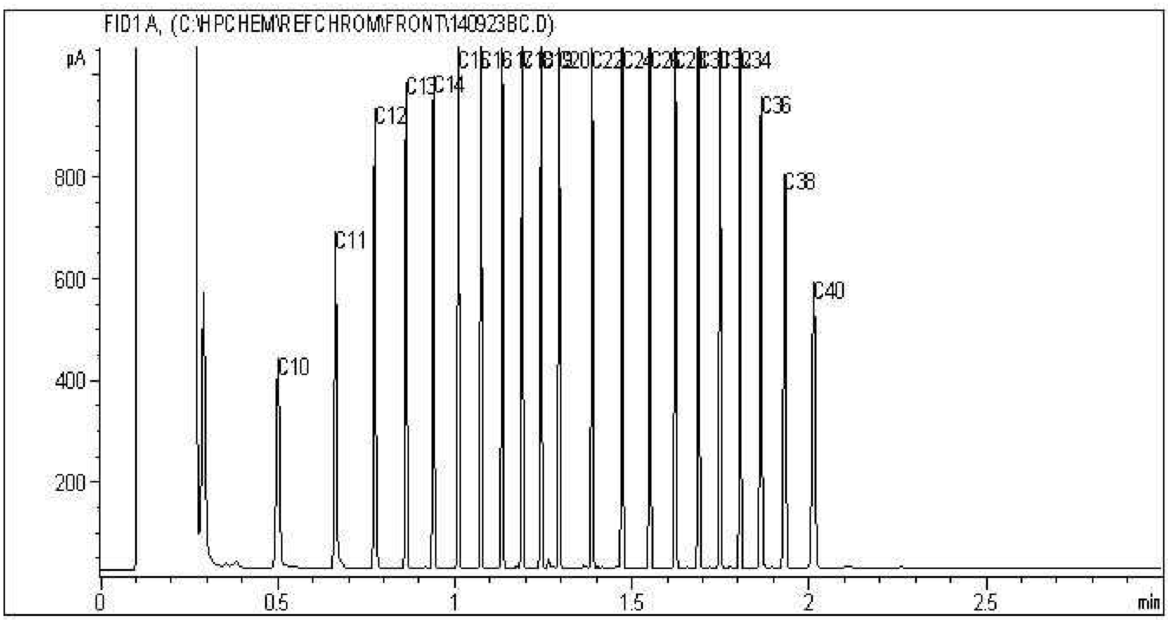
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

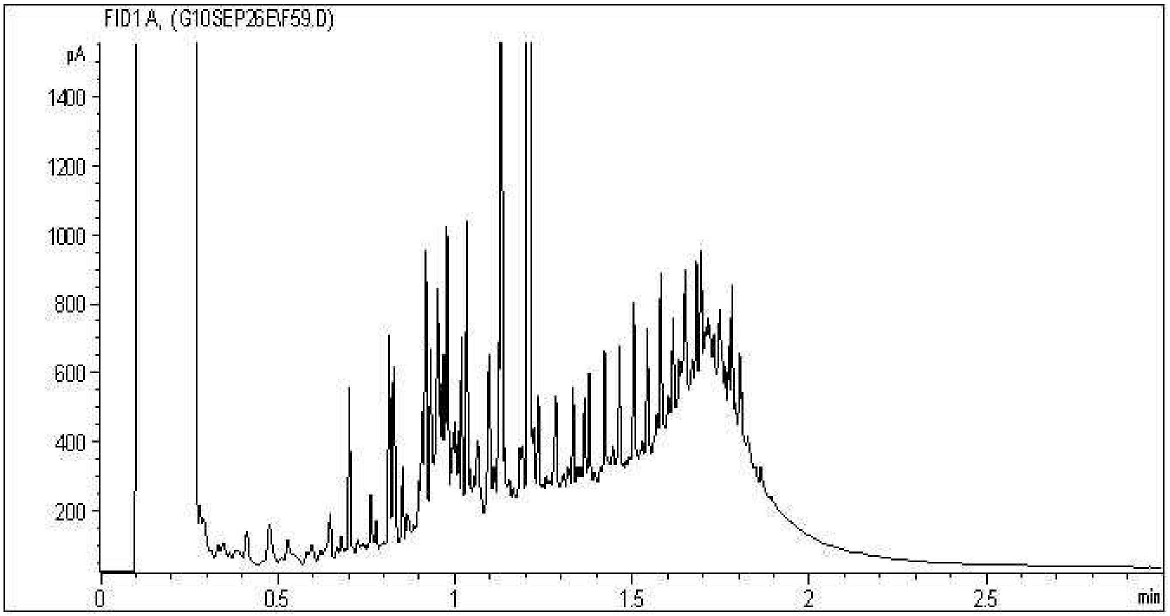
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

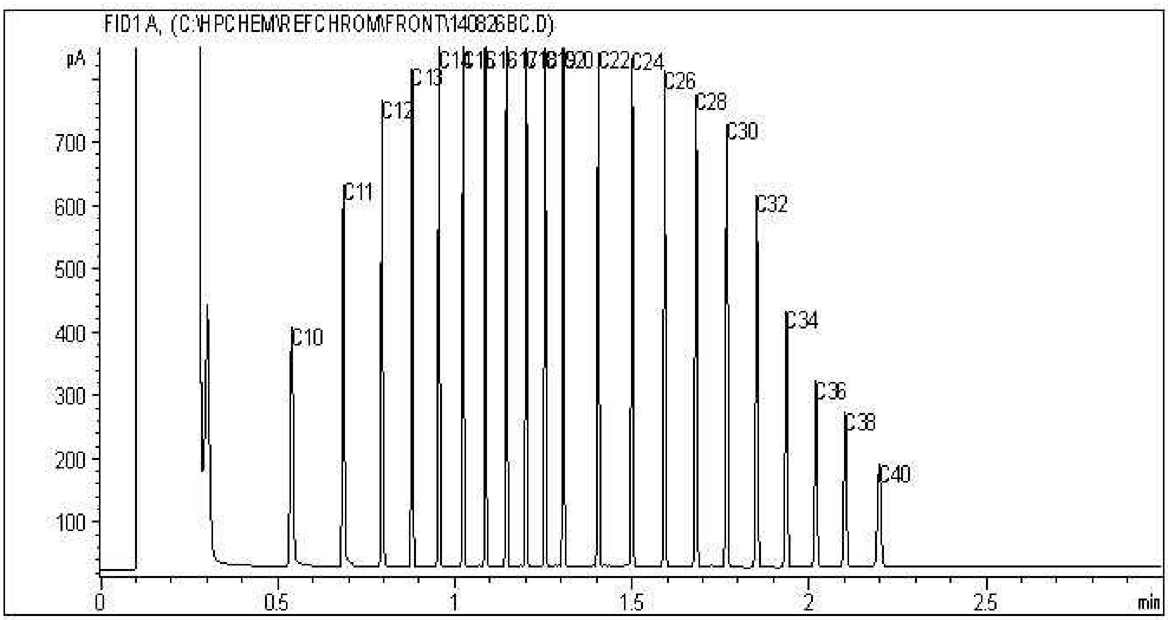
Maxxam Job #: B484263
Report Date: 2014/10/07
Maxxam Sample: KQ8578

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Reference: 1 PORT DRIVE DST; NANAIMO BC
Client ID: 14BH23-2

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

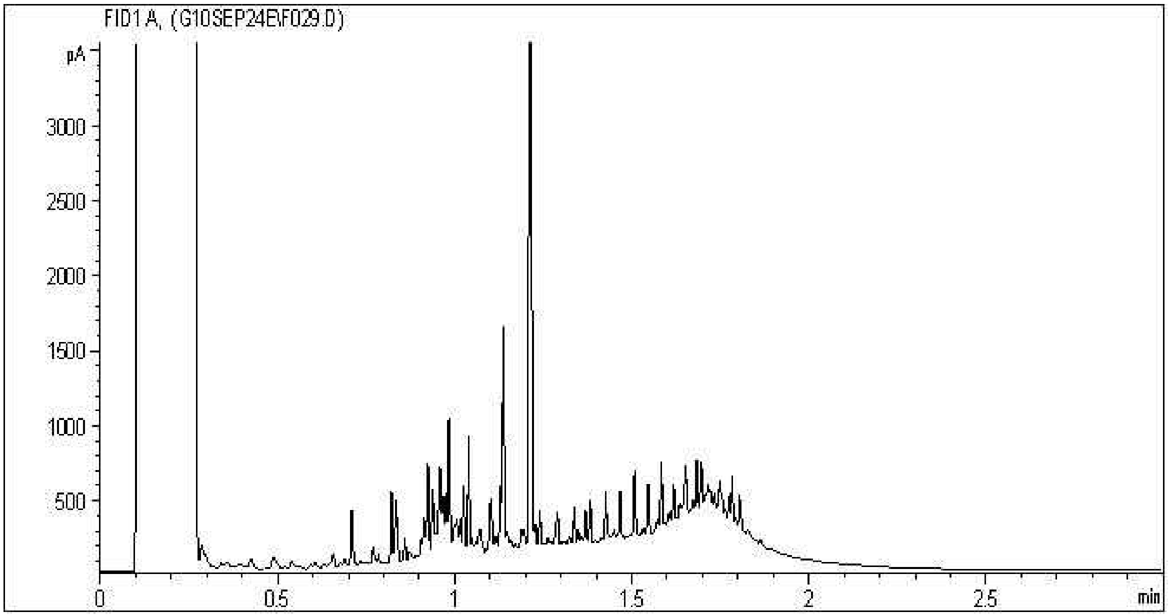
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

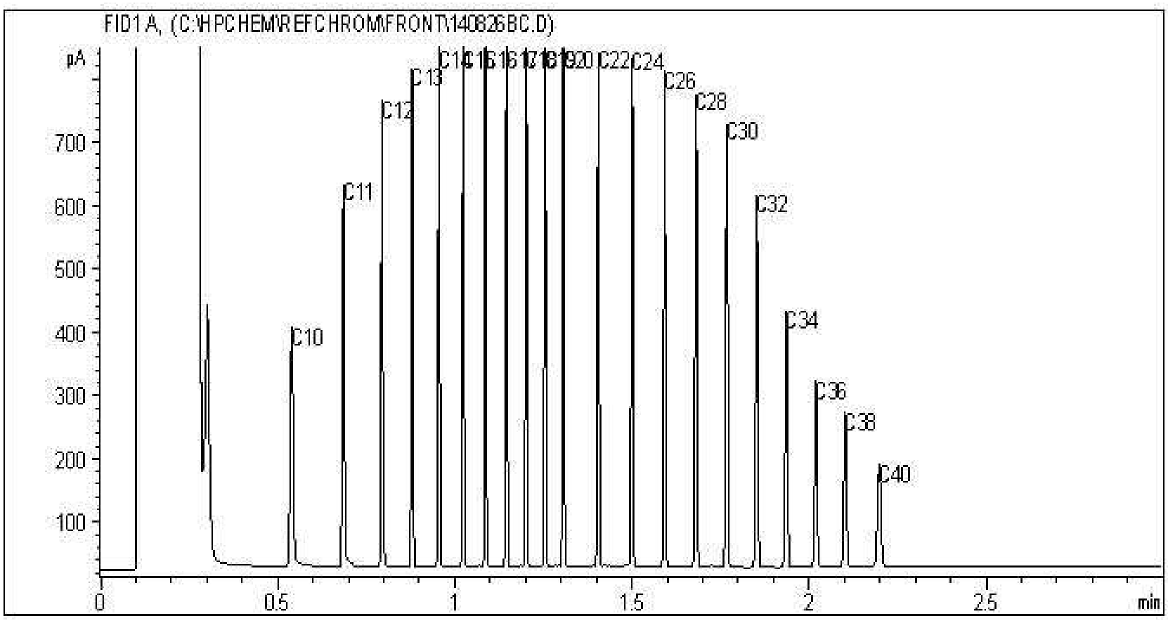
Maxxam Job #: B484263
Report Date: 2014/10/07
Maxxam Sample: KQ8579

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Reference: 1 PORT DRIVE DST; NANAIMO BC
Client ID: 14BH23-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

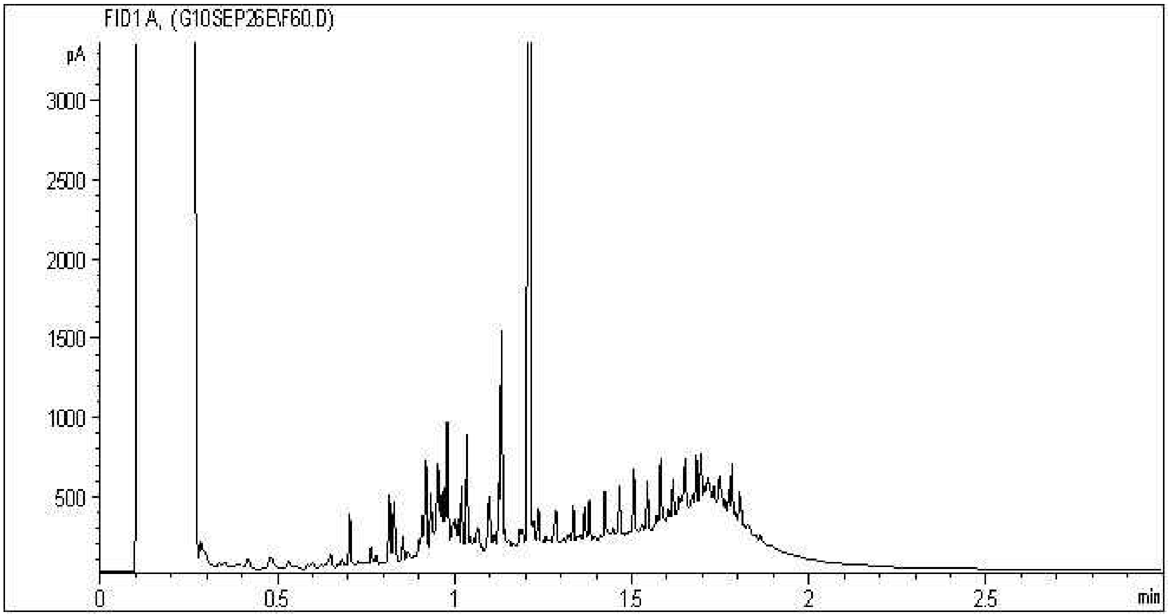
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

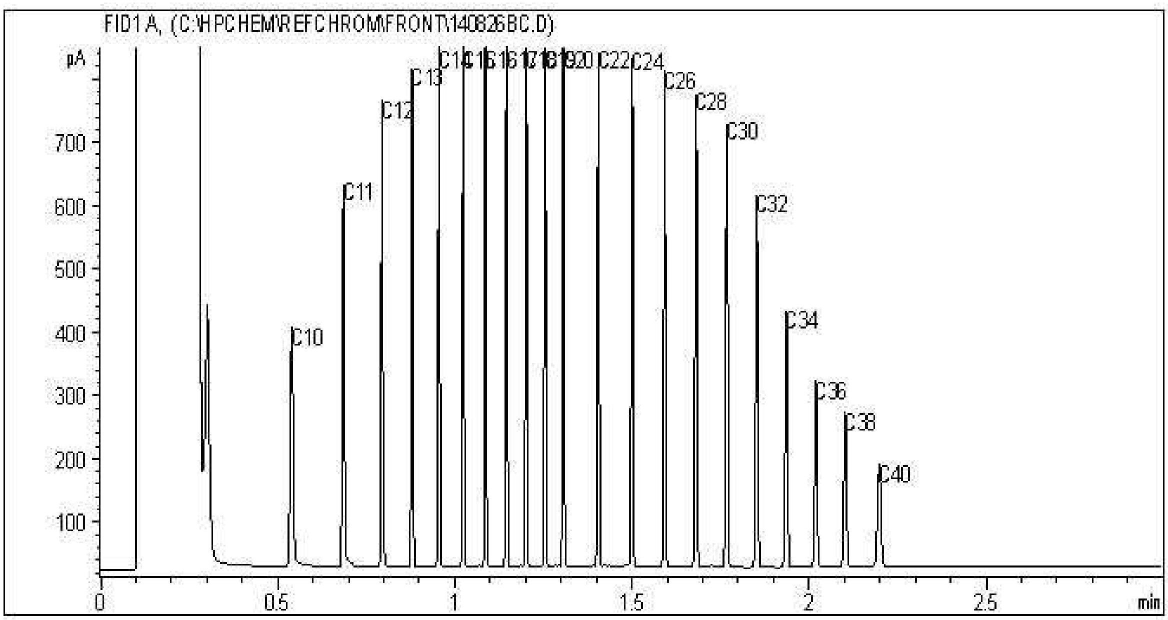
Maxxam Job #: B484263
Report Date: 2014/10/07
Maxxam Sample: KQ8582

Tetra Tech EBA
Client Project #: ENVIN003511-01.003
Site Reference: 1 PORT DRIVE DST; NANAIMO BC
Client ID: DUP.13

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

Your Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Your C.O.C. #: 449561-01-01

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/10/17
Report #: R1664809
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B485949
Received: 2014/09/25, 07:50

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride by Automated Colourimetry	2	N/A	2014/09/29	BBY6SOP-00011	SM 22 4500-Cl- G m
Phenols in Water by GCMS	4	2014/09/26	2014/09/29	BBY8SOP-00025	EPA 8270d R4
Hardness (calculated as CaCO3)	6	N/A	2014/09/30	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved) by CVAF	6	N/A	2014/10/06	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Extrac. Pet HC when LEPH/HEPH required	2	2014/09/27	2014/09/30	BBY8SOP-00029	BCMOE EPH w 07/99
Extrac. Pet HC when LEPH/HEPH required	5	2014/09/29	2014/09/30	BBY8SOP-00029	BCMOE EPH w 07/99
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	6	N/A	2014/09/30	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	6	N/A	2014/09/30	BBY7SOP-00002	EPA 6020A R1 m
PAH in Water by GC/MS (SIM)	2	2014/09/27	2014/09/28	BBY8SOP-00021	EPA 8270d R4 m
PAH in Water by GC/MS (SIM)	5	2014/09/29	2014/09/29	BBY8SOP-00021	EPA 8270d R4 m
PAH in Water by GC/MS (SIM)	1	2014/09/30	2014/10/01	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	2	N/A	2014/09/29	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	5	N/A	2014/09/30	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	1	N/A	2014/10/02	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	6	N/A	2014/09/30	BBY7 WI-00004	BCMOE Reqs 08/14
Salinity by Conductivity Method	2	2014/09/26	2014/09/27	BBY6SOP-00026	SM 22 2520 B m
Total Dissolved Solids (Filt. Residue)	7	2014/09/29	2014/09/30	BBY6SOP-00033	SM 22 2540 C m
EPH less PAH in Water by GC/FID	2	N/A	2014/09/30	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	5	N/A	2014/10/01	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		KR8216	KR8217	KR8218	KR8218	KR8219	KR8221		
Sampling Date		2014/09/24	2014/09/24	2014/09/24	2014/09/24	2014/09/24	2014/09/24		
COC Number		449561-01-01	449561-01-01	449561-01-01	449561-01-01	449561-01-01	449561-01-01		
	Units	**14MW02**	**14MW05**	**14MW07**	**14MW07 Lab-Dup**	**14MW08**	**14MW11**	**RDL**	**QC Batch**
Calculated Parameters									
Filter and HNO3 Preservation	N/A	FIELD					FIELD	N/A	ONSITE
Physical Properties									
Total Dissolved Solids	mg/L		788	1060	1100	1740	864	10	7657226

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

Maxxam ID		KR8222		KR8223	KR8224		KR8225	
Sampling Date		2014/09/24		2014/09/24	2014/09/24		2014/09/24	
COC Number		449561-01-01		449561-01-01	449561-01-01		449561-01-01	
	Units	**14MW12**	**RDL**	**14MW19**	**14MW25**	**RDL**	**DUP1**	**QC Batch**
Calculated Parameters								
Filter and HNO3 Preservation	N/A	FIELD	N/A	FIELD	FIELD	N/A	FIELD	ONSITE
Misc. Inorganics								
Salinity	g/L		0.010	23.3	17.5	0.010		7655697
Anions								
Dissolved Chloride (Cl)	mg/L		50	14000	11000	50		7658456
Physical Properties								
Total Dissolved Solids	mg/L	898	10	24900	17800	50		7657226

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		KR8216	KR8223		
Sampling Date		2014/09/24	2014/09/24		
COC Number		449561-01-01	449561-01-01		
	Units	**14MW02**	**14MW19**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS					
Phenol	ug/L	<0.50	<0.50	0.50	7655630
2-chlorophenol	ug/L	<0.10	<0.10	0.10	7655630
3 & 4-chlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2-methylphenol	ug/L	<0.50	<0.50	0.50	7655630
3 & 4-methylphenol	ug/L	<0.50	<0.50	0.50	7655630
2-nitrophenol	ug/L	<0.50	<0.50	0.50	7655630
2,4-dimethylphenol	ug/L	<0.50	<0.50	0.50	7655630
2,4 + 2,5-Dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3-Dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,6-dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
3,5-Dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
3,4-Dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,4,5-trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,4,6-trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,5-trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,6-Trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,4-trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
3,4,5-Trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,4-dinitrophenol	ug/L	<0.50	<0.50	0.50	7655630
4,6-dinitro-2-methylphenol	ug/L	<0.50	<0.50	0.50	7655630
2,3,4,6-tetrachlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,4,5-tetrachlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,5,6-tetrachlorophenol	ug/L	<0.10	<0.10	0.10	7655630
4-nitrophenol	ug/L	<0.50	<0.50	0.50	7655630
2,6-Dimethylphenol	ug/L	<0.50	<0.50	0.50	7655630
3,4-Dimethylphenol	ug/L	<0.50	<0.50	0.50	7655630
Pentachlorophenol	ug/L	<0.10	<0.10	0.10	7655630
Surrogate Recovery (%)					
2,4,6-TRIBROMOPHENOL (sur.)	%	85	96		7655630
2-FLUOROPHENOL (sur.)	%	33	29		7655630
RDL = Reportable Detection Limit					

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		KR8216	KR8217		KR8218	KR8218	KR8219		
Sampling Date		2014/09/24	2014/09/24		2014/09/24	2014/09/24	2014/09/24		
COC Number		449561-01-01	449561-01-01		449561-01-01	449561-01-01	449561-01-01		
	Units	**14MW02**	**14MW05**	**QC Batch**	**14MW07**	**14MW07 Lab-Dup**	**14MW08**	**RDL**	**QC Batch**
Polycyclic Aromatics									
Low Molecular Weight PAH`s	ug/L	<0.24	<0.24	7654571	<0.24		<0.24	0.24	7654571
High Molecular Weight PAH`s	ug/L	<0.050	<0.050	7654571	<0.050		<0.050	0.050	7654571
Total PAH	ug/L	<0.24	<0.24	7654571	<0.24		<0.24	0.24	7654571
Naphthalene	ug/L	<0.10	<0.10	7656009	<0.10		<0.10	0.10	7657911
2-Methylnaphthalene	ug/L	<0.10	<0.10	7656009	<0.10		<0.10	0.10	7657911
Quinoline	ug/L	<0.24	<0.24	7656009	<0.24		<0.24	0.24	7657911
Acenaphthylene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Acenaphthene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Fluorene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Phenanthrene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Anthracene	ug/L	<0.010	<0.010	7656009	<0.010		<0.010	0.010	7657911
Acridine	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Fluoranthene	ug/L	<0.020	<0.020	7656009	<0.020		<0.020	0.020	7657911
Pyrene	ug/L	<0.020	<0.020	7656009	<0.020		<0.020	0.020	7657911
Benzo(a)anthracene	ug/L	<0.010	<0.010	7656009	<0.010		<0.010	0.010	7657911
Chrysene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	7656009	<0.0090		<0.0090	0.0090	7657911
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	7656009	<0.050		<0.050	0.050	7657911
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	7654749	<0.20		<0.20	0.20	7654749
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	7654749	<0.20		<0.20	0.20	7654749
Ext. Pet. Hydrocarbon									
EPH (C10-C19)	mg/L	<0.20	<0.20	7656021	<0.20	<0.20	<0.20	0.20	7657942
EPH (C19-C32)	mg/L	<0.20	<0.20	7656021	<0.20	<0.20	<0.20	0.20	7657942
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	109	110	7656021	109	111	111		7657942
D10-ANTHRACENE (sur.)	%	116	113	7656009	103		104		7657911
D8-ACENAPHTHYLENE (sur.)	%	102	100	7656009	104		105		7657911
D8-NAPHTHALENE (sur.)	%	99	99	7656009	100		100		7657911
D9-Acridine	%	89	95	7656009	88		90		7657911

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		KR8216	KR8217		KR8218	KR8218	KR8219		
Sampling Date		2014/09/24	2014/09/24		2014/09/24	2014/09/24	2014/09/24		
COC Number		449561-01-01	449561-01-01		449561-01-01	449561-01-01	449561-01-01		
	Units	**14MW02**	**14MW05**	**QC Batch**	**14MW07**	**14MW07 Lab-Dup**	**14MW08**	**RDL**	**QC Batch**
TERPHENYL-D14 (sur.)	%	84	86	7656009	73		82		7657911

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		KR8220	KR8223	KR8224		
Sampling Date		2014/09/24	2014/09/24	2014/09/24		
COC Number		449561-01-01	449561-01-01	449561-01-01		
	Units	**DUP2**	**14MW19**	**14MW25**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Low Molecular Weight PAH`s	ug/L	<0.24	<0.24	<0.24	0.24	7654571
High Molecular Weight PAH`s	ug/L	<0.050	<0.050	<0.050	0.050	7654571
Total PAH	ug/L	<0.24	<0.24	<0.24	0.24	7654571
Naphthalene	ug/L	<0.10	<0.10	<0.10	0.10	7657911
2-Methylnaphthalene	ug/L	<0.10	<0.10	<0.10	0.10	7657911
Quinoline	ug/L	<0.24	<0.24	<0.24	0.24	7657911
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Acenaphthene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Fluorene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Phenanthrene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Anthracene	ug/L	<0.010	<0.010	<0.010	0.010	7657911
Acridine	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Fluoranthene	ug/L	<0.020	<0.020	<0.020	0.020	7657911
Pyrene	ug/L	<0.020	<0.020	<0.020	0.020	7657911
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	0.010	7657911
Chrysene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	0.0090	7657911
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	0.050	7657911
Calculated Parameters						
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	<0.20	0.20	7654749
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	<0.20	0.20	7654749
Ext. Pet. Hydrocarbon						
EPH (C10-C19)	mg/L	<0.20	<0.20	<0.20	0.20	7657942
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	0.20	7657942
Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	109	110	113		7657942
D10-ANTHRACENE (sur.)	%	105	94	97		7657911
D8-ACENAPHTHYLENE (sur.)	%	106	100	99		7657911
D8-NAPHTHALENE (sur.)	%	102	95	97		7657911
D9-Acridine	%	94	72	68		7657911
TERPHENYL-D14 (sur.)	%	85	63	60		7657911
RDL = Reportable Detection Limit						

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		KR8216	KR8221	KR8222		KR8223		KR8224		
Sampling Date		2014/09/24	2014/09/24	2014/09/24		2014/09/24		2014/09/24		
COC Number		449561-01-01	449561-01-01	449561-01-01		449561-01-01		449561-01-01		
	Units	14MW02	14MW11	14MW12	RDL	14MW19	RDL	14MW25	RDL	QC Batch
Misc. Inorganics										
Dissolved Hardness (CaCO3)	mg/L	1580	507	483	0.50	4190	0.50	3630	0.50	7654688
Elements										
Dissolved Mercury (Hg)	ug/L	<0.010	<0.010	<0.010	0.010	<0.010	0.010	<0.010	0.010	7662190
Dissolved Metals by ICPMS										
Dissolved Aluminum (Al)	ug/L	<3.0	<3.0	<3.0	3.0	14	12	5.7	3.0	7658090
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	0.50	<2.0	2.0	<0.50	0.50	7658090
Dissolved Arsenic (As)	ug/L	0.34	6.08	0.97	0.10	0.51	0.40	0.27	0.10	7658090
Dissolved Barium (Ba)	ug/L	66.7	104	33.1	1.0	85.9	4.0	89.5	1.0	7658090
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	0.10	<0.40	0.40	<0.10	0.10	7658090
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	1.0	<4.0	4.0	<1.0	1.0	7658090
Dissolved Boron (B)	ug/L	1450	1210	946	50	3050	200	2220	50	7658090
Dissolved Cadmium (Cd)	ug/L	<0.010	<0.010	<0.010	0.010	0.286	0.040	0.246	0.010	7658090
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	1.0	<4.0	4.0	<1.0	1.0	7658090
Dissolved Cobalt (Co)	ug/L	<0.50	0.56	<0.50	0.50	3.5	2.0	0.61	0.50	7658090
Dissolved Copper (Cu)	ug/L	<0.20	<0.20	<0.20	0.20	0.94	0.80	1.03	0.20	7658090
Dissolved Iron (Fe)	ug/L	669	6790	2040	5.0	<20	20	13.7	5.0	7658090
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	<0.20	0.20	<0.80	0.80	0.28	0.20	7658090
Dissolved Lithium (Li)	ug/L	48.0	54.7	34.5	5.0	128	20	111	5.0	7658090
Dissolved Manganese (Mn)	ug/L	371	786	146	1.0	452	4.0	239	1.0	7658090
Dissolved Molybdenum (Mo)	ug/L	1.3	2.1	<1.0	1.0	4.7	4.0	1.6	1.0	7658090
Dissolved Nickel (Ni)	ug/L	2.1	1.7	<1.0	1.0	18.7	4.0	19.7	1.0	7658090
Dissolved Selenium (Se)	ug/L	<0.10	<0.10	<0.10	0.10	<0.40	0.40	0.22	0.10	7658090
Dissolved Silicon (Si)	ug/L	13600	20900	19800	100	4830	400	7390	100	7658090
Dissolved Silver (Ag)	ug/L	<0.020	<0.020	<0.020	0.020	<0.080	0.080	0.104	0.020	7658090
Dissolved Strontium (Sr)	ug/L	2970	939	931	1.0	5910	4.0	5920	1.0	7658090
Dissolved Thallium (Tl)	ug/L	<0.050	<0.050	<0.050	0.050	<0.20	0.20	0.117	0.050	7658090
Dissolved Tin (Sn)	ug/L	<5.0	<5.0	<5.0	5.0	<20	20	<5.0	5.0	7658090
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	5.0	<20	20	<5.0	5.0	7658090
Dissolved Uranium (U)	ug/L	1.06	0.87	0.23	0.10	0.76	0.40	0.40	0.10	7658090
Dissolved Vanadium (V)	ug/L	<5.0	<5.0	<5.0	5.0	<20	20	<5.0	5.0	7658090
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	5.0	<20	20	27.3	5.0	7658090
Dissolved Zirconium (Zr)	ug/L	<0.50	<0.50	<0.50	0.50	<2.0	2.0	<0.50	0.50	7658090
Dissolved Calcium (Ca)	mg/L	333	147	136	0.050	338	0.20	427	0.050	7654690
Dissolved Magnesium (Mg)	mg/L	182	34.1	35.1	0.050	813	0.20	623	0.050	7654690
Dissolved Potassium (K)	mg/L	45.6	18.3	18.9	0.050	247	0.20	167	0.050	7654690
RDL = Reportable Detection Limit										

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		KR8216	KR8221	KR8222		KR8223		KR8224		
Sampling Date		2014/09/24	2014/09/24	2014/09/24		2014/09/24		2014/09/24		
COC Number		449561-01-01	449561-01-01	449561-01-01		449561-01-01		449561-01-01		
	Units	**14MW02**	**14MW11**	**14MW12**	**RDL**	**14MW19**	**RDL**	**14MW25**	**RDL**	**QC Batch**
Dissolved Sodium (Na)	mg/L	1060	128	157	0.050	6570	0.20	4610	0.050	7654690
Dissolved Sulphur (S)	mg/L	158	5.6	12.7	3.0	648	12	498	3.0	7654690
RDL = Reportable Detection Limit										

Success Through Science®

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		KR8225		
Sampling Date		2014/09/24		
COC Number		449561-01-01		
	Units	DUP1	RDL	QC Batch
Misc. Inorganics				
Dissolved Hardness (CaCO3)	mg/L	1560	0.50	7654688
Elements				
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	7662190
Dissolved Metals by ICPMS				
Dissolved Aluminum (Al)	ug/L	<3.0	3.0	7658090
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	7658090
Dissolved Arsenic (As)	ug/L	0.32	0.10	7658090
Dissolved Barium (Ba)	ug/L	65.3	1.0	7658090
Dissolved Beryllium (Be)	ug/L	<0.10	0.10	7658090
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	7658090
Dissolved Boron (B)	ug/L	1560	50	7658090
Dissolved Cadmium (Cd)	ug/L	0.010	0.010	7658090
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	7658090
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	7658090
Dissolved Copper (Cu)	ug/L	0.65	0.20	7658090
Dissolved Iron (Fe)	ug/L	656	5.0	7658090
Dissolved Lead (Pb)	ug/L	<0.20	0.20	7658090
Dissolved Lithium (Li)	ug/L	49.8	5.0	7658090
Dissolved Manganese (Mn)	ug/L	359	1.0	7658090
Dissolved Molybdenum (Mo)	ug/L	1.4	1.0	7658090
Dissolved Nickel (Ni)	ug/L	2.1	1.0	7658090
Dissolved Selenium (Se)	ug/L	<0.10	0.10	7658090
Dissolved Silicon (Si)	ug/L	14000	100	7658090
Dissolved Silver (Ag)	ug/L	<0.020	0.020	7658090
Dissolved Strontium (Sr)	ug/L	2930	1.0	7658090
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	7658090
Dissolved Tin (Sn)	ug/L	<5.0	5.0	7658090
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	7658090
Dissolved Uranium (U)	ug/L	1.07	0.10	7658090
Dissolved Vanadium (V)	ug/L	<5.0	5.0	7658090
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	7658090
Dissolved Zirconium (Zr)	ug/L	<0.50	0.50	7658090
Dissolved Calcium (Ca)	mg/L	325	0.050	7654690
Dissolved Magnesium (Mg)	mg/L	181	0.050	7654690
Dissolved Potassium (K)	mg/L	44.5	0.050	7654690

RDL = Reportable Detection Limit

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		KR8225		
Sampling Date		2014/09/24		
COC Number		449561-01-01		
	Units	**DUP1**	**RDL**	**QC Batch**
Dissolved Sodium (Na)	mg/L	1040	0.050	7654690
Dissolved Sulphur (S)	mg/L	158	3.0	7654690
RDL = Reportable Detection Limit				

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

CSR PAH IN WATER BY GC-MS (WATER)

Maxxam ID		KR8225		
Sampling Date		2014/09/24		
COC Number		449561-01-01		
	Units	**DUP1**	**RDL**	**QC Batch**
Polycyclic Aromatics				
Low Molecular Weight PAH`s	ug/L	<0.10	0.10	7654571
High Molecular Weight PAH`s	ug/L	<0.050	0.050	7654571
Total PAH	ug/L	<0.10	0.10	7654571
Naphthalene	ug/L	<0.10	0.10	7659138
2-Methylnaphthalene	ug/L	<0.10	0.10	7659138
Acenaphthylene	ug/L	<0.050	0.050	7659138
Acenaphthene	ug/L	<0.050	0.050	7659138
Fluorene	ug/L	<0.050	0.050	7659138
Phenanthrene	ug/L	<0.050	0.050	7659138
Anthracene	ug/L	<0.010	0.010	7659138
Acridine	ug/L	<0.050	0.050	7659138
Fluoranthene	ug/L	<0.020	0.020	7659138
Pyrene	ug/L	<0.020	0.020	7659138
Benzo(a)anthracene	ug/L	<0.010	0.010	7659138
Chrysene	ug/L	<0.050	0.050	7659138
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	7659138
Benzo(k)fluoranthene	ug/L	<0.050	0.050	7659138
Benzo(a)pyrene	ug/L	<0.0090	0.0090	7659138
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	7659138
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	7659138
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	7659138
RDL = Reportable Detection Limit				

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Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

PCP WATERS (WATER)

Maxxam ID		KR8221	KR8222		
Sampling Date		2014/09/24	2014/09/24		
COC Number		449561-01-01	449561-01-01		
	Units	14MW11	14MW12	RDL	QC Batch
SEMI-VOLATILE ORGANICS					
2-chlorophenol	ug/L	<0.10	<0.10	0.10	7655630
3 & 4-chlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,4 + 2,5-Dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3-Dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,6-dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
3,5-Dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
3,4-Dichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,4,5-trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,4,6-trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,5-trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,6-Trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,4-trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
3,4,5-Trichlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,4,6-tetrachlorophenol	ug/L	0.24	<0.10	0.10	7655630
2,3,4,5-tetrachlorophenol	ug/L	<0.10	<0.10	0.10	7655630
2,3,5,6-tetrachlorophenol	ug/L	<0.10	<0.10	0.10	7655630
Pentachlorophenol	ug/L	0.46	<0.10	0.10	7655630
Surrogate Recovery (%)					
2,4,6-TRIBROMOPHENOL (sur.)	%	75	73		7655630
2-FLUOROPHENOL (sur.)	%	21	23		7655630
RDL = Reportable Detection Limit					

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.3°C

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER) Comments

Sample KR8223-05 Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference.

Results relate only to the items tested.

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Maxxam Job #: B485949
Report Date: 2014/10/17

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7655630	2,4,6-TRIBROMOPHENOL (sur.)	2014/09/29			87	10 - 123	84	%		
7655630	2-FLUOROPHENOL (sur.)	2014/09/29			24	21 - 100	31	%		
7656009	D10-ANTHRACENE (sur.)	2014/09/28	117	60 - 130	102	60 - 130	88	%		
7656009	D8-ACENAPHTHYLENE (sur.)	2014/09/28	104	50 - 130	92	50 - 130	77	%		
7656009	D8-NAPHTHALENE (sur.)	2014/09/28	100	50 - 130	89	50 - 130	76	%		
7656009	D9-Acridine	2014/09/28	99	50 - 130	85	50 - 130	71	%		
7656009	TERPHENYL-D14 (sur.)	2014/09/28	113	60 - 130	103	60 - 130	86	%		
7656021	O-TERPHENYL (sur.)	2014/09/30	109	50 - 130	111	50 - 130	105	%		
7657911	D10-ANTHRACENE (sur.)	2014/09/29	98	60 - 130	103	60 - 130	108	%		
7657911	D8-ACENAPHTHYLENE (sur.)	2014/09/29	101	50 - 130	104	50 - 130	109	%		
7657911	D8-NAPHTHALENE (sur.)	2014/09/29	98	50 - 130	97	50 - 130	103	%		
7657911	D9-Acridine	2014/09/29	87	50 - 130	90	50 - 130	91	%		
7657911	TERPHENYL-D14 (sur.)	2014/09/29	74	60 - 130	99	60 - 130	104	%		
7657942	O-TERPHENYL (sur.)	2014/09/30	107	50 - 130	110	50 - 130	109	%		
7659138	D10-ANTHRACENE (sur.)	2014/09/30	115	60 - 130	112	60 - 130	112	%		
7659138	D8-ACENAPHTHYLENE (sur.)	2014/09/30	112	50 - 130	100	50 - 130	100	%		
7659138	D8-NAPHTHALENE (sur.)	2014/09/30	103	50 - 130	95	50 - 130	99	%		
7659138	D9-Acridine	2014/09/30	100	50 - 130	92	50 - 130	89	%		
7659138	TERPHENYL-D14 (sur.)	2014/09/30	95	60 - 130	107	60 - 130	105	%		
7655630	2,3,4,5-tetrachlorophenol	2014/09/29			94	14 - 176	<0.10	ug/L		
7655630	2,3,4,6-tetrachlorophenol	2014/09/29			100	14 - 176	<0.10	ug/L		
7655630	2,3,4-trichlorophenol	2014/09/29			89	37 - 144	<0.10	ug/L		
7655630	2,3,5,6-tetrachlorophenol	2014/09/29			96	14 - 176	<0.10	ug/L		
7655630	2,3,5-trichlorophenol	2014/09/29			84	37 - 144	<0.10	ug/L		
7655630	2,3,6-Trichlorophenol	2014/09/29			85	37 - 144	<0.10	ug/L		
7655630	2,3-Dichlorophenol	2014/09/29			67	39 - 135	<0.10	ug/L		
7655630	2,4 + 2,5-Dichlorophenol	2014/09/29			72	39 - 135	<0.10	ug/L		
7655630	2,4,5-trichlorophenol	2014/09/29			88	37 - 144	<0.10	ug/L		
7655630	2,4,6-trichlorophenol	2014/09/29			84	37 - 144	<0.10	ug/L		
7655630	2,4-dimethylphenol	2014/09/29			99	60 - 130	<0.50	ug/L		
7655630	2,4-dinitrophenol	2014/09/29			101	1 - 191	<0.50	ug/L		
7655630	2,6-dichlorophenol	2014/09/29			72	39 - 135	<0.10	ug/L		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7655630	2,6-Dimethylphenol	2014/09/29			58	32 - 119	<0.50	ug/L		
7655630	2-chlorophenol	2014/09/29			52	27 - 123	<0.10	ug/L		
7655630	2-methylphenol	2014/09/29			58	25 - 120	<0.50	ug/L		
7655630	2-nitrophenol	2014/09/29			56	29 - 182	<0.50	ug/L		
7655630	3 & 4-chlorophenol	2014/09/29			73	27 - 123	<0.10	ug/L		
7655630	3 & 4-methylphenol	2014/09/29			61	25 - 120	<0.50	ug/L		
7655630	3,4,5-Trichlorophenol	2014/09/29			105	37 - 144	<0.10	ug/L		
7655630	3,4-Dichlorophenol	2014/09/29			81	39 - 135	<0.10	ug/L		
7655630	3,4-Dimethylphenol	2014/09/29			68	32 - 119	<0.50	ug/L		
7655630	3,5-Dichlorophenol	2014/09/29			78	39 - 135	<0.10	ug/L		
7655630	4,6-dinitro-2-methylphenol	2014/09/29			87	1 - 181	<0.50	ug/L		
7655630	4-nitrophenol	2014/09/29			91	1 - 132	<0.50	ug/L		
7655630	Pentachlorophenol	2014/09/29			128	14 - 176	<0.10	ug/L		
7655630	Phenol	2014/09/29			108	60 - 130	<0.50	ug/L		
7655697	Salinity	2014/09/27					<0.010	g/L	0	25
7656009	2-Methylnaphthalene	2014/09/28	92	50 - 130	82	50 - 130	<0.10	ug/L	NC	40
7656009	Acenaphthene	2014/09/28	98	50 - 130	87	50 - 130	<0.050	ug/L	NC	40
7656009	Acenaphthylene	2014/09/28	94	50 - 130	82	50 - 130	<0.050	ug/L	NC	40
7656009	Acridine	2014/09/28	85	50 - 130	74	50 - 130	<0.050	ug/L	NC	40
7656009	Anthracene	2014/09/28	102	60 - 130	89	60 - 130	<0.010	ug/L	NC	40
7656009	Benzo(a)anthracene	2014/09/28	86	60 - 130	77	60 - 130	<0.010	ug/L	NC	40
7656009	Benzo(a)pyrene	2014/09/28	93	60 - 130	84	60 - 130	<0.0090	ug/L	NC	40
7656009	Benzo(b&j)fluoranthene	2014/09/28	88	60 - 130	80	60 - 130	<0.050	ug/L	NC	40
7656009	Benzo(g,h,i)perylene	2014/09/28	89	60 - 130	80	60 - 130	<0.050	ug/L	NC	40
7656009	Benzo(k)fluoranthene	2014/09/28	88	60 - 130	79	60 - 130	<0.050	ug/L	NC	40
7656009	Chrysene	2014/09/28	86	60 - 130	78	60 - 130	<0.050	ug/L	NC	40
7656009	Dibenz(a,h)anthracene	2014/09/28	89	60 - 130	80	60 - 130	<0.050	ug/L	NC	40
7656009	Fluoranthene	2014/09/28	99	60 - 130	87	60 - 130	<0.020	ug/L	NC	40
7656009	Fluorene	2014/09/28	95	50 - 130	84	50 - 130	<0.050	ug/L	NC	40
7656009	Indeno(1,2,3-cd)pyrene	2014/09/28	93	60 - 130	84	60 - 130	<0.050	ug/L	NC	40
7656009	Naphthalene	2014/09/28	90	50 - 130	81	50 - 130	<0.10	ug/L	NC	40
7656009	Phenanthrene	2014/09/28	93	60 - 130	82	60 - 130	<0.050	ug/L	NC	40

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7656009	Pyrene	2014/09/28	100	60 - 130	88	60 - 130	<0.020	ug/L	NC	40
7656009	Quinoline	2014/09/28	103	50 - 130	106	50 - 130	<0.24	ug/L	NC	40
7656021	EPH (C10-C19)	2014/09/30	92	50 - 130	93	50 - 130	<0.20	mg/L	NC	30
7656021	EPH (C19-C32)	2014/09/30	98	50 - 130	101	50 - 130	<0.20	mg/L	NC	30
7657226	Total Dissolved Solids	2014/09/30	NC	80 - 120	88	80 - 120	<10	mg/L	3.5	20
7657911	2-Methylnaphthalene	2014/09/29	106	50 - 130	104	50 - 130	<0.10	ug/L	NC	40
7657911	Acenaphthene	2014/09/29	114	50 - 130	116	50 - 130	<0.050	ug/L	NC	40
7657911	Acenaphthylene	2014/09/29	109	50 - 130	109	50 - 130	<0.050	ug/L	NC	40
7657911	Acridine	2014/09/29	94	50 - 130	97	50 - 130	<0.050	ug/L	NC	40
7657911	Anthracene	2014/09/29	102	60 - 130	109	60 - 130	<0.010	ug/L	NC	40
7657911	Benzo(a)anthracene	2014/09/29	71	60 - 130	106	60 - 130	<0.010	ug/L	NC	40
7657911	Benzo(a)pyrene	2014/09/29	68	60 - 130	108	60 - 130	<0.0090	ug/L	NC	40
7657911	Benzo(b&j)fluoranthene	2014/09/29	67	60 - 130	108	60 - 130	<0.050	ug/L	NC	40
7657911	Benzo(g,h,i)perylene	2014/09/29	69	60 - 130	111	60 - 130	<0.050	ug/L	NC	40
7657911	Benzo(k)fluoranthene	2014/09/29	70	60 - 130	106	60 - 130	<0.050	ug/L	NC	40
7657911	Chrysene	2014/09/29	73	60 - 130	109	60 - 130	<0.050	ug/L	NC	40
7657911	Dibenz(a,h)anthracene	2014/09/29	70	60 - 130	114	60 - 130	<0.050	ug/L	NC	40
7657911	Fluoranthene	2014/09/29	90	60 - 130	102	60 - 130	<0.020	ug/L	NC	40
7657911	Fluorene	2014/09/29	104	50 - 130	106	50 - 130	<0.050	ug/L	NC	40
7657911	Indeno(1,2,3-cd)pyrene	2014/09/29	72	60 - 130	118	60 - 130	<0.050	ug/L	NC	40
7657911	Naphthalene	2014/09/29	104	50 - 130	101	50 - 130	<0.10	ug/L	NC	40
7657911	Phenanthrene	2014/09/29	106	60 - 130	107	60 - 130	<0.050	ug/L	NC	40
7657911	Pyrene	2014/09/29	89	60 - 130	103	60 - 130	<0.020	ug/L	NC	40
7657911	Quinoline	2014/09/29	128	50 - 130	125	50 - 130	<0.24	ug/L	NC	40
7657942	EPH (C10-C19)	2014/09/30	99	50 - 130	89	50 - 130	<0.20	mg/L	NC	30
7657942	EPH (C19-C32)	2014/09/30	108	50 - 130	93	50 - 130	<0.20	mg/L	NC	30
7658090	Dissolved Aluminum (Al)	2014/09/30	106	80 - 120	104	80 - 120	<3.0	ug/L	NC	20
7658090	Dissolved Antimony (Sb)	2014/09/30	99	80 - 120	102	80 - 120	<0.50	ug/L	NC	20
7658090	Dissolved Arsenic (As)	2014/09/30	104	80 - 120	101	80 - 120	<0.10	ug/L	NC	20
7658090	Dissolved Barium (Ba)	2014/09/30	NC	80 - 120	99	80 - 120	<1.0	ug/L	0.50	20
7658090	Dissolved Beryllium (Be)	2014/09/30	104	80 - 120	96	80 - 120	<0.10	ug/L	NC	20
7658090	Dissolved Bismuth (Bi)	2014/09/30	99	80 - 120	99	80 - 120	<1.0	ug/L	NC	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7658090	Dissolved Boron (B)	2014/09/30					<50	ug/L	NC	20
7658090	Dissolved Cadmium (Cd)	2014/09/30	99	80 - 120	98	80 - 120	<0.010	ug/L	NC	20
7658090	Dissolved Chromium (Cr)	2014/09/30	101	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
7658090	Dissolved Cobalt (Co)	2014/09/30	99	80 - 120	99	80 - 120	<0.50	ug/L	NC	20
7658090	Dissolved Copper (Cu)	2014/09/30	100	80 - 120	99	80 - 120	<0.20	ug/L	1.0	20
7658090	Dissolved Iron (Fe)	2014/09/30	105	80 - 120	109	80 - 120	<5.0	ug/L	NC	20
7658090	Dissolved Lead (Pb)	2014/09/30	98	80 - 120	99	80 - 120	<0.20	ug/L	NC	20
7658090	Dissolved Lithium (Li)	2014/09/30	98	80 - 120	93	80 - 120	<5.0	ug/L	NC	20
7658090	Dissolved Manganese (Mn)	2014/09/30	100	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
7658090	Dissolved Molybdenum (Mo)	2014/09/30	100	80 - 120	95	80 - 120	<1.0	ug/L	NC	20
7658090	Dissolved Nickel (Ni)	2014/09/30	102	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
7658090	Dissolved Selenium (Se)	2014/09/30	95	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
7658090	Dissolved Silicon (Si)	2014/09/30					<100	ug/L	3.3	20
7658090	Dissolved Silver (Ag)	2014/09/30	102	80 - 120	84	80 - 120	<0.020	ug/L	NC	20
7658090	Dissolved Strontium (Sr)	2014/09/30	NC	80 - 120	98	80 - 120	<1.0	ug/L	0.60	20
7658090	Dissolved Thallium (Tl)	2014/09/30	99	80 - 120	98	80 - 120	<0.050	ug/L	NC	20
7658090	Dissolved Tin (Sn)	2014/09/30	98	80 - 120	99	80 - 120	<5.0	ug/L	NC	20
7658090	Dissolved Titanium (Ti)	2014/09/30	101	80 - 120	89	80 - 120	<5.0	ug/L	NC	20
7658090	Dissolved Uranium (U)	2014/09/30	102	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
7658090	Dissolved Vanadium (V)	2014/09/30	102	80 - 120	101	80 - 120	<5.0	ug/L	NC	20
7658090	Dissolved Zinc (Zn)	2014/09/30	NC	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
7658090	Dissolved Zirconium (Zr)	2014/09/30					<0.50	ug/L	NC	20
7658456	Dissolved Chloride (Cl)	2014/09/29	103	80 - 120	105	80 - 120	<0.50	mg/L	2.1	20
7659138	2-Methylnaphthalene	2014/10/01	NC	50 - 130	94	50 - 130	<0.10	ug/L	7.4 (1)	40
7659138	Acenaphthene	2014/10/01	118	50 - 130	104	50 - 130	<0.050	ug/L	NC (2)	40
7659138	Acenaphthylene	2014/10/01	110	50 - 130	98	50 - 130	<0.050	ug/L	NC (2)	40
7659138	Acridine	2014/10/01	99	50 - 130	88	50 - 130	<0.050	ug/L	NC (2)	40
7659138	Anthracene	2014/10/01	119	60 - 130	109	60 - 130	<0.010	ug/L	NC (2)	40
7659138	Benzo(a)anthracene	2014/10/01	101	60 - 130	94	60 - 130	<0.010	ug/L	NC	40
7659138	Benzo(a)pyrene	2014/10/01	108	60 - 130	101	60 - 130	<0.0090	ug/L	NC	40
7659138	Benzo(b&j)fluoranthene	2014/10/01	98	60 - 130	92	60 - 130	<0.050	ug/L	NC	40
7659138	Benzo(g,h,i)perylene	2014/10/01	101	60 - 130	95	60 - 130	<0.050	ug/L	NC	40

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7659138	Benzo(k)fluoranthene	2014/10/01	107	60 - 130	101	60 - 130	<0.050	ug/L	NC	40
7659138	Chrysene	2014/10/01	102	60 - 130	96	60 - 130	<0.050	ug/L	NC	40
7659138	Dibenz(a,h)anthracene	2014/10/01	98	60 - 130	92	60 - 130	<0.050	ug/L	NC	40
7659138	Fluoranthene	2014/10/01	116	60 - 130	106	60 - 130	<0.020	ug/L	NC	40
7659138	Fluorene	2014/10/01	112	50 - 130	101	50 - 130	<0.050	ug/L	12	40
7659138	Indeno(1,2,3-cd)pyrene	2014/10/01	105	60 - 130	99	60 - 130	<0.050	ug/L	NC	40
7659138	Naphthalene	2014/10/01	NC	50 - 130	90	50 - 130	<0.10	ug/L	6.1 (1)	40
7659138	Phenanthrene	2014/10/01	107	60 - 130	100	60 - 130	<0.050	ug/L	9.5	40
7659138	Pyrene	2014/10/01	116	60 - 130	107	60 - 130	<0.020	ug/L	NC	40
7659138	Quinoline	2014/10/01	117	50 - 130	113	50 - 130	<0.24	ug/L	NC (2)	40
7662190	Dissolved Mercury (Hg)	2014/10/06	114	80 - 120	119	80 - 120	<0.010	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) RDL raised due to sample matrix interference.

Maxxam Job #: B485949
Report Date: 2014/10/17

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC - DSI
Sampler Initials: KG

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam

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Chain Of Custody Record

Page 1 of 1

INVOICE TO:		Report Information		Project Information	
Company Name	#11478 TETRA TECH EBA INC.	Company Name	#28955 Tetra Tech EBA	Quotation #	B40497
Contact Name	Accounts Payable	Contact Name	Lora Paul, Kristy G, Darren T	P.O. #	
Address	14940-123 AVENUE	Address	#1 - 4376 Boban Drive	Project #	ENVIND03511-01
	EDMONTON AB T5V 1B4		Nanaimo BC V9T 6A7	Project Name	
Phone	(780) 451-2121 x Fax (780) 454-5688 x	Phone	(250) 756-2256 Fax	Site #	1 Port Drive, Nanaimo BC – DSI
Email	EBA.Accounts.Payable@tetratech.com	Email	Lora.Paul@tetratech.com Kristy.Fahehouse@tetratech.com	Sampled By	KG / DT

Laboratory Use Only

Maxxam Job #	Bottle Order #:
B485949	449561
Chain Of Custody Record	Project Manager
C#449561-01-01	Crystal Ireland

Regulatory Criteria:

- [x] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other ____________

Special Instructions

B485949

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: ☒

(will be applied if Rush TAT is not specified):

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

1 DAY ☐ 2 Day ☐ 3 Day ☐ Date Required: ________ ☐

Rush Confirmation Number: ________________ *(call lab for #)*

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR Dissolved Metals in Water with CV Hg	LEPH & HEPH with CSR/CCME PAH in Water	Chloro/Non-Chloro Phenols incl. PCPs	Total Dissolved Solids (Filt. Residue)	PCP waters	Salinity by Conductivity Method	Na and Chloride by Automated Colourimetry	CSR VOC + VPH in Water	PAHS		# of Bottles	Comments
1	SID#108856	BH14-02	Sept 24/14		GW	Y	X	X	X								5	KR8216
2	SID#108857	BH14-05	Sept 24/14		GW			X		X							4	KR8217
3	SID#108858	BH14-07	Sept 24/14		GW			X		X							4	KR8218
4	SID#108859	BH14-08	Sept 24/14		GW			X		X							4	KR8219
5	SID#108860	~~BH14-18~~ DUP2	"		GW			X									3	KR8220
6	SID#108861	BH14-11	Sept 24/14		GW	Y	X			X	X						3	KR8221
7	SID#108862	BH14-12	Sept 24/14		GW	Y	X			X	X						3	KR8222
8	SID#108863	~~BH14-19~~ BH 14-19	"		GW	Y	X	X	X	X		X	X				7	KR8223
9	SID#108864	~~BH14-14~~ BH 14-25	"		GW	Y	X	X		X		X	X				6	KR8224
10	SID#108865	~~BH14-16~~ DUP1	"		GW	Y	X								X		2	KR8225

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
[signature]	14/09/24	4:00pm	[signature] Laurel Berthier	2014/09/25	07:50	

Lab Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
☐	6,8,5/6,7,7	NA ☐ Yes ☐ No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

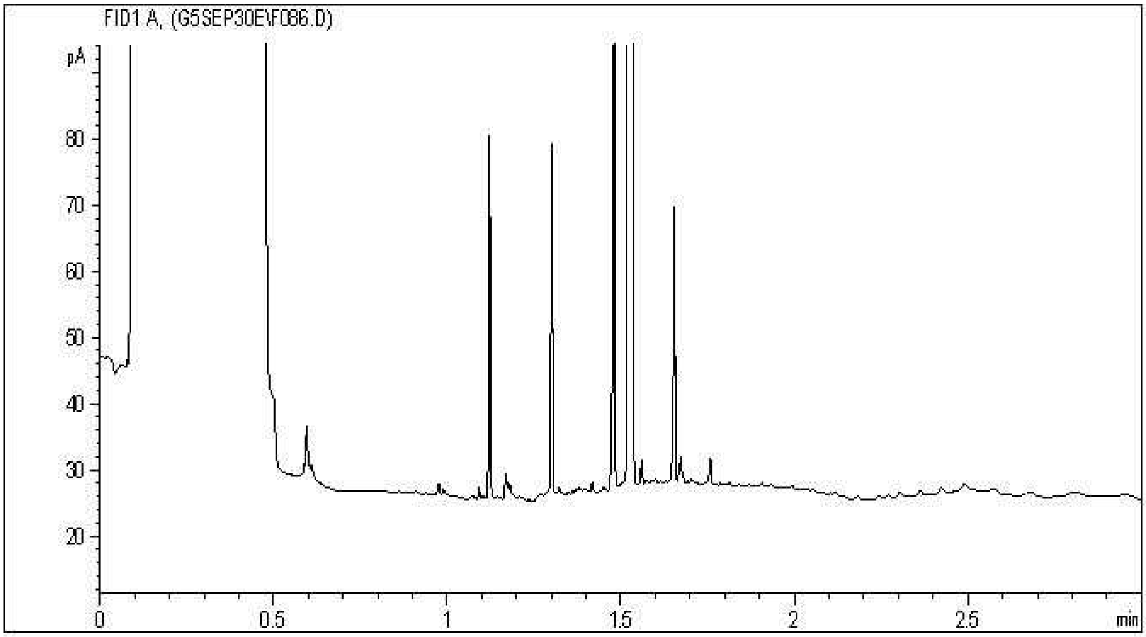
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

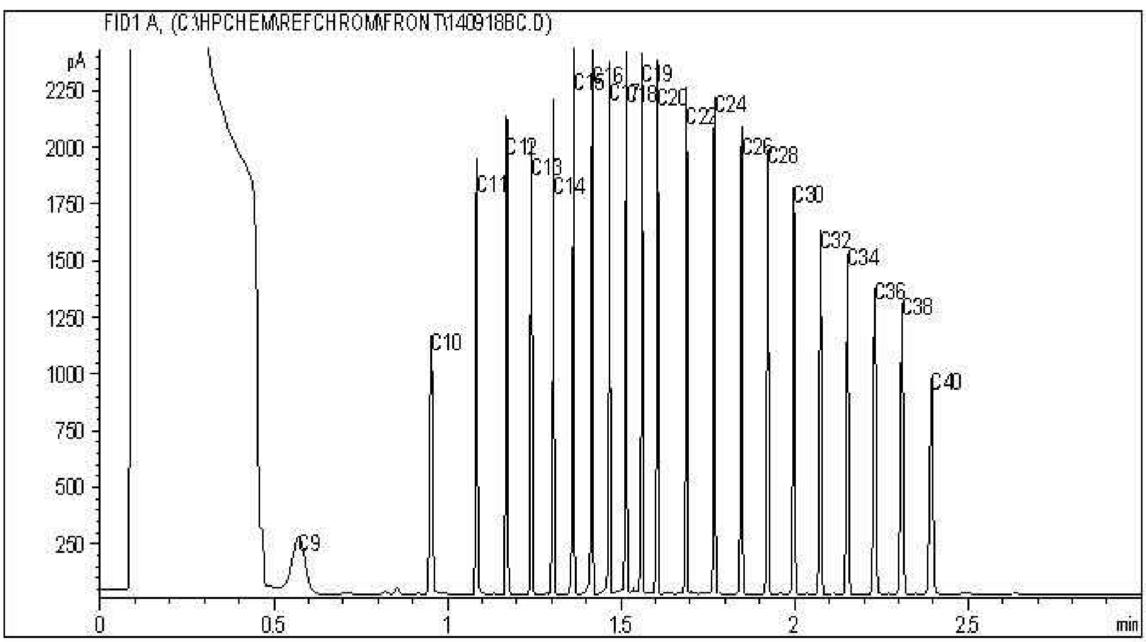
Maxxam Job #: B485949
Report Date: 2014/10/17
Maxxam Sample: KR8216

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Reference: 1 PORT DRIVE, NANAIMO BC - DSI
Client ID: 14MW02

Extrac. Pet HC when LEPH/HEPH required Chromatogram



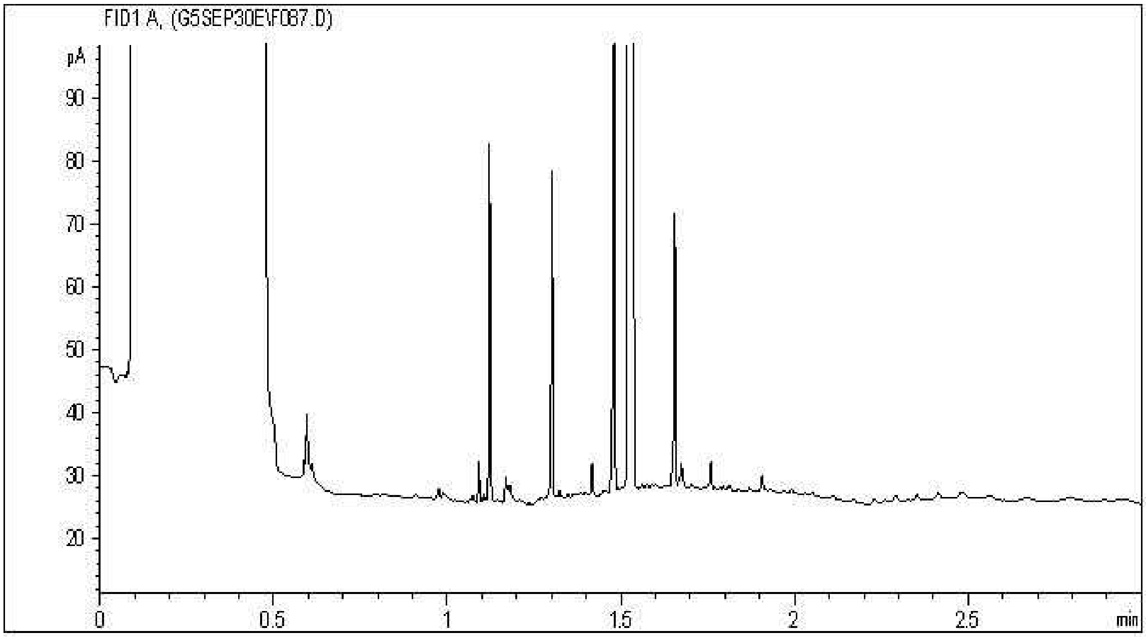
Carbon Range Distribution - Reference Chromatogram



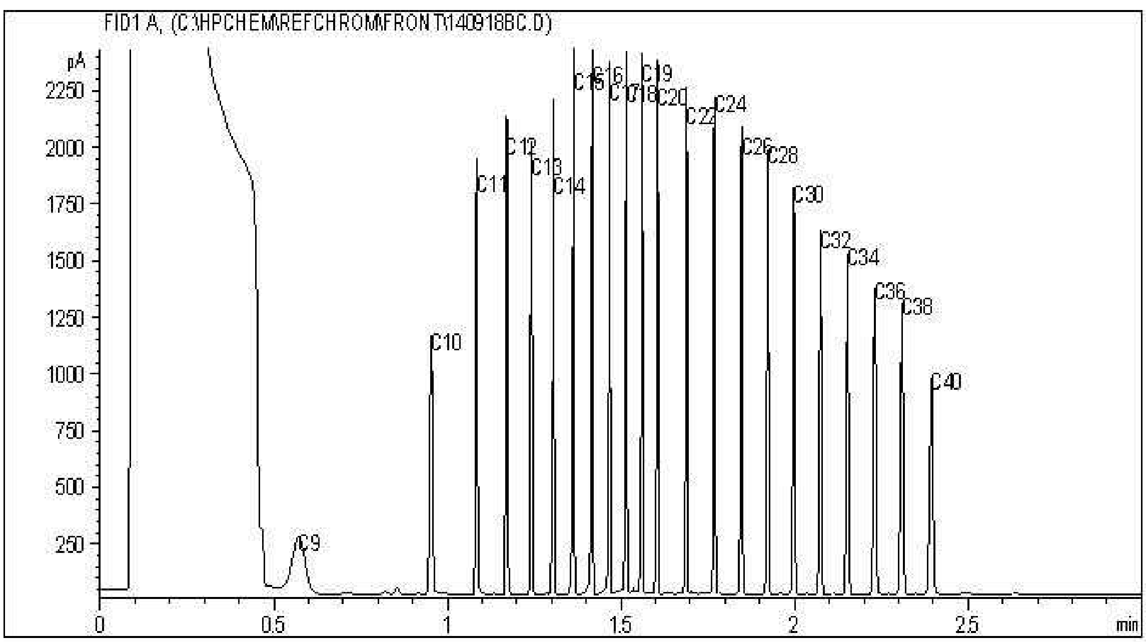
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Extrac. Pet HC when LEPH/HEPH required Chromatogram



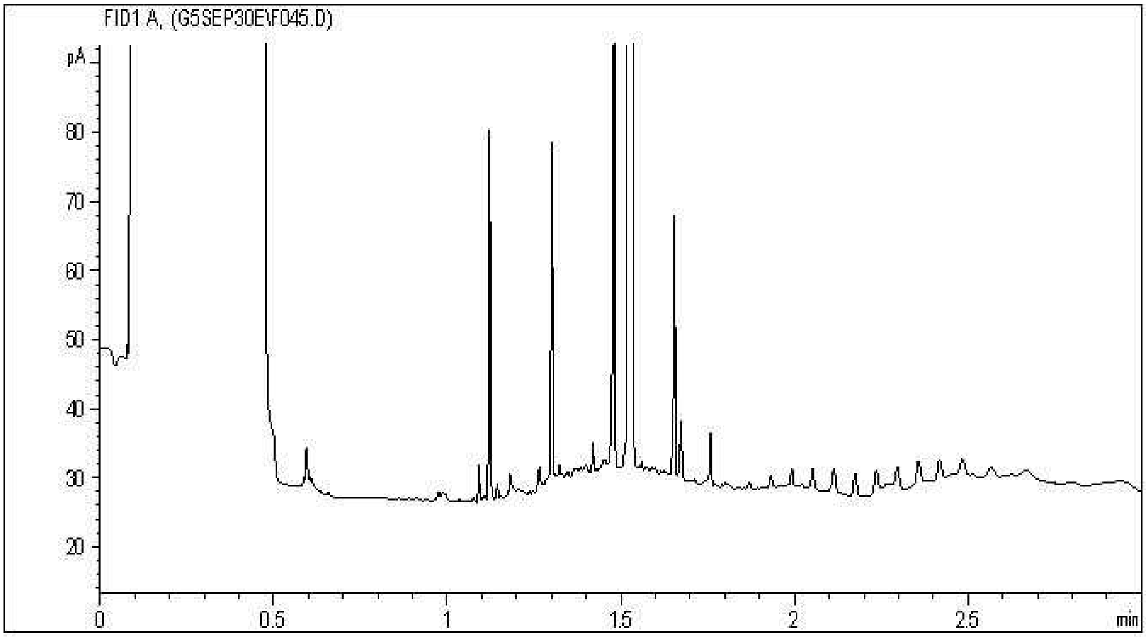
Carbon Range Distribution - Reference Chromatogram



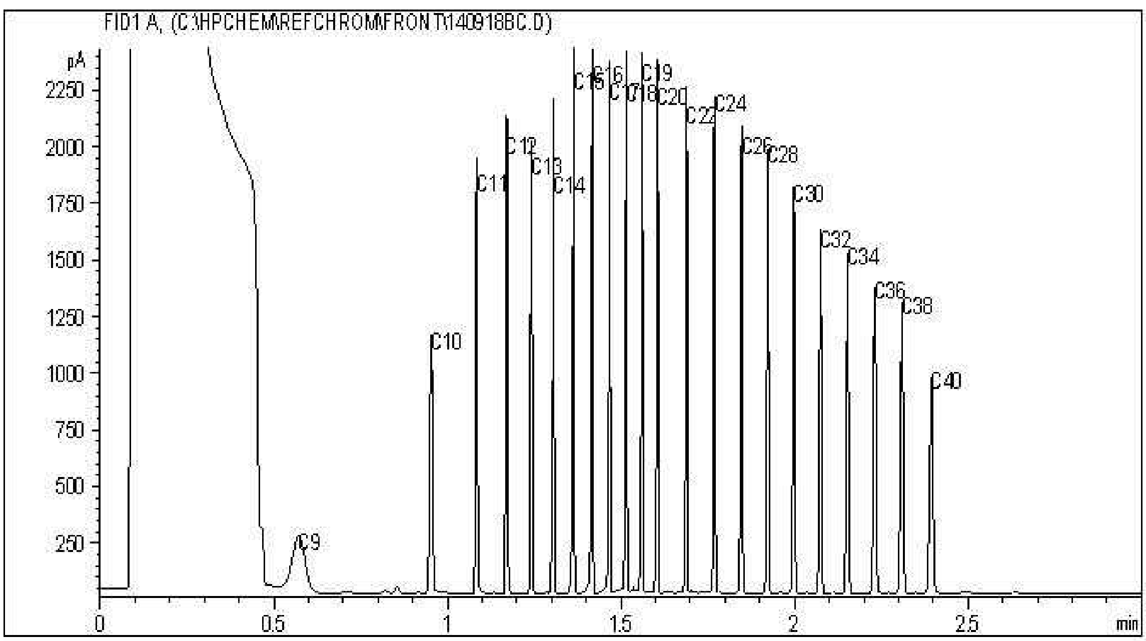
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Extrac. Pet HC when LEPH/HEPH required Chromatogram



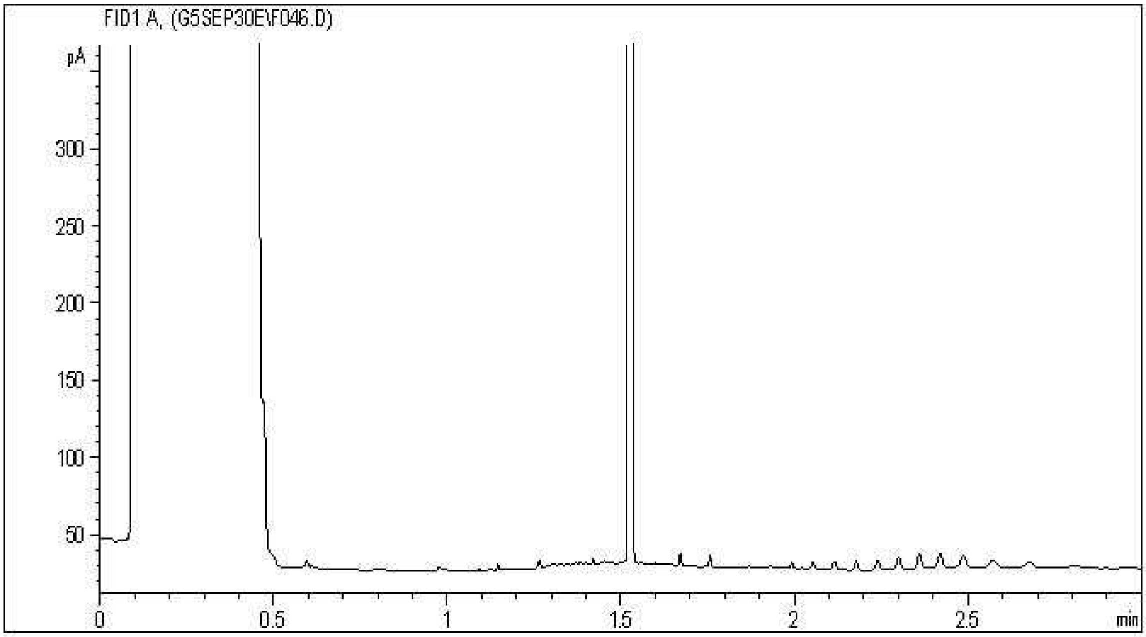
Carbon Range Distribution - Reference Chromatogram



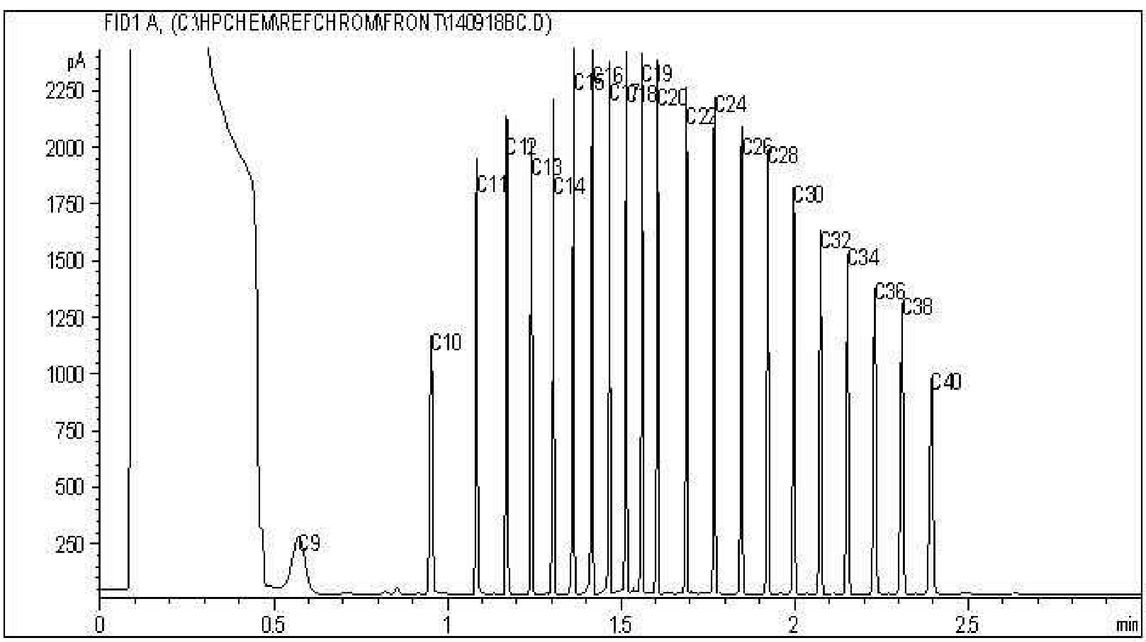
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



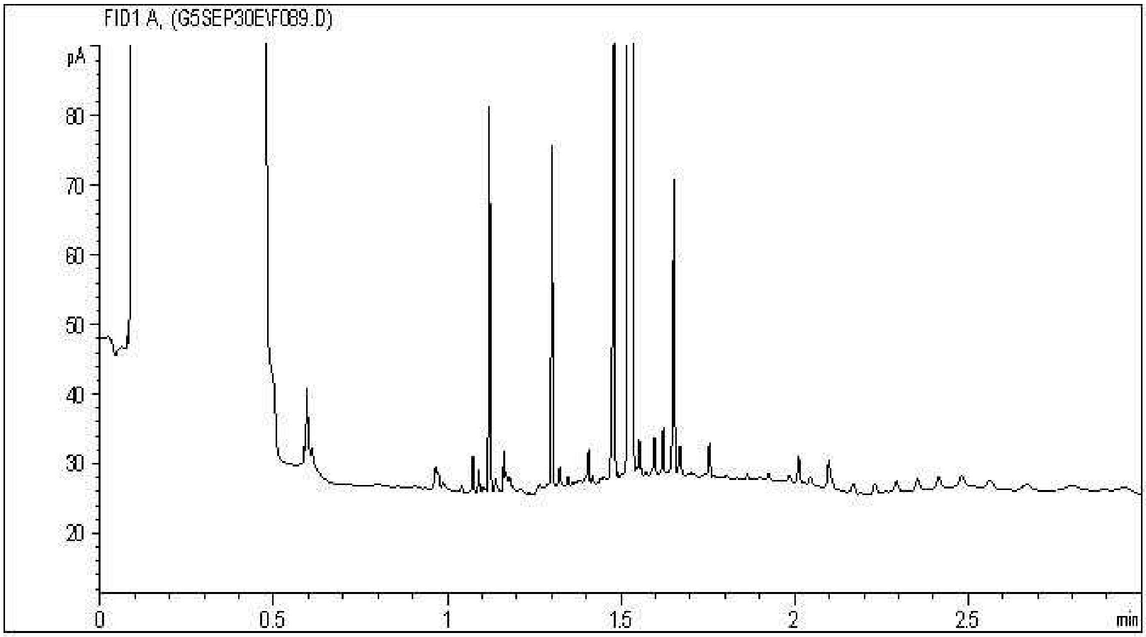
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

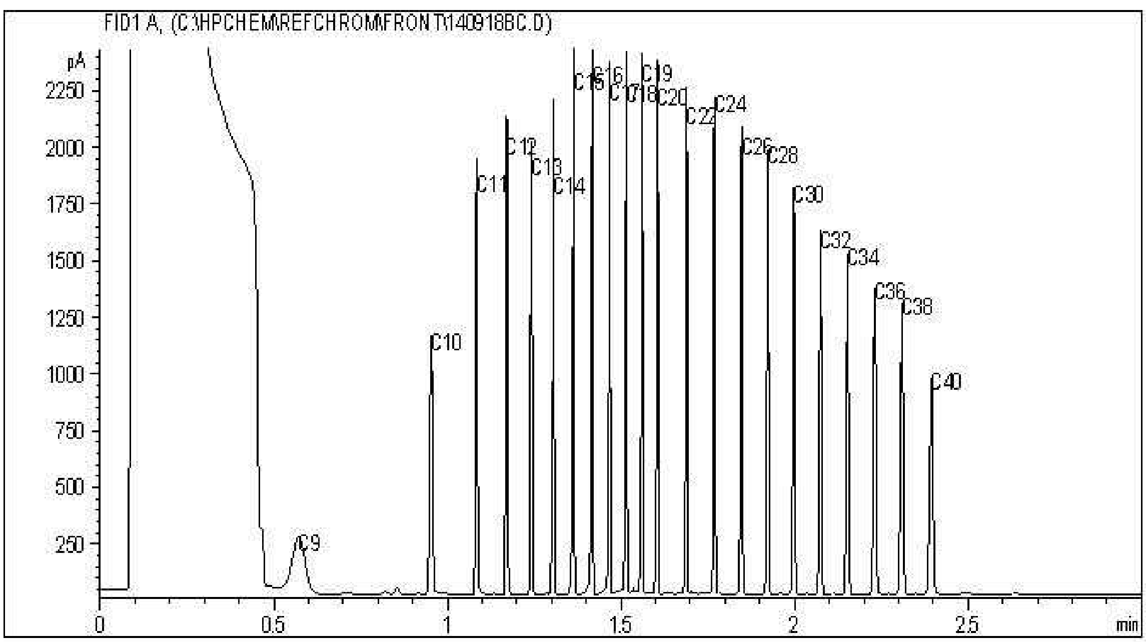
Maxxam Job #: B485949
Report Date: 2014/10/17
Maxxam Sample: KR8219

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Reference: 1 PORT DRIVE, NANAIMO BC - DSI
Client ID: 14MW08

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



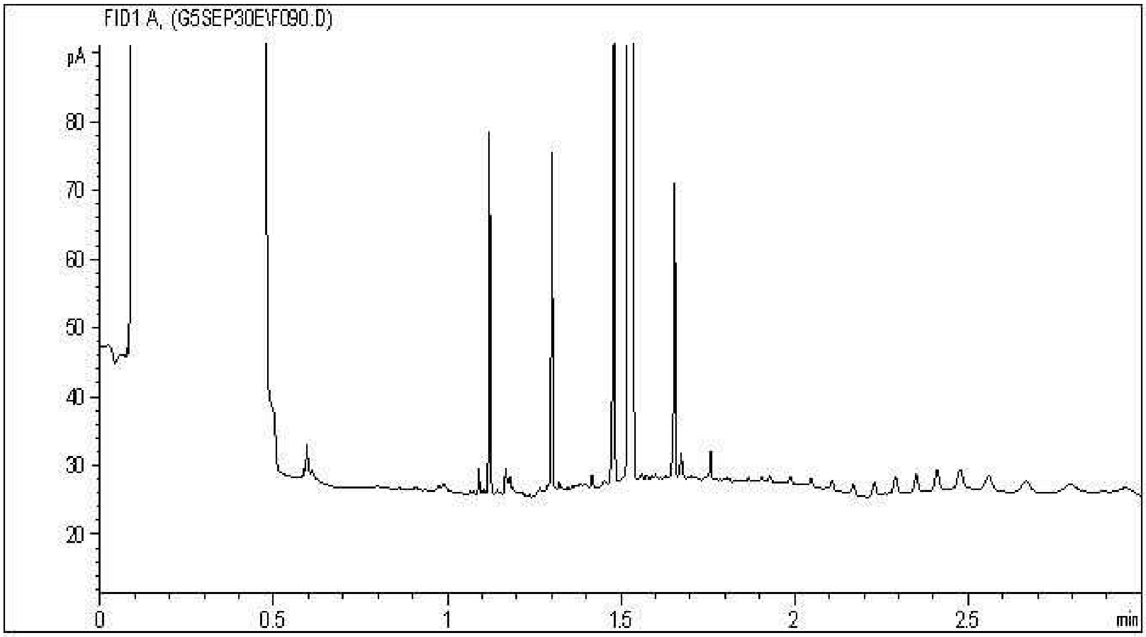
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

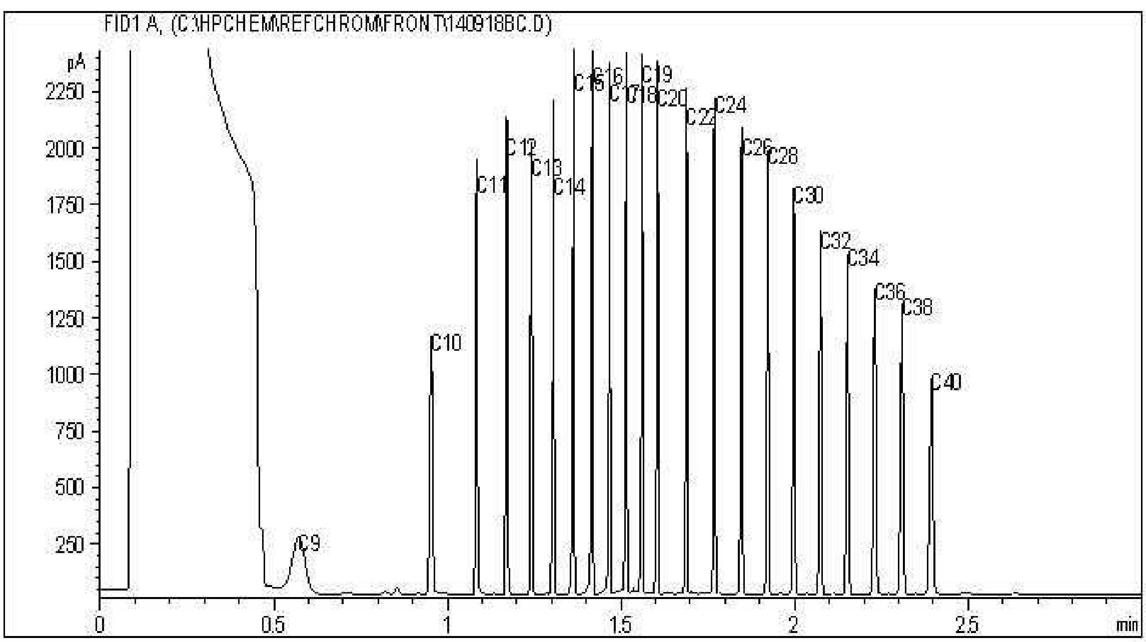
Maxxam Job #: B485949
Report Date: 2014/10/17
Maxxam Sample: KR8220

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Reference: 1 PORT DRIVE, NANAIMO BC - DSI
Client ID: DUP2

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



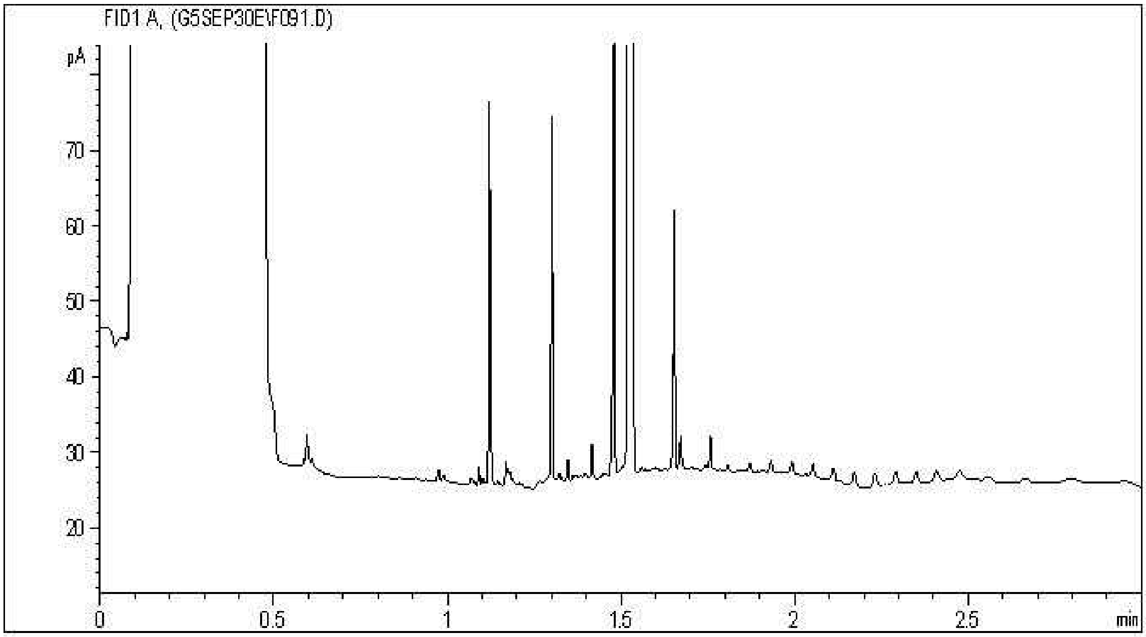
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

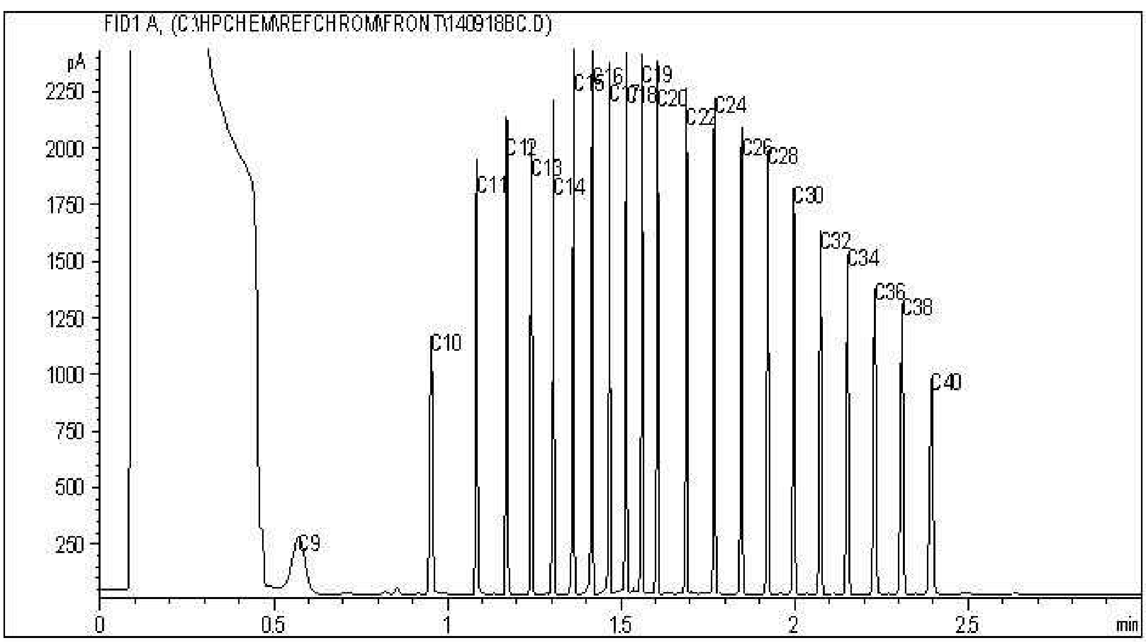
Maxxam Job #: B485949
Report Date: 2014/10/17
Maxxam Sample: KR8223

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Reference: 1 PORT DRIVE, NANAIMO BC - DSI
Client ID: 14MW19

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



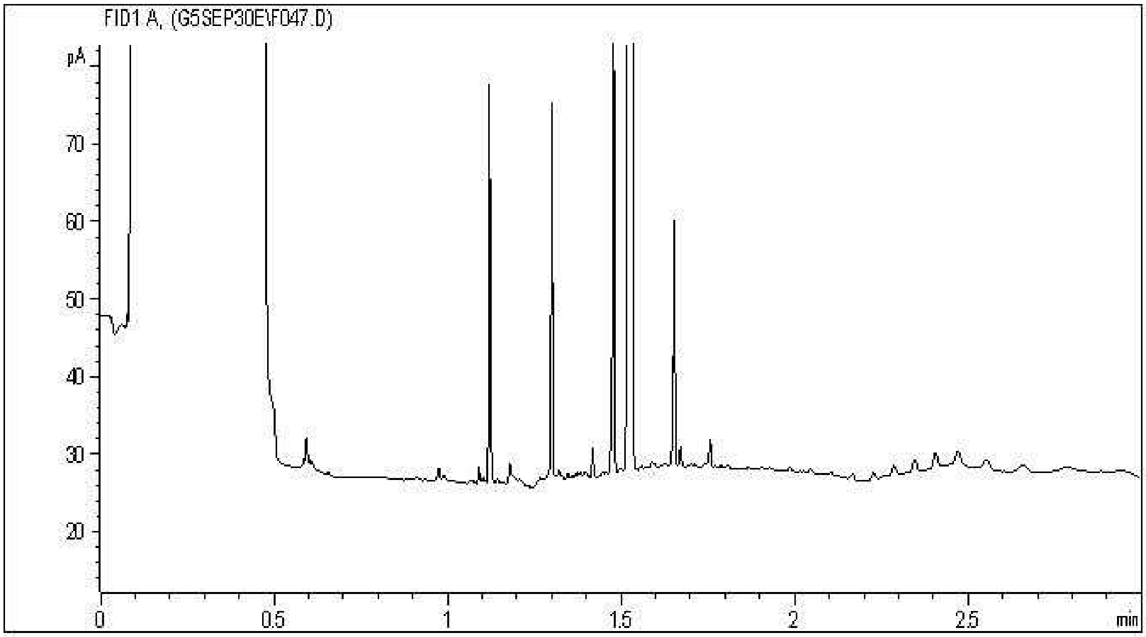
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

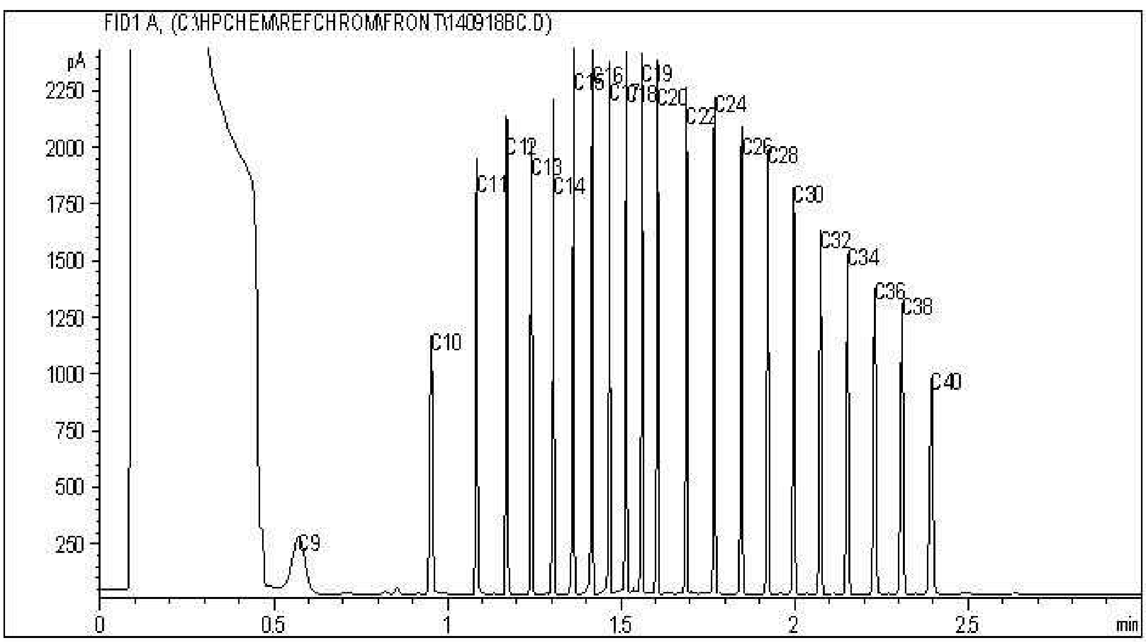
Maxxam Job #: B485949
Report Date: 2014/10/17
Maxxam Sample: KR8224

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Reference: 1 PORT DRIVE, NANAIMO BC - DSI
Client ID: 14MW25

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: ENVIND03511-01
Site#: 1 PORT DRIVE, NANAIMO BC DSI
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Your C.O.C. #: 449561-02-01

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/10/27
Report #: R1672261
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B486398
Received: 2014/09/26, 08:05

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chloride by Automated Colourimetry	2	N/A	2014/09/30	BBY6SOP-00011	SM 22 4500-Cl- G m
Phenols in Water by GCMS	2	2014/09/29	2014/10/01	BBY8SOP-00025	EPA 8270d R4
Phenols in Water by GCMS	4	2014/09/29	2014/10/02	BBY8SOP-00025	EPA 8270d R4
Hardness (calculated as CaCO3)	5	N/A	2014/10/02	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved) by CVAF	5	N/A	2014/10/06	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Extrac. Pet HC when LEPH/HEPH required	2	2014/10/02	2014/10/02	BBY8SOP-00029	BCMOE EPH w 07/99
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	5	N/A	2014/10/02	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	1	N/A	2014/09/30	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	4	N/A	2014/10/02	BBY7SOP-00002	EPA 6020A R1 m
PAH in Water by GC/MS (SIM)	2	2014/10/02	2014/10/02	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	2	N/A	2014/10/03	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	1	N/A	2014/09/30	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	4	N/A	2014/10/02	BBY7 WI-00004	BCMOE Reqs 08/14
Salinity by Conductivity Method	2	2014/10/24	2014/10/24	BBY6SOP-00026	SM 22 2520 B m
Total Dissolved Solids (Filt. Residue)	6	2014/09/29	2014/09/30	BBY6SOP-00033	SM 22 2540 C m
EPH less PAH in Water by GC/FID	2	N/A	2014/10/03	BBY WI-00033	Auto Calc
VOCs, VH, F1, LH in Water by HS GC/MS	2	2014/09/29	2014/10/01	BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	2	N/A	2014/10/01	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Success Through Science®

Maxxam Job #: B486398
Report Date: 2014/10/27

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		KS0764	KS0765		KS0768	KS0769	KS0770		
Sampling Date		2014/09/25	2014/09/25		2014/09/25	2014/09/25	2014/09/25		
COC Number		449561-02-01	449561-02-01		449561-02-01	449561-02-01	449561-02-01		
	Units	**14MW21**	**14MW23**	**RDL**	**14MW10**	**14MW13**	**14MW14**	**RDL**	**QC Batch**
Calculated Parameters									
Filter and HNO3 Preservation	N/A	FIELD	FIELD	N/A		FIELD	FIELD	N/A	ONSITE
Misc. Inorganics									
Salinity	g/L	10.7	25.5	0.010				0.010	7691038
Anions									
Dissolved Chloride (Cl)	mg/L	6200	15000	50				50	7660496
Physical Properties									
Total Dissolved Solids	mg/L	11800	25400	50	832	764	692	10	7657290

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		KS0771		
Sampling Date		2014/09/25		
COC Number		449561-02-01		
	Units	**14MW16**	**RDL**	**QC Batch**
Calculated Parameters				
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE
Physical Properties				
Total Dissolved Solids	mg/L	560	10	7657290

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B486398
Report Date: 2014/10/27

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		KS0764	KS0765		
Sampling Date		2014/09/25	2014/09/25		
COC Number		449561-02-01	449561-02-01		
	Units	14MW21	14MW23	RDL	QC Batch
Polycyclic Aromatics					
Low Molecular Weight PAH`s	ug/L	<0.24	<0.24	0.24	7655999
High Molecular Weight PAH`s	ug/L	<0.050	<0.050	0.050	7655999
Total PAH	ug/L	<0.24	<0.24	0.24	7655999
Naphthalene	ug/L	<0.10	<0.10	0.10	7663028
2-Methylnaphthalene	ug/L	<0.10	<0.10	0.10	7663028
Quinoline	ug/L	<0.24	<0.24	0.24	7663028
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7663028
Acenaphthene	ug/L	<0.050	<0.050	0.050	7663028
Fluorene	ug/L	<0.050	<0.050	0.050	7663028
Phenanthrene	ug/L	<0.050	<0.050	0.050	7663028
Anthracene	ug/L	<0.010	<0.010	0.010	7663028
Acridine	ug/L	<0.050	<0.050	0.050	7663028
Fluoranthene	ug/L	<0.020	<0.020	0.020	7663028
Pyrene	ug/L	<0.020	<0.020	0.020	7663028
Benzo(a)anthracene	ug/L	<0.010	<0.010	0.010	7663028
Chrysene	ug/L	<0.050	<0.050	0.050	7663028
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	0.050	7663028
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7663028
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	0.0090	7663028
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7663028
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7663028
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	7663028
Calculated Parameters					
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	0.20	7656002
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	0.20	7656002
Ext. Pet. Hydrocarbon					
EPH (C10-C19)	mg/L	<0.20	<0.20	0.20	7663055
EPH (C19-C32)	mg/L	<0.20	<0.20	0.20	7663055
Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	107	107		7663055
D10-ANTHRACENE (sur.)	%	114	116		7663028
D8-ACENAPHTHYLENE (sur.)	%	105	100		7663028
D8-NAPHTHALENE (sur.)	%	100	96		7663028
D9-Acridine	%	70	64		7663028
TERPHENYL-D14 (sur.)	%	89	107		7663028
RDL = Reportable Detection Limit					

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B486398
Report Date: 2014/10/27

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		KS0764	KS0765		KS0769	KS0770	KS0771		
Sampling Date		2014/09/25	2014/09/25		2014/09/25	2014/09/25	2014/09/25		
COC Number		449561-02-01	449561-02-01		449561-02-01	449561-02-01	449561-02-01		
	Units	**14MW21**	**14MW23**	**RDL**	**14MW13**	**14MW14**	**14MW16**	**RDL**	**QC Batch**
Misc. Inorganics									
Dissolved Hardness (CaCO3)	mg/L	2710	5040	0.50	589	594	481	0.50	7655997
Elements									
Dissolved Mercury (Hg)	ug/L	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	7667982
Dissolved Metals by ICPMS									
Dissolved Aluminum (Al)	ug/L	<30	<30	30	14.6	6.4	5.3	3.0	7659824
Dissolved Antimony (Sb)	ug/L	<5.0	<5.0	5.0	<0.50	<0.50	<0.50	0.50	7659824
Dissolved Arsenic (As)	ug/L	<1.0	1.2	1.0	2.67	4.51	1.37	0.10	7659824
Dissolved Barium (Ba)	ug/L	104	76	10	78.9	235	154	1.0	7659824
Dissolved Beryllium (Be)	ug/L	<1.0	<1.0	1.0	<0.10	<0.10	<0.10	0.10	7659824
Dissolved Bismuth (Bi)	ug/L	<10	<10	10	<1.0	<1.0	<1.0	1.0	7659824
Dissolved Boron (B)	ug/L	1800	3450	500	1480	1130	342	50	7659824
Dissolved Cadmium (Cd)	ug/L	0.17	0.14	0.10	<0.010	<0.010	0.049	0.010	7659824
Dissolved Chromium (Cr)	ug/L	<10	<10	10	<1.0	<1.0	<1.0	1.0	7659824
Dissolved Cobalt (Co)	ug/L	<5.0	<5.0	5.0	<0.50	1.25	1.82	0.50	7659824
Dissolved Copper (Cu)	ug/L	<2.0	<2.0	2.0	0.31	<0.20	0.72	0.20	7659824
Dissolved Iron (Fe)	ug/L	<50	<50	50	8430	1110	19.6	5.0	7659824
Dissolved Lead (Pb)	ug/L	<2.0	<2.0	2.0	<0.20	<0.20	<0.20	0.20	7659824
Dissolved Lithium (Li)	ug/L	64	155	50	48.4	49.5	18.1	5.0	7659824
Dissolved Manganese (Mn)	ug/L	210	130	10	635	591	1130	1.0	7659824
Dissolved Molybdenum (Mo)	ug/L	<10	<10	10	2.6	<1.0	1.7	1.0	7659824
Dissolved Nickel (Ni)	ug/L	36	28	10	<1.0	2.8	13.5	1.0	7659824
Dissolved Selenium (Se)	ug/L	<1.0	<1.0	1.0	<0.10	<0.10	0.17	0.10	7659824
Dissolved Silicon (Si)	ug/L	6980	5600	1000	14200	18500	8590	100	7659824
Dissolved Silver (Ag)	ug/L	<0.20	<0.20	0.20	<0.020	<0.020	<0.020	0.020	7659824
Dissolved Strontium (Sr)	ug/L	3610	6070	10	1230	1210	907	1.0	7659824
Dissolved Thallium (Tl)	ug/L	<0.50	<0.50	0.50	<0.050	<0.050	<0.050	0.050	7659824
Dissolved Tin (Sn)	ug/L	<50	<50	50	<5.0	<5.0	<5.0	5.0	7659824
Dissolved Titanium (Ti)	ug/L	<50	<50	50	<5.0	<5.0	<5.0	5.0	7659824
Dissolved Uranium (U)	ug/L	1.3	2.3	1.0	0.64	1.10	0.79	0.10	7659824
Dissolved Vanadium (V)	ug/L	<50	<50	50	<5.0	<5.0	<5.0	5.0	7659824
Dissolved Zinc (Zn)	ug/L	<50	<50	50	<5.0	<5.0	<5.0	5.0	7659824
Dissolved Zirconium (Zr)	ug/L	<5.0	<5.0	5.0	<0.50	<0.50	<0.50	0.50	7659824
Dissolved Calcium (Ca)	mg/L	316	471	0.50	168	193	173	0.050	7655998
Dissolved Magnesium (Mg)	mg/L	465	938	0.50	41.0	27.1	12.1	0.050	7655998
Dissolved Potassium (K)	mg/L	118	305	0.50	20.2	17.8	5.71	0.050	7655998
RDL = Reportable Detection Limit									

Maxxam Job #: B486398
Report Date: 2014/10/27

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		KS0764	KS0765		KS0769	KS0770	KS0771		
Sampling Date		2014/09/25	2014/09/25		2014/09/25	2014/09/25	2014/09/25		
COC Number		449561-02-01	449561-02-01		449561-02-01	449561-02-01	449561-02-01		
	Units	**14MW21**	**14MW23**	**RDL**	**14MW13**	**14MW14**	**14MW16**	**RDL**	**QC Batch**
Dissolved Sodium (Na)	mg/L	3390	7550	0.50	68.0	17.5	6.22	0.050	7655998
Dissolved Sulphur (S)	mg/L	374	709	30	21.2	29.8	25.5	3.0	7655998
RDL = Reportable Detection Limit									

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Report Date: 2014/10/27

Tetra Tech EBA
Client Project #: ENVIND03511-01
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Sampler Initials: FA

PCP WATERS (WATER)

Maxxam ID		KS0766	KS0767	KS0768	KS0769	KS0770	KS0771		
Sampling Date		2014/09/25	2014/09/25	2014/09/25	2014/09/25	2014/09/25	2014/09/25		
COC Number		449561-02-01	449561-02-01	449561-02-01	449561-02-01	449561-02-01	449561-02-01		
	Units	**DUP-3**	**14MW15**	**14MW10**	**14MW13**	**14MW14**	**14MW16**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS									
2-chlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
3 & 4-chlorophenol	ug/L		<0.10	3.8	<0.10	<0.10	<0.10	0.10	7658331
2,4 + 2,5-Dichlorophenol	ug/L		<0.10	0.13	<0.10	<0.10	<0.10	0.10	7658331
2,3-Dichlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
2,6-dichlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
3,5-Dichlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
3,4-Dichlorophenol	ug/L		<0.10	5.1	<0.10	<0.10	<0.10	0.10	7658331
2,4,5-trichlorophenol	ug/L		<0.10		<0.10	<0.10	<0.10	0.10	7658331
2,4,6-trichlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
2,3,5-trichlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
2,3,6-Trichlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
2,3,4-trichlorophenol	ug/L			<0.10	<0.10	<0.10	<0.10	0.10	7658331
3,4,5-Trichlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
2,3,4,6-tetrachlorophenol	ug/L		<0.10	4.2	<0.10	<0.10	<0.10	0.10	7658331
2,3,4,5-tetrachlorophenol	ug/L		<0.10	<0.10	<0.10		<0.10	0.10	7658331
2,3,5,6-tetrachlorophenol	ug/L		<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7658331
Pentachlorophenol	ug/L	0.91	<0.10	0.89	<0.10	<0.10	<0.10	0.10	7658331
Surrogate Recovery (%)									
2,4,6-TRIBROMOPHENOL (sur.)	%	102	104	101	87	100	100		7658331
2-FLUOROPHENOL (sur.)	%	26	30	27	31	28	36		7658331
RDL = Reportable Detection Limit									

Maxxam Job #: B486398
Report Date: 2014/10/27

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		KS0764		KS0765		
Sampling Date		2014/09/25		2014/09/25		
COC Number		449561-02-01		449561-02-01		
	Units	14MW21	RDL	14MW23	RDL	QC Batch
Volatiles						
VPH (VH6 to 10 - BTEX)	ug/L	<300	300	<300	300	7656004
Chloromethane	ug/L	<5.3 (1)	5.3	<3.6 (1)	3.6	7658140
Vinyl chloride	ug/L	<0.50	0.50	<0.50	0.50	7658140
Chloroethane	ug/L	<1.0	1.0	<1.0	1.0	7658140
Trichlorofluoromethane	ug/L	<4.0	4.0	<4.0	4.0	7658140
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	2.0	<2.0	2.0	7658140
Dichlorodifluoromethane	ug/L	<2.0	2.0	<2.0	2.0	7658140
1,1-dichloroethene	ug/L	<0.50	0.50	<0.50	0.50	7658140
Dichloromethane	ug/L	<2.0	2.0	<2.0	2.0	7658140
trans-1,2-dichloroethene	ug/L	<1.0	1.0	<1.0	1.0	7658140
1,1-dichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7658140
cis-1,2-dichloroethene	ug/L	<1.0	1.0	<1.0	1.0	7658140
Chloroform	ug/L	<1.0	1.0	<1.0	1.0	7658140
1,1,1-trichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7658140
1,2-dichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7658140
Carbon tetrachloride	ug/L	<0.50	0.50	<0.50	0.50	7658140
Benzene	ug/L	<0.40	0.40	<0.40	0.40	7658140
Methyl-tert-butylether (MTBE)	ug/L	<4.0	4.0	<4.0	4.0	7658140
1,2-dichloropropane	ug/L	<1.6 (1)	1.6	<0.50	0.50	7658140
cis-1,3-dichloropropene	ug/L	<1.0	1.0	<1.0	1.0	7658140
trans-1,3-dichloropropene	ug/L	<1.0	1.0	<1.0	1.0	7658140
Bromomethane	ug/L	<1.0	1.0	<1.0	1.0	7658140
1,1,2-trichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7658140
Trichloroethene	ug/L	<0.50	0.50	<0.50	0.50	7658140
Chlorodibromomethane	ug/L	<1.0	1.0	<1.0	1.0	7658140
1,2-dibromoethane	ug/L	<0.20	0.20	<0.20	0.20	7658140
1,3-Butadiene	ug/L	<5.0	5.0	<5.0	5.0	7658140
Tetrachloroethene	ug/L	<0.50	0.50	<0.50	0.50	7658140
Bromodichloromethane	ug/L	<1.0	1.0	<1.0	1.0	7658140
Toluene	ug/L	<0.40	0.40	<0.40	0.40	7658140
Ethylbenzene	ug/L	<0.40	0.40	<0.40	0.40	7658140
m & p-Xylene	ug/L	<0.40	0.40	<0.40	0.40	7658140
Bromoform	ug/L	<1.0	1.0	<1.0	1.0	7658140
Styrene	ug/L	<0.50	0.50	<0.50	0.50	7658140

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference.

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Maxxam Job #: B486398
Report Date: 2014/10/27

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		KS0764		KS0765		
Sampling Date		2014/09/25		2014/09/25		
COC Number		449561-02-01		449561-02-01		
	Units	**14MW21**	**RDL**	**14MW23**	**RDL**	**QC Batch**
o-Xylene	ug/L	<0.40	0.40	<0.40	0.40	7658140
Xylenes (Total)	ug/L	<0.40	0.40	<0.40	0.40	7658140
1,1,1,2-tetrachloroethane	ug/L	<0.50	0.50	<0.50	0.50	7658140
1,1,2,2-tetrachloroethane	ug/L	<0.50	0.50	<0.50	0.50	7658140
1,2-dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7658140
1,3-dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7658140
1,4-dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7658140
Chlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7658140
Dibromomethane	ug/L	<0.90	0.90	<0.90	0.90	7658140
Bromobenzene	ug/L	<2.0	2.0	<2.0	2.0	7658140
1,2,3-trichlorobenzene	ug/L	<2.0	2.0	<2.0	2.0	7658140
1,2,4-trichlorobenzene	ug/L	<2.0	2.0	<2.0	2.0	7658140
Hexachlorobutadiene	ug/L	<0.50	0.50	<0.50	0.50	7658140
VH C6-C10	ug/L	<300	300	<300	300	7658140
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	101		90		7658140
4-Bromofluorobenzene (sur.)	%	107		85		7658140
D4-1,2-Dichloroethane (sur.)	%	100		86		7658140
RDL = Reportable Detection Limit						

Maxxam Job #: B486398
Report Date: 2014/10/27

Tetra Tech EBA
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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.3°C
Package 2	5.3°C

[Revision V2R 2014/10/27 SF] Revised salinity results of samples 14MW21 and 14MW23

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER) Comments

Sample KS0764-04 Elements by CRC ICPMS (dissolved): Detection limits raised due to matrix interference.
Sample KS0765-04 Elements by CRC ICPMS (dissolved): Detection limits raised due to matrix interference.

Results relate only to the items tested.

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Maxxam Job #: B486398
Report Date: 2014/10/27

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7658140	1,4-Difluorobenzene (sur.)	2014/09/30	100	70 - 130	102	70 - 130	102	%		
7658140	4-Bromofluorobenzene (sur.)	2014/09/30	111	70 - 130	105	70 - 130	119	%		
7658140	D4-1,2-Dichloroethane (sur.)	2014/09/30	101	70 - 130	100	70 - 130	98	%		
7658331	2,4,6-TRIBROMOPHENOL (sur.)	2014/10/01			97	10 - 123	87	%		
7658331	2-FLUOROPHENOL (sur.)	2014/10/01			48	21 - 100	18 (2)			
7663028	D10-ANTHRACENE (sur.)	2014/10/02	118	60 - 130	118	60 - 130	110	%		
7663028	D8-ACENAPHTHYLENE (sur.)	2014/10/02	107	50 - 130	105	50 - 130	95	%		
7663028	D8-NAPHTHALENE (sur.)	2014/10/02	104	50 - 130	104	50 - 130	96	%		
7663028	D9-Acridine	2014/10/02	94	50 - 130	94	50 - 130	84	%		
7663028	TERPHENYL-D14 (sur.)	2014/10/02	85	60 - 130	109	60 - 130	99	%		
7663055	O-TERPHENYL (sur.)	2014/10/02	106	50 - 130	107	50 - 130	103	%		
7657290	Total Dissolved Solids	2014/09/30	102	80 - 120	100	80 - 120	<10	mg/L	3.5	20
7658140	1,1,1,2-tetrachloroethane	2014/09/30	100	70 - 130	92	70 - 130	<0.50	ug/L		
7658140	1,1,1-trichloroethane	2014/09/30	105	70 - 130	97	70 - 130	<0.50	ug/L		
7658140	1,1,2,2-tetrachloroethane	2014/09/30	86	70 - 130	89	70 - 130	<0.50	ug/L		
7658140	1,1,2Trichloro-1,2,2Trifluoroethane	2014/09/30					<2.0	ug/L		
7658140	1,1,2-trichloroethane	2014/09/30	93	70 - 130	90	70 - 130	<0.50	ug/L		
7658140	1,1-dichloroethane	2014/09/30	92	70 - 130	90	70 - 130	<0.50	ug/L		
7658140	1,1-dichloroethene	2014/09/30	76	70 - 130	70	70 - 130	<0.50	ug/L		
7658140	1,2,3-trichlorobenzene	2014/09/30	90	70 - 130	79	70 - 130	<2.0	ug/L		
7658140	1,2,4-trichlorobenzene	2014/09/30	99	70 - 130	96	70 - 130	<2.0	ug/L		
7658140	1,2-dibromoethane	2014/09/30	96	70 - 130	92	70 - 130	<0.20	ug/L		
7658140	1,2-dichlorobenzene	2014/09/30	104	70 - 130	95	70 - 130	<0.50	ug/L		
7658140	1,2-dichloroethane	2014/09/30	100	70 - 130	104	70 - 130	<0.50	ug/L		
7658140	1,2-dichloropropane	2014/09/30	96	70 - 130	94	70 - 130	<0.50	ug/L		
7658140	1,3-Butadiene	2014/09/30					<5.0	ug/L		
7658140	1,3-dichlorobenzene	2014/09/30	104	70 - 130	95	70 - 130	<0.50	ug/L		
7658140	1,4-dichlorobenzene	2014/09/30	103	70 - 130	94	70 - 130	<0.50	ug/L		
7658140	Benzene	2014/09/30	96	70 - 130	92	70 - 130	<0.40	ug/L		
7658140	Bromobenzene	2014/09/30	104	70 - 130	95	70 - 130	<2.0	ug/L		
7658140	Bromodichloromethane	2014/09/30	92	70 - 130	90	70 - 130	<1.0	ug/L	NC	30
7658140	Bromoform	2014/09/30	91	70 - 130	88	70 - 130	<1.0	ug/L	NC	30

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Maxxam Job #: B486398
Report Date: 2014/10/27

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7658140	Bromomethane	2014/09/30	128	60 - 140	91	60 - 140	<1.0	ug/L		
7658140	Carbon tetrachloride	2014/09/30	108	70 - 130	95	70 - 130	<0.50	ug/L		
7658140	Chlorobenzene	2014/09/30	97	70 - 130	98	70 - 130	<0.50	ug/L		
7658140	Chlorodibromomethane	2014/09/30	90	70 - 130	86	70 - 130	<1.0	ug/L	NC	30
7658140	Chloroethane	2014/09/30	107	60 - 140	74	60 - 140	<1.0	ug/L		
7658140	Chloroform	2014/09/30	97	70 - 130	93	70 - 130	<1.0	ug/L	NC	30
7658140	Chloromethane	2014/09/30	76	60 - 140	66	60 - 140	<1.0	ug/L		
7658140	cis-1,2-dichloroethene	2014/09/30	102	70 - 130	96	70 - 130	<1.0	ug/L		
7658140	cis-1,3-dichloropropene	2014/09/30	84	70 - 130	84	70 - 130	<1.0	ug/L		
7658140	Dibromomethane	2014/09/30	90	70 - 130	88	70 - 130	<0.90	ug/L		
7658140	Dichlorodifluoromethane	2014/09/30	117	60 - 140	91	60 - 140	<2.0	ug/L		
7658140	Dichloromethane	2014/09/30	113	70 - 130	73	70 - 130	<2.0	ug/L		
7658140	Ethylbenzene	2014/09/30	103	70 - 130	101	70 - 130	<0.40	ug/L		
7658140	Hexachlorobutadiene	2014/09/30	112	70 - 130	103	70 - 130	<0.50	ug/L		
7658140	m & p-Xylene	2014/09/30	102	70 - 130	98	70 - 130	<0.40	ug/L		
7658140	Methyl-tert-butylether (MTBE)	2014/09/30	107	70 - 130	83	70 - 130	<4.0	ug/L		
7658140	o-Xylene	2014/09/30	102	70 - 130	99	70 - 130	<0.40	ug/L		
7658140	Styrene	2014/09/30	105	70 - 130	100	70 - 130	<0.50	ug/L		
7658140	Tetrachloroethene	2014/09/30	103	70 - 130	91	70 - 130	<0.50	ug/L		
7658140	Toluene	2014/09/30	98	70 - 130	93	70 - 130	<0.40	ug/L		
7658140	trans-1,2-dichloroethene	2014/09/30	96	70 - 130	74	70 - 130	<1.0	ug/L		
7658140	trans-1,3-dichloropropene	2014/09/30	76	70 - 130	79	70 - 130	<1.0	ug/L		
7658140	Trichloroethene	2014/09/30	98	70 - 130	93	70 - 130	<0.50	ug/L		
7658140	Trichlorofluoromethane	2014/09/30	157 (1)	60 - 140	110	60 - 140	<4.0	ug/L		
7658140	VH C6-C10	2014/09/30			104	70 - 130	<300	ug/L		
7658140	Vinyl chloride	2014/09/30	128	60 - 140	87	60 - 140	<0.50	ug/L		
7658140	Xylenes (Total)	2014/09/30					<0.40	ug/L		
7658331	2,3,4,5-tetrachlorophenol	2014/10/01			110	14 - 176	<0.10	ug/L		
7658331	2,3,4,6-tetrachlorophenol	2014/10/01			94	14 - 176	<0.10	ug/L		
7658331	2,3,4-trichlorophenol	2014/10/01			97	37 - 144	<0.10	ug/L		
7658331	2,3,5,6-tetrachlorophenol	2014/10/01			101	14 - 176	<0.10	ug/L		
7658331	2,3,5-trichlorophenol	2014/10/01			93	37 - 144	<0.10	ug/L		

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QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7658331	2,3,6-Trichlorophenol	2014/10/01			92	37 - 144	<0.10	ug/L		
7658331	2,3-Dichlorophenol	2014/10/01			79	39 - 135	<0.10	ug/L		
7658331	2,4 + 2,5-Dichlorophenol	2014/10/01			88	39 - 135	<0.10	ug/L		
7658331	2,4,5-trichlorophenol	2014/10/01			98	37 - 144	<0.10	ug/L		
7658331	2,4,6-trichlorophenol	2014/10/01			91	37 - 144	<0.10	ug/L		
7658331	2,6-dichlorophenol	2014/10/01			85	39 - 135	<0.10	ug/L		
7658331	2-chlorophenol	2014/10/01			69	27 - 123	<0.10	ug/L		
7658331	3 & 4-chlorophenol	2014/10/01			86	27 - 123	<0.10	ug/L		
7658331	3,4,5-Trichlorophenol	2014/10/01			110	37 - 144	<0.10	ug/L		
7658331	3,4-Dichlorophenol	2014/10/01			93	39 - 135	<0.10	ug/L		
7658331	3,5-Dichlorophenol	2014/10/01			87	39 - 135	<0.10	ug/L		
7658331	Pentachlorophenol	2014/10/01			124	14 - 176	<0.10	ug/L		
7659824	Dissolved Aluminum (Al)	2014/09/30	109	80 - 120	106	80 - 120	<3.0	ug/L	NC	20
7659824	Dissolved Antimony (Sb)	2014/09/30	107	80 - 120	98	80 - 120	<0.50	ug/L	NC	20
7659824	Dissolved Arsenic (As)	2014/09/30	NC	80 - 120	101	80 - 120	<0.10	ug/L	4.4	20
7659824	Dissolved Barium (Ba)	2014/09/30	NC	80 - 120	95	80 - 120	<1.0	ug/L	0.50	20
7659824	Dissolved Beryllium (Be)	2014/09/30	103	80 - 120	99	80 - 120	<0.10	ug/L	NC	20
7659824	Dissolved Bismuth (Bi)	2014/09/30	99	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
7659824	Dissolved Boron (B)	2014/09/30					<50	ug/L	NC	20
7659824	Dissolved Cadmium (Cd)	2014/09/30	100	80 - 120	95	80 - 120	<0.010	ug/L	NC	20
7659824	Dissolved Chromium (Cr)	2014/09/30	101	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
7659824	Dissolved Cobalt (Co)	2014/09/30	100	80 - 120	99	80 - 120	<0.50	ug/L	NC	20
7659824	Dissolved Copper (Cu)	2014/09/30	96	80 - 120	101	80 - 120	<0.20	ug/L	NC	20
7659824	Dissolved Iron (Fe)	2014/09/30	NC	80 - 120	108	80 - 120	<5.0	ug/L	0.21	20
7659824	Dissolved Lead (Pb)	2014/09/30	101	80 - 120	101	80 - 120	<0.20	ug/L	NC	20
7659824	Dissolved Lithium (Li)	2014/09/30	NC	80 - 120	94	80 - 120	<5.0	ug/L	0.65	20
7659824	Dissolved Manganese (Mn)	2014/09/30	NC	80 - 120	99	80 - 120	<1.0	ug/L	0.65	20
7659824	Dissolved Molybdenum (Mo)	2014/09/30	NC	80 - 120	94	80 - 120	<1.0	ug/L	2.4	20
7659824	Dissolved Nickel (Ni)	2014/09/30	100	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
7659824	Dissolved Selenium (Se)	2014/09/30	104	80 - 120	96	80 - 120	<0.10	ug/L	NC	20
7659824	Dissolved Silicon (Si)	2014/09/30					<100	ug/L	0.48	20
7659824	Dissolved Silver (Ag)	2014/09/30	99	80 - 120	89	80 - 120	<0.020	ug/L	NC	20

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Maxxam Job #: B486398
Report Date: 2014/10/27

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7659824	Dissolved Strontium (Sr)	2014/09/30	NC	80 - 120	96	80 - 120	<1.0	ug/L	2.7	20
7659824	Dissolved Thallium (Tl)	2014/09/30	92	80 - 120	83	80 - 120	<0.050	ug/L	NC	20
7659824	Dissolved Tin (Sn)	2014/09/30	105	80 - 120	91	80 - 120	<5.0	ug/L	NC	20
7659824	Dissolved Titanium (Ti)	2014/09/30	103	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7659824	Dissolved Uranium (U)	2014/09/30	105	80 - 120	98	80 - 120	<0.10	ug/L	0.12	20
7659824	Dissolved Vanadium (V)	2014/09/30	106	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7659824	Dissolved Zinc (Zn)	2014/09/30	94	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7659824	Dissolved Zirconium (Zr)	2014/09/30					<0.50	ug/L	NC	20
7660496	Dissolved Chloride (Cl)	2014/09/30	NC	80 - 120	109	80 - 120	<0.50	mg/L	1.4	20
7663028	2-Methylnaphthalene	2014/10/02	98	50 - 130	95	50 - 130	<0.10	ug/L	NC	40
7663028	Acenaphthene	2014/10/02	109	50 - 130	107	50 - 130	<0.050	ug/L	NC	40
7663028	Acenaphthylene	2014/10/02	102	50 - 130	101	50 - 130	<0.050	ug/L	NC	40
7663028	Acridine	2014/10/02	90	50 - 130	90	50 - 130	<0.050	ug/L	NC	40
7663028	Anthracene	2014/10/02	110	60 - 130	114	60 - 130	<0.010	ug/L	NC	40
7663028	Benzo(a)anthracene	2014/10/02	90	60 - 130	101	60 - 130	<0.010	ug/L	NC	40
7663028	Benzo(a)pyrene	2014/10/02	92	60 - 130	106	60 - 130	<0.0090	ug/L	NC	40
7663028	Benzo(b&j)fluoranthene	2014/10/02	86	60 - 130	98	60 - 130	<0.050	ug/L	NC	40
7663028	Benzo(g,h,i)perylene	2014/10/02	82	60 - 130	97	60 - 130	<0.050	ug/L	NC	40
7663028	Benzo(k)fluoranthene	2014/10/02	93	60 - 130	106	60 - 130	<0.050	ug/L	NC	40
7663028	Chrysene	2014/10/02	92	60 - 130	104	60 - 130	<0.050	ug/L	NC	40
7663028	Dibenz(a,h)anthracene	2014/10/02	78	60 - 130	91	60 - 130	<0.050	ug/L	NC	40
7663028	Fluoranthene	2014/10/02	105	60 - 130	108	60 - 130	<0.020	ug/L	NC	40
7663028	Fluorene	2014/10/02	106	50 - 130	104	50 - 130	<0.050	ug/L	NC	40
7663028	Indeno(1,2,3-cd)pyrene	2014/10/02	85	60 - 130	99	60 - 130	<0.050	ug/L	NC	40
7663028	Naphthalene	2014/10/02	98	50 - 130	96	50 - 130	<0.10	ug/L	NC	40
7663028	Phenanthrene	2014/10/02	106	60 - 130	105	60 - 130	<0.050	ug/L	NC	40
7663028	Pyrene	2014/10/02	106	60 - 130	110	60 - 130	<0.020	ug/L	NC	40
7663028	Quinoline	2014/10/02	113	50 - 130	113	50 - 130	<0.24	ug/L	NC	40
7663055	EPH (C10-C19)	2014/10/02	105	50 - 130	102	50 - 130	<0.20	mg/L	NC	30
7663055	EPH (C19-C32)	2014/10/02	107	50 - 130	104	50 - 130	<0.20	mg/L	NC	30
7667982	Dissolved Mercury (Hg)	2014/10/06	116	80 - 120	113	80 - 120	<0.010	ug/L	NC	20
7691038	Salinity	2014/10/24					<0.010	g/L		

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Surrogate recovery below acceptance criteria.

Maxxam Job #: B486398
Report Date: 2014/10/27

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Location: 1 PORT DRIVE, NANAIMO BC-DSI
Sampler Initials: FA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Rob Reinert, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam

Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-Free 800-563-6266 Fax:(604) 731 2386 www.maxxam.ca

Chain Of Custody Record Page 1 of 1

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#11478 TETRA TECH EBA INC.	Company Name	#28955 Tetra Tech EBA	Quotation #	B40497	Maxxam Job #	Bottle Order #:
Contact Name	Accounts Payable	Contact Name	Lora Paul, Kristy G, Darren T	P.O. #		B486398	449561
Address	14940-123 AVENUE	Address	#1 - 4376 Boban Drive	Project #	ENVIND03511-01	Chain Of Custody Record	Project Manager
	EDMONTON AB T5V 1B4		Nanaimo BC V9T 6A7	Project Name		C#449561-02-01	Crystal Ireland
Phone	(780) 451-2121 x Fax (780) 454-5688 x	Phone	(250) 756-2256 Fax	Site #	1 Port Drive, Nanaimo BC – DSI		
Email	EBA.Accounts.Payable@tetratech.com	Email	Lora.Paul@tetratech.com Kristy.gabelhouse@tetratech.com	Sampled By	KG / DT		

Regulatory Criteria: ☒ CSR ☐ CCME ☐ BC Water Quality ☐ Other

Special Instructions

B486398

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects
Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.
Job Specific Rush TAT (if applies to entire submission)
1 DAY ☐ 2 Day ☐ 3 Day ☐ Date Required: ____ ☐
Rush Confirmation Number: ____ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR Dissolved Metals in Water with CV Hg	LEPH & HEPH with CSR/CCME PAH in Water	Chloro/Non-Chloro Phenols incl. PCPs	Total Dissolved Solids (Filt. Residue)	PCP waters	Salinity by Conductivity Method	Na and Chloride by Automated Colourimetry	CSR VOC + VPH in Water			# of Bottles	Comments
1	SID#108866	~~[illegible]~~																
2	SID#108867	BH14-21	Sept25/14		GW	Y	X	X		X		X	X	X			9	KS0764
3	SID#108868	BH14-23	↓		↓	Y	X	X		X		X	X	X			9	KS0765
4	SID#108869	~~BH14-25~~																
5	SID#108870	~~DUP~~ DVP3									X						1	KS0766
6	SID#108871	BH14-15 ~~DUP2~~									X						1	KS0767
7	SID#108872	BH14-10								X	X						2	KS0768
8	SID#108873	BH14-13				Y	X			X	X						3	KS0769
9		BH14-14				Y	X			X	X						3	KS0770
10		BH14-16	↓		↓	Y	X			X	X						3	KS0771

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
K Malcolm	14/09/25	4:00pm	Marie Laurel Berthier	2014/09/26	08:05		☐	3,5,5 / 5,4,7	N/A ☐ Yes ☐ No

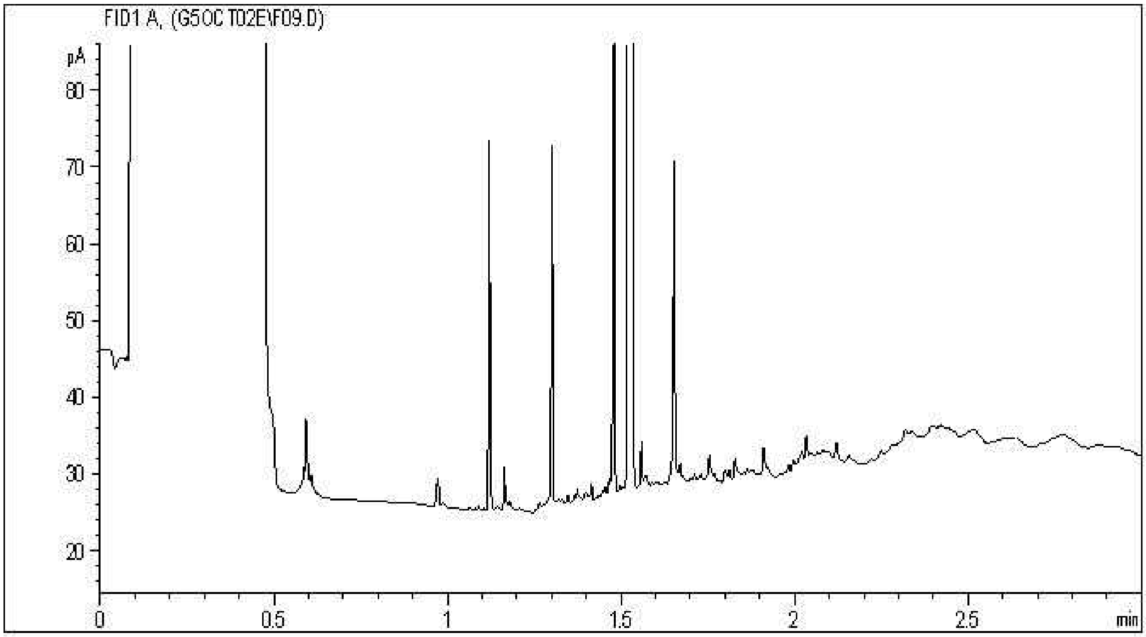
Lab Use Only

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

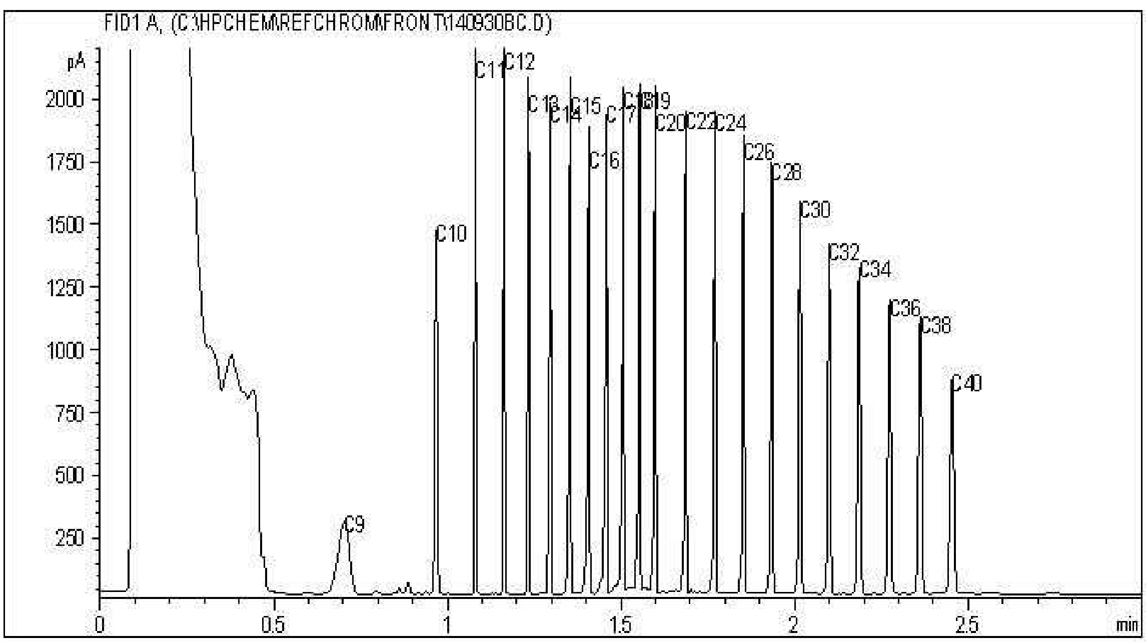
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



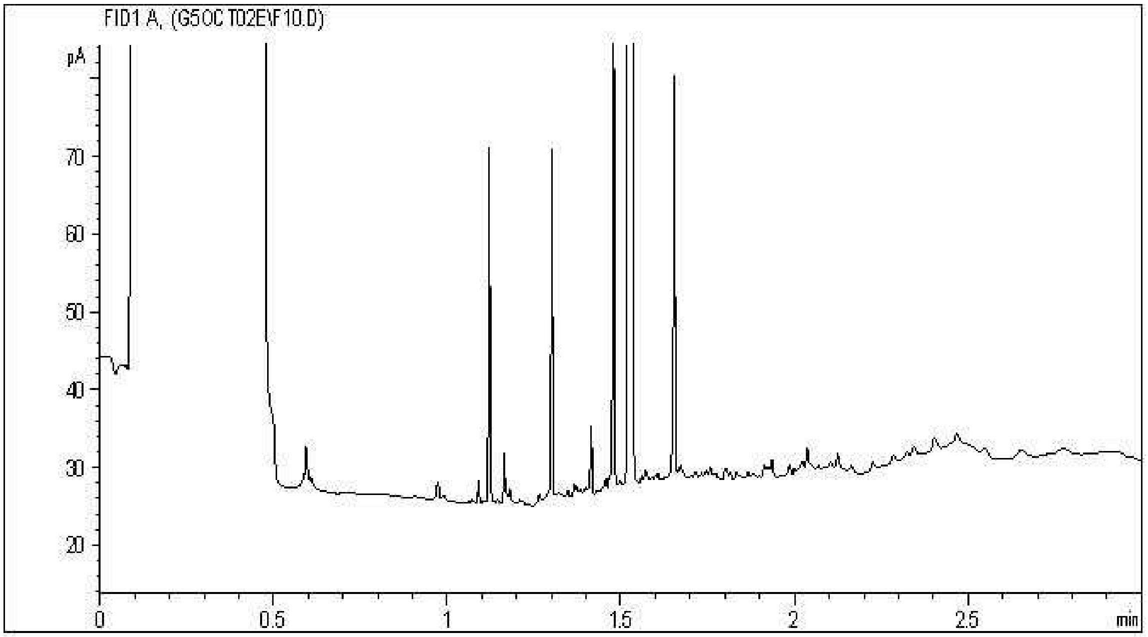
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

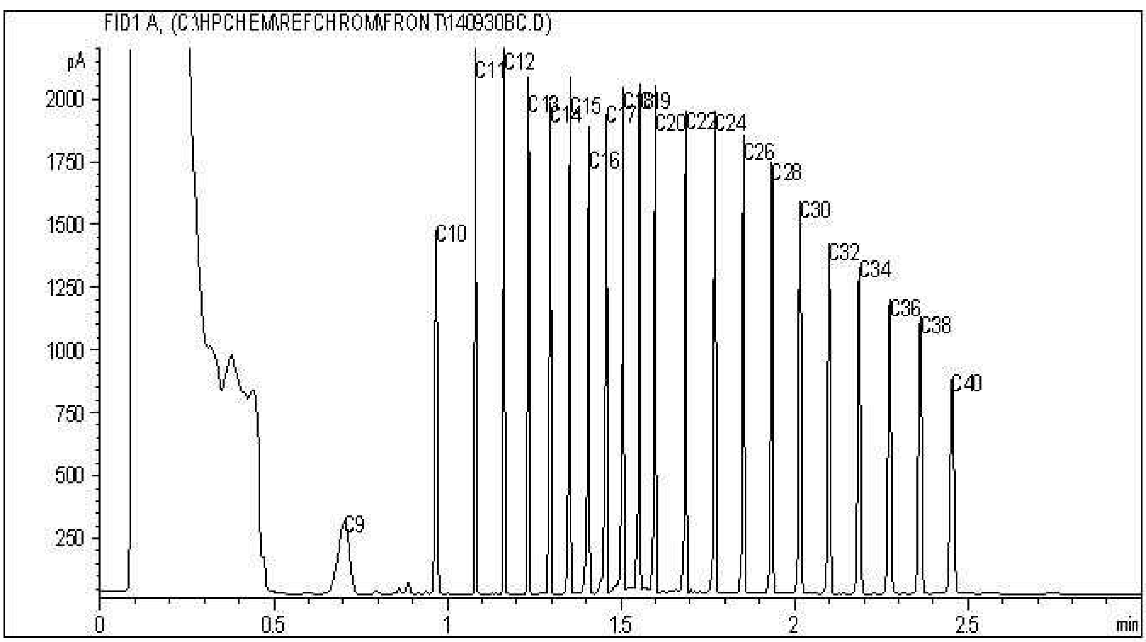
Maxxam Job #: B486398
Report Date: 2014/10/27
Maxxam Sample: KS0765

Tetra Tech EBA
Client Project #: ENVIND03511-01
Site Reference: 1 PORT DRIVE, NANAIMO BC-DSI
Client ID: 14MW23

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
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Your Project #: ENVINO03511-01.003
Site#: 1 PORT DRIVE DSI
Site Location: NANAIMO BC

Attention: Lora J Paul
Tetra Tech EBA
NANAIMO
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Your C.O.C. #: G087499, G087500, G087501, G087502, G087503

Report Date: 2014/11/10
Report #: R1680717
Version: 5R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B482486
Received: 2014/09/17, 08:00

Sample Matrix: Soil
Samples Received: 42

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE Soil LH, VH, F1 SIM/MS	1	2014/09/19	2014/09/20	BBY8SOP-00010, BBY8SOP-00011	EPA 8260c R3 m
Phenols in Soil by GCMS	3	2014/09/22	2014/09/24	BBY8SOP-00025	EPA 8270d R4
Phenols in Soil by GCMS	1	2014/09/22	2014/09/25	BBY8SOP-00025	EPA 8270d R4
Chromium III (Calc'd)	5	2014/10/02	2014/10/07		
Chromium, Hexavalent (soil)	5	2014/10/07	2014/10/07	BBY6SOP-00015	SM 22 3500-Cr B m
Elements by ICPMS (total)	8	2014/09/19	2014/09/19	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	21	2014/09/20	2014/09/22	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	1	2014/09/21	2014/09/22	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	3	2014/10/03	2014/10/03	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	1	2014/10/29	2014/10/29	BBY7SOP-00001	EPA 6020a R1 m
Metals - TCLP	1	2014/10/02	2014/10/03	BBY7SOP-00001	EPA 6020a R1 m
Metals - SPLP	5	2014/10/04	2014/10/04	BBY7SOP-00002	EPA 6020A R1 m
Metals - SPLP	1	2014/10/07	2014/10/10	BBY7SOP-00002	EPA 6020A R1 m
Moisture	13	N/A	2014/09/19	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	2	N/A	2014/09/20	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	11	N/A	2014/09/24	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	2	N/A	2014/10/04	BBY8SOP-00017	OMOE E3139 3.1 m
PAH in Soil by GC/MS (SIM)	6	2014/09/18	2014/09/19	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	5	2014/09/18	2014/09/20	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/09/19	2014/09/24	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	7	2014/09/23	2014/09/24	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/09/23	2014/09/25	BBY8SOP-00022	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	11	N/A	2014/09/22	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	5	N/A	2014/09/24	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	4	N/A	2014/09/25	BBY WI-00033	Auto Calc
pH (2:1 DI Water Extract)	29	2014/09/22	2014/09/22	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	1	2014/09/24	2014/09/24	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	3	2014/10/03	2014/10/03	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	1	2014/10/29	2014/10/29	BBY6SOP-00028	BCMOE BCLM Mar2005 m

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Your Project #: ENVINO03511-01.003
Site#: 1 PORT DRIVE DSI
Site Location: NANAIMO BC

Attention: Lora J Paul
Tetra Tech EBA
NANAIMO
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Your C.O.C. #: G087499, G087500, G087501, G087502, G087503

Report Date: 2014/11/10
Report #: R1680717
Version: 5R

CERTIFICATE OF ANALYSIS – REVISED REPORT

-2-

Sample Matrix: Soil
Samples Received: 42

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
TCLP pH Measurements	1	N/A	2014/10/03	BBY7SOP-00005	EPA 1311 R1992
EPH less PAH in Soil By GC/FID	8	N/A	2014/09/22	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	5	N/A	2014/09/24	BBY WI-00033	Auto Calc
BC Hydrocarbons in Soil by GC/FID	4	2014/09/18	2014/09/19	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	5	2014/09/18	2014/09/21	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	1	2014/09/19	2014/09/22	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	1	2014/09/19	2014/09/23	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	7	2014/09/23	2014/09/24	BBY8SOP-00029	BCMOE EPH s 07/99 m
VOCs, VH, F1, LH in Soil by HS GC/MS	1	2014/09/19	2014/09/23	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	1	N/A	2014/09/22	BBY WI-00033	Auto Calc
Volatile HC-BTEX	1	N/A	2014/09/26	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604) 638-5016

==

Total cover pages: 2

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		KP7753	KP7753	KP7819	KP7931	KP7977	KP7979		
Sampling Date		2014/09/15	2014/09/15	2014/09/15	2014/09/16	2014/09/16	2014/09/16		
COC Number		G087499	G087499	G087500	G087502	G087503	G087503		
	UNITS	**14BH02-2**	**14BH02-2 Lab-Dup**	**14BH01-1**	**14BH04-2**	**14BH20-2**	**14BH20-4**	**RDL**	**QC Batch**
Calculated Parameters									
Chromium III	mg/kg	124		130	138	115	96.8	1.0	7663244
Metals									
Hex. Chromium (Cr 6+)	mg/kg	1.3 (1)	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	7669648

RDL = Reportable Detection Limit
(1) Matrix spike exceeds acceptance limits due to matrix interference. Re-analysis yields similar results.

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

PHYSICAL TESTING (SOIL)

Maxxam ID		KP7753	KP7754	KP7759	KP7762	KP7763	KP7816		
Sampling Date		2014/09/15	2014/09/15	2014/09/15	2014/09/15	2014/09/15	2014/09/15		
COC Number		G087499	G087499	G087499	G087499	G087499	G087500		
	UNITS	**14BH02-2**	**14BH02-3**	**14BH19-3**	**14BH17-2**	**14BH17-3**	**14BH18-3**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	8.6	26	17	11	26	17	0.30	7642578

RDL = Reportable Detection Limit

Maxxam ID		KP7819		KP7820		KP7823		KP7878		
Sampling Date		2014/09/15		2014/09/15		2014/09/15		2014/09/15		
COC Number		G087500		G087500		G087500		G087501		
	UNITS	**14BH01-1**	**QC Batch**	**14BH01-2**	**QC Batch**	**14BH01-5**	**QC Batch**	**14BH05-3**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	3.2	7664406	10	7642578	16	7645310	4.5	0.30	7642578

RDL = Reportable Detection Limit

Maxxam ID		KP7880	KP7881	KP7882	KP7883		KP7885		
Sampling Date		2014/09/15	2014/09/15	2014/09/15	2014/09/15		2014/09/16		
COC Number		G087501	G087501	G087501	G087501		G087501		
	UNITS	**14BH05-5**	**14BH05-6**	**14BH05-7**	**DUP.1**	**QC Batch**	**DUP.3**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	13	11	20	17	7642578	24	0.30	7648427

RDL = Reportable Detection Limit

Maxxam ID		KP7887		KP7926	KP7928	KP7931	KP7932		
Sampling Date		2014/09/16		2014/09/16	2014/09/16	2014/09/16	2014/09/16		
COC Number		G087501		G087502	G087502	G087502	G087502		
	UNITS	**DUP.5**	**QC Batch**	**14BH03-2**	**14BH03-4**	**14BH04-2**	**14BH04-3**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	22	7645053	8.9	17	9.1	32	0.30	7648427

RDL = Reportable Detection Limit

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Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

PHYSICAL TESTING (SOIL)

Maxxam ID		KP7935	KP7936	KP7971		KP7972		KP7974		
Sampling Date		2014/09/16	2014/09/16	2014/09/16		2014/09/16		2014/09/16		
COC Number		G087502	G087502	G087503		G087503		G087503		
	UNITS	**14BH08-2**	**14BH08-3**	**14BH08-4**	**QC Batch**	**14BH08-5**	**QC Batch**	**14BH09-2**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	17	10	33	7648427	27	7645310	13	0.30	7648427

RDL = Reportable Detection Limit

Maxxam ID		KP7975	KP7977		KP7979		
Sampling Date		2014/09/16	2014/09/16		2014/09/16		
COC Number		G087503	G087503		G087503		
	UNITS	**14BH09-3**	**14BH20-2**	**QC Batch**	**14BH20-4**	**RDL**	**QC Batch**
Physical Properties							
Moisture	%	33	10	7648427	12	0.30	7664406

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KP7753		KP7759		KP7763		KP7883		
Sampling Date		2014/09/15		2014/09/15		2014/09/15		2014/09/15		
COC Number		G087499		G087499		G087499		G087501		
	UNITS	**14BH02-2**	**RDL**	**14BH19-3**	**RDL**	**14BH17-3**	**RDL**	**DUP.1**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS										
Phenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7648515
2-chlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
3 & 4-chlorophenol	mg/kg	<0.059 (2)	0.059	<0.22 (2)	0.22	<0.13 (2)	0.13	<0.22 (2)	0.22	7648515
2-methylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7648515
3 & 4-methylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7648515
2-nitrophenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7648515
2,4-dimethylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7648515
2,4 + 2,5-Dichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,3-Dichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,6-dichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
3,5-Dichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
3,4-Dichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,4,5-trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,4,6-trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,3,5-trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,3,6-Trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,3,4-trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
3,4,5-Trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,4-dinitrophenol	mg/kg	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	7648515
4,6-dinitro-2-methylphenol	mg/kg	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	7648515
2,3,4,6-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,3,4,5-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
2,3,5,6-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
4-nitrophenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7648515
2,6-Dimethylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7648515
3,4-Dimethylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7648515
Pentachlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7648515
Surrogate Recovery (%)										
2,4,6-TRIBROMOPHENOL (sur.)	%	102		112		107		121		7648515
2-FLUOROPHENOL (sur.)	%	70		77		82		84		7648515

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution as a result of sample matrix inteference.
(2) RDL raised due to sample matrix interference.

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KP7883		
Sampling Date		2014/09/15		
COC Number		G087501		
	UNITS	**DUP.1 Lab-Dup**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS				
Phenol	mg/kg	<0.50 (1)	0.50	7648515
2-chlorophenol	mg/kg	<0.050 (1)	0.050	7648515
3 & 4-chlorophenol	mg/kg	<0.19 (2)	0.19	7648515
2-methylphenol	mg/kg	<0.50 (1)	0.50	7648515
3 & 4-methylphenol	mg/kg	<0.50 (1)	0.50	7648515
2-nitrophenol	mg/kg	<0.50 (1)	0.50	7648515
2,4-dimethylphenol	mg/kg	<0.50 (1)	0.50	7648515
2,4 + 2,5-Dichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,3-Dichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,6-dichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
3,5-Dichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
3,4-Dichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,4,5-trichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,4,6-trichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,3,5-trichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,3,6-Trichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,3,4-trichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
3,4,5-Trichlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,4-dinitrophenol	mg/kg	<0.80 (1)	0.80	7648515
4,6-dinitro-2-methylphenol	mg/kg	<0.80 (1)	0.80	7648515
2,3,4,6-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,3,4,5-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	7648515
2,3,5,6-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	7648515
4-nitrophenol	mg/kg	<0.50 (1)	0.50	7648515
2,6-Dimethylphenol	mg/kg	<0.50 (1)	0.50	7648515
3,4-Dimethylphenol	mg/kg	<0.50 (1)	0.50	7648515
Pentachlorophenol	mg/kg	<0.050 (1)	0.050	7648515
Surrogate Recovery (%)				
2,4,6-TRIBROMOPHENOL (sur.)	%	93		7648515
2-FLUOROPHENOL (sur.)	%	73		7648515

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution as a result of sample matrix inteference.
(2) RDL raised due to sample matrix interference.

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		KP7931	
Sampling Date		2014/09/16	
COC Number		G087502	
	UNITS	**14BH04-2**	**QC Batch**

TCLP Extraction Procedure			
Initial pH of Sample	pH	7.85	7663039
pH after HCl	pH	1.30	7663039
Final pH of Leachate	pH	5.57	7663039
pH of Leaching Fluid	pH	4.96	7663039

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

TOTAL PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		KP7882	KP7882		KP7928	KP7931	KP7936		
Sampling Date		2014/09/15	2014/09/15		2014/09/16	2014/09/16	2014/09/16		
COC Number		G087501	G087501		G087502	G087502	G087502		
	UNITS	**14BH05-7**	**14BH05-7 Lab-Dup**	**QC Batch**	**14BH03-4**	**14BH04-2**	**14BH08-3**	**RDL**	**QC Batch**
Hydrocarbons									
EPH (C10-C19)	mg/kg	<100	<100	7645052	<100	496	372	100	7651230
EPH (C19-C32)	mg/kg	<100	<100	7645052	<100	572	375	100	7651230
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	91	93	7645052	87	86	83		7651230

RDL = Reportable Detection Limit

Maxxam ID		KP7972		
Sampling Date		2014/09/16		
COC Number		G087503		
	UNITS	**14BH08-5**	**RDL**	**QC Batch**
Hydrocarbons				
EPH (C10-C19)	mg/kg	<100	100	7646567
EPH (C19-C32)	mg/kg	<100	100	7646567
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	99		7646567

RDL = Reportable Detection Limit

Maxxam
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Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

BCCSR BTEX/VPH BY HS IN SOIL (SOIL)

Maxxam ID		KP7823		
Sampling Date		2014/09/15		
COC Number		G087500		
	UNITS	**14BH01-5**	**RDL**	**QC Batch**
Volatiles				
VPH (VH6 to 10 - BTEX)	mg/kg	<10	10	7641772
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	7646032
Benzene	mg/kg	0.010	0.0050	7646032
Toluene	mg/kg	0.038	0.020	7646032
Ethylbenzene	mg/kg	0.014	0.010	7646032
m & p-Xylene	mg/kg	0.063	0.040	7646032
o-Xylene	mg/kg	0.049	0.040	7646032
Styrene	mg/kg	<0.030	0.030	7646032
Xylenes (Total)	mg/kg	0.11	0.040	7646032
VH C6-C10	mg/kg	<10	10	7646032
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	103		7646032
4-Bromofluorobenzene (sur.)	%	99		7646032
D10-ETHYLBENZENE (sur.)	%	88		7646032
D4-1,2-Dichloroethane (sur.)	%	100		7646032

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KP7754		KP7759		KP7816		KP7820		
Sampling Date		2014/09/15		2014/09/15		2014/09/15		2014/09/15		
COC Number		G087499		G087499		G087500		G087500		
	UNITS	**14BH02-3**	**RDL**	**14BH19-3**	**RDL**	**14BH18-3**	**RDL**	**14BH01-2**	**RDL**	**QC Batch**
Polycyclic Aromatics										
Naphthalene	mg/kg	1.9	0.050	7.6	0.050	5.0	0.050	11 (1)	0.25	7645296
2-Methylnaphthalene	mg/kg	2.7	0.050	11	0.050	9.1	0.050	15 (1)	0.25	7645296
Acenaphthylene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7645296
Acenaphthene	mg/kg	0.21	0.050	1.3	0.050	0.70	0.050	1.5	0.050	7645296
Fluorene	mg/kg	<0.050	0.050	0.14	0.050	0.10	0.050	0.14	0.050	7645296
Phenanthrene	mg/kg	0.41	0.050	1.9	0.050	2.0	0.050	2.5	0.050	7645296
Anthracene	mg/kg	0.079	0.050	0.44	0.050	0.19	0.050	0.47	0.050	7645296
Fluoranthene	mg/kg	0.057	0.050	0.31	0.050	0.23	0.050	0.39	0.050	7645296
Pyrene	mg/kg	0.091	0.050	0.40	0.050	0.34	0.050	0.51	0.050	7645296
Benzo(a)anthracene	mg/kg	0.054	0.050	0.22	0.050	0.21	0.050	0.35	0.050	7645296
Chrysene	mg/kg	0.051	0.050	0.15	0.050	0.20	0.050	0.22	0.050	7645296
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	<0.075 (2)	0.075	<0.083 (2)	0.083	<0.10 (2)	0.10	7645296
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.060 (2)	0.060	7645296
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7645296
Benzo(a)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	0.081	0.050	7645296
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7645296
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7645296
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7645296
Low Molecular Weight PAH`s	mg/kg	5.3	0.050	23	0.050	17	0.050	30	0.25	7641831
High Molecular Weight PAH`s	mg/kg	0.25	0.050	1.1	0.075	0.98	0.083	1.5	0.10	7641831
Total PAH	mg/kg	5.6	0.050	24	0.075	18	0.083	32	0.25	7641831
Calculated Parameters										
LEPH (C10-C19 less PAH)	mg/kg	137	100	983	100	675	100	1280	100	7642064
HEPH (C19-C32 less PAH)	mg/kg	170	100	1280	100	658	100	1730	100	7642064
Hydrocarbons										
EPH (C10-C19)	mg/kg	140	100	993	100	682	100	1290	100	7645303
EPH (C19-C32)	mg/kg	170	100	1280	100	658	100	1730	100	7645303
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	84		60		73		66		7645296
D8-ACENAPHTHYLENE (sur.)	%	92		68		77		67		7645296
D8-NAPHTHALENE (sur.)	%	96		83		88		85		7645296
TERPHENYL-D14 (sur.)	%	99		78		86		78		7645296

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.
(2) RDL raised due to sample matrix interference.

Tetra Tech EBA
Maxxam Job #: B482486 Client Project #: ENVINO03511-01.003
Report Date: 2014/11/10 Site Location: NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KP7754		KP7759		KP7816		KP7820		
Sampling Date		2014/09/15		2014/09/15		2014/09/15		2014/09/15		
COC Number		G087499		G087499		G087500		G087500		
	UNITS	**14BH02-3**	**RDL**	**14BH19-3**	**RDL**	**14BH18-3**	**RDL**	**14BH01-2**	**RDL**	**QC Batch**
O-TERPHENYL (sur.)	%	89		88		89		91		7645303

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KP7878			KP7880			KP7881		
Sampling Date		2014/09/15			2014/09/15			2014/09/15		
COC Number		G087501			G087501			G087501		
	UNITS	**14BH05-3**	**RDL**	**QC Batch**	**14BH05-5**	**RDL**	**QC Batch**	**14BH05-6**	**RDL**	**QC Batch**
Polycyclic Aromatics										
Naphthalene	mg/kg	4.8	0.050	7645021	7.8	0.050	7645021	5.6	0.050	7645296
2-Methylnaphthalene	mg/kg	8.3	0.050	7645021	13	0.050	7645021	9.3	0.050	7645296
Acenaphthylene	mg/kg	<0.050	0.050	7645021	<0.050	0.050	7645021	<0.050	0.050	7645296
Acenaphthene	mg/kg	0.87	0.050	7645021	1.4	0.050	7645021	1.2	0.050	7645296
Fluorene	mg/kg	0.15	0.050	7645021	0.62	0.050	7645021	0.60	0.050	7645296
Phenanthrene	mg/kg	2.5	0.050	7645021	2.8	0.050	7645021	1.7	0.050	7645296
Anthracene	mg/kg	0.32	0.050	7645021	0.62	0.050	7645021	0.30	0.050	7645296
Fluoranthene	mg/kg	0.37	0.050	7645021	0.43	0.050	7645021	0.24	0.050	7645296
Pyrene	mg/kg	0.56	0.050	7645021	0.70	0.050	7645021	0.37	0.050	7645296
Benzo(a)anthracene	mg/kg	0.41	0.050	7645021	0.42	0.050	7645021	0.19	0.050	7645296
Chrysene	mg/kg	0.40	0.050	7645021	0.42	0.050	7645021	0.17	0.050	7645296
Benzo(b&j)fluoranthene	mg/kg	0.23	0.050	7645021	0.25	0.050	7645021	<0.083 (1)	0.083	7645296
Benzo(b)fluoranthene	mg/kg	0.15	0.050	7645021	0.15	0.050	7645021	<0.052 (1)	0.052	7645296
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	7645021	<0.050	0.050	7645021	<0.050	0.050	7645296
Benzo(a)pyrene	mg/kg	0.16	0.050	7645021	0.20	0.050	7645021	0.055	0.050	7645296
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	7645021	0.056	0.050	7645021	<0.050	0.050	7645296
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	7645021	<0.050	0.050	7645021	<0.050	0.050	7645296
Benzo(g,h,i)perylene	mg/kg	0.13	0.050	7645021	0.16	0.050	7645021	<0.050	0.050	7645296
Low Molecular Weight PAH`s	mg/kg	17	0.050	7641831	27	0.13	7641831	19	0.088	7641831
High Molecular Weight PAH`s	mg/kg	2.3	0.050	7641831	2.6	0.050	7641831	1.0	0.083	7641831
Total PAH	mg/kg	19	0.050	7641831	29	0.13	7641831	20	0.088	7641831
Calculated Parameters										
LEPH (C10-C19 less PAH)	mg/kg	714	100	7642064	1030	100	7642064	909	100	7642064
HEPH (C19-C32 less PAH)	mg/kg	925	100	7642064	1260	100	7642064	817	100	7642064
Hydrocarbons										
EPH (C10-C19)	mg/kg	722	100	7645114	1040	100	7645052	917	100	7645303
EPH (C19-C32)	mg/kg	926	100	7645114	1260	100	7645052	817	100	7645303
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	101		7645021	101		7645021	71		7645296
D8-ACENAPHTHYLENE (sur.)	%	98		7645021	92		7645021	72		7645296
D8-NAPHTHALENE (sur.)	%	98		7645021	97		7645021	95		7645296
TERPHENYL-D14 (sur.)	%	107		7645021	105		7645021	80		7645296

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference.

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KP7878			KP7880			KP7881		
Sampling Date		2014/09/15			2014/09/15			2014/09/15		
COC Number		G087501			G087501			G087501		
	UNITS	**14BH05-3**	**RDL**	**QC Batch**	**14BH05-5**	**RDL**	**QC Batch**	**14BH05-6**	**RDL**	**QC Batch**
O-TERPHENYL (sur.)	%	106		7645114	99		7645052	85		7645303

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KP7883			KP7885			KP7887		
Sampling Date		2014/09/15			2014/09/16			2014/09/16		
COC Number		G087501			G087501			G087501		
	UNITS	**DUP.1**	**RDL**	**QC Batch**	**DUP.3**	**RDL**	**QC Batch**	**DUP.5**	**RDL**	**QC Batch**
Polycyclic Aromatics										
Naphthalene	mg/kg	11	0.050	7645021	1.9	0.050	7650323	7.2 (1)	0.50	7648583
2-Methylnaphthalene	mg/kg	15	0.050	7645021	2.7	0.050	7650323	18 (1)	0.50	7648583
Acenaphthylene	mg/kg	<0.050	0.050	7645021	<0.050	0.050	7650323	<0.50 (2)	0.50	7648583
Acenaphthene	mg/kg	1.4	0.050	7645021	<0.090 (3)	0.090	7650323	4.9 (2)	0.50	7648583
Fluorene	mg/kg	0.20	0.050	7645021	<0.050	0.050	7650323	10 (2)	0.50	7648583
Phenanthrene	mg/kg	2.9	0.050	7645021	0.39	0.050	7650323	4.9 (2)	0.50	7648583
Anthracene	mg/kg	0.84	0.050	7645021	0.10	0.050	7650323	1.0 (2)	0.50	7648583
Fluoranthene	mg/kg	0.63	0.050	7645021	0.052	0.050	7650323	0.57 (2)	0.50	7648583
Pyrene	mg/kg	0.85	0.050	7645021	0.085	0.050	7650323	0.77 (2)	0.50	7648583
Benzo(a)anthracene	mg/kg	0.56	0.050	7645021	0.060	0.050	7650323	<0.50 (2)	0.50	7648583
Chrysene	mg/kg	0.37	0.050	7645021	<0.050	0.050	7650323	<0.50 (2)	0.50	7648583
Benzo(b&j)fluoranthene	mg/kg	0.23	0.050	7645021	<0.050	0.050	7650323	<0.50 (2)	0.50	7648583
Benzo(b)fluoranthene	mg/kg	0.15	0.050	7645021	<0.050	0.050	7650323	<0.50 (2)	0.50	7648583
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	7645021	<0.050	0.050	7650323	<0.50 (2)	0.50	7648583
Benzo(a)pyrene	mg/kg	0.17	0.050	7645021	<0.050	0.050	7650323	<0.50 (2)	0.50	7648583
Indeno(1,2,3-cd)pyrene	mg/kg	0.060	0.050	7645021	<0.050	0.050	7650323	<0.50 (2)	0.50	7648583
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	7645021	<0.050	0.050	7650323	<0.50 (2)	0.50	7648583
Benzo(g,h,i)perylene	mg/kg	0.088	0.050	7645021	<0.070 (3)	0.070	7650323	<0.50 (2)	0.50	7648583
Low Molecular Weight PAH`s	mg/kg	31	0.050	7641831	5.2	0.090	7645415	46	0.50	7645415
High Molecular Weight PAH`s	mg/kg	3.0	0.050	7641831	0.20	0.070	7645415	1.3	0.50	7645415
Total PAH	mg/kg	34	0.050	7641831	5.4	0.090	7645415	47	0.50	7645415
Calculated Parameters										
LEPH (C10-C19 less PAH)	mg/kg	1170	100	7642064	149	100	7645733	10400	100	7645733
HEPH (C19-C32 less PAH)	mg/kg	1920	100	7642064	181	100	7645733	3330	100	7645733
Hydrocarbons										
EPH (C10-C19)	mg/kg	1190	100	7645114	151	100	7650315	10400	100	7648571
EPH (C19-C32)	mg/kg	1920	100	7645114	182	100	7650315	3330	100	7648571
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	95		7645021	89		7650323	69		7648583
D8-ACENAPHTHYLENE (sur.)	%	95		7645021	95		7650323	71		7648583
D8-NAPHTHALENE (sur.)	%	100		7645021	101		7650323	88		7648583

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.
(2) Detection limits raised due to dilution as a result of sample matrix inteference.
(3) RDL raised due to sample matrix interference.

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KP7883			KP7885			KP7887		
Sampling Date		2014/09/15			2014/09/16			2014/09/16		
COC Number		G087501			G087501			G087501		
	UNITS	**DUP.1**	**RDL**	**QC Batch**	**DUP.3**	**RDL**	**QC Batch**	**DUP.5**	**RDL**	**QC Batch**
TERPHENYL-D14 (sur.)	%	104		7645021	97		7650323	82		7648583
O-TERPHENYL (sur.)	%	104		7645114	81		7650315	96		7648571

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KP7971		KP7975		KP7977		
Sampling Date		2014/09/16		2014/09/16		2014/09/16		
COC Number		G087503		G087503		G087503		
	UNITS	**14BH08-4**	**RDL**	**14BH09-3**	**RDL**	**14BH20-2**	**RDL**	**QC Batch**
Polycyclic Aromatics								
Naphthalene	mg/kg	1.8	0.050	5.0	0.050	4.4	0.050	7650323
2-Methylnaphthalene	mg/kg	2.5	0.050	11	0.050	6.3	0.050	7650323
Acenaphthylene	mg/kg	<0.050	0.050	<0.12 (1)	0.12	<0.050	0.050	7650323
Acenaphthene	mg/kg	<0.060 (1)	0.060	<0.22 (1)	0.22	<0.10 (1)	0.10	7650323
Fluorene	mg/kg	<0.050	0.050	<0.22 (1)	0.22	<0.060 (1)	0.060	7650323
Phenanthrene	mg/kg	0.40	0.050	1.9	0.050	1.1	0.050	7650323
Anthracene	mg/kg	0.11	0.050	0.13	0.050	0.27	0.050	7650323
Fluoranthene	mg/kg	0.059	0.050	0.098	0.050	0.17	0.050	7650323
Pyrene	mg/kg	0.086	0.050	0.16	0.050	0.23	0.050	7650323
Benzo(a)anthracene	mg/kg	0.064	0.050	0.082	0.050	0.17	0.050	7650323
Chrysene	mg/kg	0.056	0.050	0.089	0.050	0.14	0.050	7650323
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	0.068	0.050	7650323
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	7650323
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	7650323
Benzo(a)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	7650323
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	7650323
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	7650323
Benzo(g,h,i)perylene	mg/kg	<0.070 (1)	0.070	<0.060 (1)	0.060	<0.080 (1)	0.080	7650323
Low Molecular Weight PAH`s	mg/kg	4.8	0.060	18	0.22	12	0.10	7645415
High Molecular Weight PAH`s	mg/kg	0.27	0.070	0.43	0.060	0.78	0.080	7645415
Total PAH	mg/kg	5.1	0.070	18	0.22	13	0.10	7645415
Calculated Parameters								
LEPH (C10-C19 less PAH)	mg/kg	164	100	486	100	397	100	7645733
HEPH (C19-C32 less PAH)	mg/kg	209	100	557	100	501	100	7645733
Hydrocarbons								
EPH (C10-C19)	mg/kg	166	100	493	100	403	100	7650315
EPH (C19-C32)	mg/kg	209	100	558	100	501	100	7650315
Surrogate Recovery (%)								
D10-ANTHRACENE (sur.)	%	80		77		82		7650323
D8-ACENAPHTHYLENE (sur.)	%	84		84		84		7650323
D8-NAPHTHALENE (sur.)	%	90		91		89		7650323
TERPHENYL-D14 (sur.)	%	89		93		102		7650323

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference.

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KP7971		KP7975		KP7977		
Sampling Date		2014/09/16		2014/09/16		2014/09/16		
COC Number		G087503		G087503		G087503		
	UNITS	**14BH08-4**	**RDL**	**14BH09-3**	**RDL**	**14BH20-2**	**RDL**	**QC Batch**
O-TERPHENYL (sur.)	%	82		82		83		7650315

RDL = Reportable Detection Limit

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7752	KP7753	KP7754	KP7755	KP7757	KP7759		
Sampling Date		2014/09/15	2014/09/15	2014/09/15	2014/09/15	2014/09/15	2014/09/15		
COC Number		G087499	G087499	G087499	G087499	G087499	G087499		
	UNITS	**14BH02-1**	**14BH02-2**	**14BH02-3**	**14BH02-4**	**14BH19-1**	**14BH19-3**	**RDL**	**QC Batch**
Physical Properties									
Soluble (2:1) pH	pH	7.75	7.51	7.25	6.87	7.16	7.18	N/A	7645363
Total Metals by ICPMS									
Total Aluminum (Al)	mg/kg	23500	23500	30800	11500	15600	13900	100	7645320
Total Antimony (Sb)	mg/kg	0.40	1.05	0.45	0.30	0.15	0.38	0.10	7645320
Total Arsenic (As)	mg/kg	4.74	14.9	6.97	2.95	2.04	5.16	0.50	7645320
Total Barium (Ba)	mg/kg	217	149	498	87.6	63.1	84.3	0.10	7645320
Total Beryllium (Be)	mg/kg	0.45	0.64	0.69	<0.40	0.58	0.51	0.40	7645320
Total Bismuth (Bi)	mg/kg	<0.10	0.11	<0.10	<0.10	<0.10	<0.10	0.10	7645320
Total Cadmium (Cd)	mg/kg	0.320	0.461	0.441	1.09	0.093	0.187	0.050	7645320
Total Calcium (Ca)	mg/kg	28900	26200	28000	6500	3590	2340	100	7645320
Total Chromium (Cr)	mg/kg	124	125	82.0	19.4	15.4	85.9	1.0	7645320
Total Cobalt (Co)	mg/kg	23.2	29.7	19.6	5.87	5.03	10.9	0.30	7645320
Total Copper (Cu)	mg/kg	73.1	89.8	85.2	26.3	5.41	89.8	0.50	7645320
Total Iron (Fe)	mg/kg	29200	36500	28800	11200	15200	16600	100	7645320
Total Lead (Pb)	mg/kg	6.13	9.85	6.72	2.98	5.90	5.74	0.10	7645320
Total Lithium (Li)	mg/kg	25.0	26.7	43.1	16.9	18.3	23.6	5.0	7645320
Total Magnesium (Mg)	mg/kg	10700	10200	8010	4350	3780	7120	100	7645320
Total Manganese (Mn)	mg/kg	572	614	555	149	304	386	0.20	7645320
Total Mercury (Hg)	mg/kg	0.190	0.430	0.197	0.158	<0.050	0.380	0.050	7645320
Total Molybdenum (Mo)	mg/kg	2.50	4.86	3.38	1.32	0.28	2.97	0.10	7645320
Total Nickel (Ni)	mg/kg	214	213	145	46.8	12.9	101	0.80	7645320
Total Phosphorus (P)	mg/kg	290	234	777	422	378	245	10	7645320
Total Potassium (K)	mg/kg	1030	1020	1770	800	2080	1290	100	7645320
Total Selenium (Se)	mg/kg	1.02	1.43	0.59	1.05	<0.50	0.69	0.50	7645320
Total Silver (Ag)	mg/kg	0.145	0.187	0.166	0.068	<0.050	0.085	0.050	7645320
Total Sodium (Na)	mg/kg	433	361	2710	1040	493	3820	100	7645320
Total Strontium (Sr)	mg/kg	258	209	485	99.9	28.8	82.3	0.10	7645320
Total Thallium (Tl)	mg/kg	0.083	0.206	0.093	0.305	0.104	0.066	0.050	7645320
Total Tin (Sn)	mg/kg	0.47	0.58	0.65	0.38	0.66	0.42	0.10	7645320
Total Titanium (Ti)	mg/kg	265	225	1010	963	577	516	1.0	7645320
Total Uranium (U)	mg/kg	0.347	0.400	0.820	0.687	0.574	0.487	0.050	7645320
Total Vanadium (V)	mg/kg	81.1	126	94.0	40.8	32.4	74.0	2.0	7645320
Total Zinc (Zn)	mg/kg	69.9	83.7	68.4	40.2	34.8	47.9	1.0	7645320

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7752	KP7753	KP7754	KP7755	KP7757	KP7759		
Sampling Date		2014/09/15	2014/09/15	2014/09/15	2014/09/15	2014/09/15	2014/09/15		
COC Number		G087499	G087499	G087499	G087499	G087499	G087499		
	UNITS	**14BH02-1**	**14BH02-2**	**14BH02-3**	**14BH02-4**	**14BH19-1**	**14BH19-3**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg	9.22	10.7	17.9	4.48	1.38	5.13	0.50	7645320

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7760		KP7762	KP7763		KP7814		
Sampling Date		2014/09/15		2014/09/15	2014/09/15		2014/09/15		
COC Number		G087499		G087499	G087499		G087500		
	UNITS	**14BH19-4**	**QC Batch**	**14BH17-2**	**14BH17-3**	**QC Batch**	**14BH18-1**	**RDL**	**QC Batch**
Physical Properties									
Soluble (2:1) pH	pH	7.19	7664566	7.40	6.60	7645363	7.91	N/A	7664566
Total Metals by ICPMS									
Total Aluminum (Al)	mg/kg			20500	25300	7645320		100	
Total Antimony (Sb)	mg/kg			0.26	0.55	7645320		0.10	
Total Arsenic (As)	mg/kg			2.16	9.64	7645320		0.50	
Total Barium (Ba)	mg/kg			128	213	7645320		0.10	
Total Beryllium (Be)	mg/kg			0.45	0.55	7645320		0.40	
Total Bismuth (Bi)	mg/kg			<0.10	<0.10	7645320		0.10	
Total Cadmium (Cd)	mg/kg			0.089	0.402	7645320		0.050	
Total Calcium (Ca)	mg/kg			5920	13300	7645320		100	
Total Chromium (Cr)	mg/kg	81.9	7664561	22.7	78.1	7645320		1.0	
Total Cobalt (Co)	mg/kg			5.60	16.7	7645320		0.30	
Total Copper (Cu)	mg/kg			14.9	83.3	7645320	72.0	0.50	7664561
Total Iron (Fe)	mg/kg			15200	34900	7645320		100	
Total Lead (Pb)	mg/kg			58.3	8.33	7645320		0.10	
Total Lithium (Li)	mg/kg			17.9	39.1	7645320		5.0	
Total Magnesium (Mg)	mg/kg			4360	8150	7645320		100	
Total Manganese (Mn)	mg/kg			281	514	7645320		0.20	
Total Mercury (Hg)	mg/kg			0.067	0.588	7645320		0.050	
Total Molybdenum (Mo)	mg/kg			0.54	3.45	7645320		0.10	
Total Nickel (Ni)	mg/kg			29.0	142	7645320		0.80	
Total Phosphorus (P)	mg/kg			520	580	7645320		10	
Total Potassium (K)	mg/kg			2440	1690	7645320		100	
Total Selenium (Se)	mg/kg			<0.50	0.72	7645320		0.50	
Total Silver (Ag)	mg/kg			<0.050	0.149	7645320		0.050	
Total Sodium (Na)	mg/kg			496	4280	7645320		100	
Total Strontium (Sr)	mg/kg			50.2	292	7645320		0.10	
Total Thallium (Tl)	mg/kg			0.102	0.201	7645320		0.050	
Total Tin (Sn)	mg/kg			1.02	0.97	7645320		0.10	
Total Titanium (Ti)	mg/kg			548	696	7645320		1.0	
Total Uranium (U)	mg/kg			0.569	1.02	7645320		0.050	
Total Vanadium (V)	mg/kg			30.0	79.1	7645320		2.0	
Total Zinc (Zn)	mg/kg			52.6	61.5	7645320		1.0	

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7760		KP7762	KP7763		KP7814		
Sampling Date		2014/09/15		2014/09/15	2014/09/15		2014/09/15		
COC Number		G087499		G087499	G087499		G087500		
	UNITS	**14BH19-4**	**QC Batch**	**14BH17-2**	**14BH17-3**	**QC Batch**	**14BH18-1**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg			1.27	13.3	7645320		0.50	

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7815		KP7816	KP7819	KP7820	KP7821		
Sampling Date		2014/09/15		2014/09/15	2014/09/15	2014/09/15	2014/09/15		
COC Number		G087500		G087500	G087500	G087500	G087500		
	UNITS	**14BH18-2**	**QC Batch**	**14BH18-3**	**14BH01-1**	**14BH01-2**	**14BH01-3**	**RDL**	**QC Batch**
Physical Properties									
Soluble (2:1) pH	pH	7.25	7646562	7.40	7.39	7.53	7.16	N/A	7646562
Total Metals by ICPMS									
Total Aluminum (Al)	mg/kg	24500	7646559	16000	23400	13500	13800	100	7646559
Total Antimony (Sb)	mg/kg	0.44	7646559	1.08	0.57	0.45	0.34	0.10	7646559
Total Arsenic (As)	mg/kg	7.56	7646559	18.6	8.13	5.47	4.29	0.50	7646559
Total Barium (Ba)	mg/kg	87.2	7646559	101	108	98.8	88.8	0.10	7646559
Total Beryllium (Be)	mg/kg	<0.40	7646559	0.41	0.60	0.50	0.42	0.40	7646559
Total Bismuth (Bi)	mg/kg	0.20	7646559	0.56	0.12	0.11	0.11	0.10	7646559
Total Cadmium (Cd)	mg/kg	0.129	7646559	0.132	0.375	0.194	0.226	0.050	7646559
Total Calcium (Ca)	mg/kg	1920	7646559	3540	14600	3460	3360	100	7646559
Total Chromium (Cr)	mg/kg	86.5	7646559	57.4	130	83.6	88.4	1.0	7646559
Total Cobalt (Co)	mg/kg	13.9	7646559	16.6	26.4	13.9	10.9	0.30	7646559
Total Copper (Cu)	mg/kg	107	7710805	160	74.0	108	97.7	0.50	7646559
Total Iron (Fe)	mg/kg	31600	7646559	51800	38000	18400	16500	100	7646559
Total Lead (Pb)	mg/kg	13.7	7646559	62.3	8.97	8.99	6.73	0.10	7646559
Total Lithium (Li)	mg/kg	45.2	7646559	26.6	25.4	20.8	25.5	5.0	7646559
Total Magnesium (Mg)	mg/kg	12400	7646559	7230	12800	6830	6590	100	7646559
Total Manganese (Mn)	mg/kg	482	7646559	653	559	383	371	0.20	7646559
Total Mercury (Hg)	mg/kg	0.237	7646559	0.354	0.364	0.445	0.292	0.050	7646559
Total Molybdenum (Mo)	mg/kg	3.13	7646559	8.40	3.13	3.18	2.52	0.10	7646559
Total Nickel (Ni)	mg/kg	131	7646559	78.7	200	102	102	0.80	7646559
Total Phosphorus (P)	mg/kg	408	7646559	576	303	176	169	10	7646559
Total Potassium (K)	mg/kg	1650	7646559	1590	1180	1310	1190	100	7646559
Total Selenium (Se)	mg/kg	0.65	7646559	0.75	0.92	0.66	0.72	0.50	7646559
Total Silver (Ag)	mg/kg	0.149	7646559	0.071	0.154	0.121	0.117	0.050	7646559
Total Sodium (Na)	mg/kg	2250	7646559	3590	358	2380	2740	100	7646559
Total Strontium (Sr)	mg/kg	104	7646559	80.6	92.6	97.9	84.8	0.10	7646559
Total Thallium (Tl)	mg/kg	0.078	7646559	0.103	0.152	0.119	0.103	0.050	7646559
Total Tin (Sn)	mg/kg	2.43	7646559	7.19	0.85	1.19	0.59	0.10	7646559
Total Titanium (Ti)	mg/kg	57.7	7646559	222	247	515	554	1.0	7646559
Total Uranium (U)	mg/kg	0.474	7646559	1.42	0.370	0.483	0.418	0.050	7646559
Total Vanadium (V)	mg/kg	63.0	7646559	57.4	92.3	69.3	75.3	2.0	7646559
Total Zinc (Zn)	mg/kg	107	7646559	134	87.7	65.5	44.0	1.0	7646559

RDL = Reportable Detection Limit

Success Through Science®

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7815		KP7816	KP7819	KP7820	KP7821		
Sampling Date		2014/09/15		2014/09/15	2014/09/15	2014/09/15	2014/09/15		
COC Number		G087500		G087500	G087500	G087500	G087500		
	UNITS	**14BH18-2**	**QC Batch**	**14BH18-3**	**14BH01-1**	**14BH01-2**	**14BH01-3**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg	3.11	7646559	2.70	8.12	5.41	6.46	0.50	7646559

RDL = Reportable Detection Limit

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7877		KP7881		KP7883	KP7884		
Sampling Date		2014/09/15		2014/09/15		2014/09/15	2014/09/15		
COC Number		G087501		G087501		G087501	G087501		
	UNITS	**14BH05-2**	**QC Batch**	**14BH05-6**	**QC Batch**	**DUP.1**	**DUP.2**	**RDL**	**QC Batch**
Physical Properties									
Soluble (2:1) pH	pH	6.40	7646562	7.70	7697594	7.06	7.42	N/A	7646562
Total Metals by ICPMS									
Total Aluminum (Al)	mg/kg	26200	7646559			15300	21900	100	7646559
Total Antimony (Sb)	mg/kg	0.40	7646559			0.36	0.64	0.10	7646559
Total Arsenic (As)	mg/kg	3.21	7646559			5.02	8.06	0.50	7646559
Total Barium (Ba)	mg/kg	488	7646559			105	112	0.10	7646559
Total Beryllium (Be)	mg/kg	0.66	7646559			0.57	0.52	0.40	7646559
Total Bismuth (Bi)	mg/kg	<0.10	7646559			<0.10	0.11	0.10	7646559
Total Cadmium (Cd)	mg/kg	0.345	7646559			0.145	0.357	0.050	7646559
Total Calcium (Ca)	mg/kg	17500	7646559			2410	14100	100	7646559
Total Chromium (Cr)	mg/kg	32.7	7646559	12.9	7697590	95.0	116	1.0	7646559
Total Cobalt (Co)	mg/kg	7.15	7646559			11.2	26.3	0.30	7646559
Total Copper (Cu)	mg/kg	46.3	7646559			90.1	73.5	0.50	7646559
Total Iron (Fe)	mg/kg	22000	7646559			18500	33500	100	7646559
Total Lead (Pb)	mg/kg	5.71	7646559			5.82	8.81	0.10	7646559
Total Lithium (Li)	mg/kg	26.1	7646559			26.2	22.9	5.0	7646559
Total Magnesium (Mg)	mg/kg	3410	7646559			8000	12200	100	7646559
Total Manganese (Mn)	mg/kg	327	7646559			412	567	0.20	7646559
Total Mercury (Hg)	mg/kg	0.070	7646559			0.387	0.379	0.050	7646559
Total Molybdenum (Mo)	mg/kg	1.74	7646559			3.20	3.05	0.10	7646559
Total Nickel (Ni)	mg/kg	52.1	7646559			101	188	0.80	7646559
Total Phosphorus (P)	mg/kg	808	7646559			274	290	10	7646559
Total Potassium (K)	mg/kg	1340	7646559			1360	1040	100	7646559
Total Selenium (Se)	mg/kg	<0.50	7646559			0.58	0.94	0.50	7646559
Total Silver (Ag)	mg/kg	0.096	7646559			0.096	0.144	0.050	7646559
Total Sodium (Na)	mg/kg	829	7646559			4040	395	100	7646559
Total Strontium (Sr)	mg/kg	530	7646559			89.8	96.4	0.10	7646559
Total Thallium (Tl)	mg/kg	0.059	7646559			0.073	0.130	0.050	7646559
Total Tin (Sn)	mg/kg	0.59	7646559			0.43	0.97	0.10	7646559
Total Titanium (Ti)	mg/kg	808	7646559			519	224	1.0	7646559
Total Uranium (U)	mg/kg	0.618	7646559			0.531	0.362	0.050	7646559
Total Vanadium (V)	mg/kg	63.7	7646559			82.4	86.1	2.0	7646559
Total Zinc (Zn)	mg/kg	23.2	7646559			48.6	82.7	1.0	7646559

RDL = Reportable Detection Limit

Success Through Science®

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7877		KP7881		KP7883	KP7884		
Sampling Date		2014/09/15		2014/09/15		2014/09/15	2014/09/15		
COC Number		G087501		G087501		G087501	G087501		
	UNITS	**14BH05-2**	**QC Batch**	**14BH05-6**	**QC Batch**	**DUP.1**	**DUP.2**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg	17.1	7646559			5.93	7.00	0.50	7646559

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7885		KP7925	KP7926	KP7931	KP7932		
Sampling Date		2014/09/16		2014/09/16	2014/09/16	2014/09/16	2014/09/16		
COC Number		G087501		G087502	G087502	G087502	G087502		
	UNITS	**DUP.3**	**QC Batch**	**14BH03-1**	**14BH03-2**	**14BH04-2**	**14BH04-3**	**RDL**	**QC Batch**
Physical Properties									
Soluble (2:1) pH	pH	7.95	7650832	7.93	7.21	7.19	7.13	N/A	7646569
Total Metals by ICPMS									
Total Aluminum (Al)	mg/kg	21700	7647061	28300	13000	23300	24600	100	7646563
Total Antimony (Sb)	mg/kg	0.47	7647061	0.43	0.40	0.63	0.30	0.10	7646563
Total Arsenic (As)	mg/kg	5.85	7647061	5.63	9.98	6.96	3.83	0.50	7646563
Total Barium (Ba)	mg/kg	212	7647061	668	86.5	167	319	0.10	7646563
Total Beryllium (Be)	mg/kg	0.49	7647061	0.76	0.45	0.60	0.61	0.40	7646563
Total Bismuth (Bi)	mg/kg	<0.10	7647061	<0.10	<0.10	0.13	<0.10	0.10	7646563
Total Cadmium (Cd)	mg/kg	0.428	7647061	0.659	0.293	0.351	0.555	0.050	7646563
Total Calcium (Ca)	mg/kg	25600	7647061	51300	16600	11000	24800	100	7646563
Total Chromium (Cr)	mg/kg	66.5	7647061	71.5	77.1	138	52.6	1.0	7646563
Total Cobalt (Co)	mg/kg	12.5	7647061	12.4	19.7	26.4	11.8	0.30	7646563
Total Copper (Cu)	mg/kg	121	7647061	73.5	68.8	73.1	68.1	0.50	7646563
Total Iron (Fe)	mg/kg	27600	7647061	26400	25000	29000	18500	100	7646563
Total Lead (Pb)	mg/kg	5.79	7647061	4.05	7.17	9.98	4.81	0.10	7646563
Total Lithium (Li)	mg/kg	29.0	7647061	36.9	20.6	33.8	24.7	5.0	7646563
Total Magnesium (Mg)	mg/kg	6880	7647061	6770	5520	8880	6410	100	7646563
Total Manganese (Mn)	mg/kg	540	7647061	517	342	658	429	0.20	7646563
Total Mercury (Hg)	mg/kg	0.317	7647061	0.188	0.392	0.174	0.112	0.050	7646563
Total Molybdenum (Mo)	mg/kg	2.68	7647061	3.79	3.92	2.30	2.23	0.10	7646563
Total Nickel (Ni)	mg/kg	103	7647061	123	159	241	103	0.80	7646563
Total Phosphorus (P)	mg/kg	539	7647061	818	226	302	710	10	7646563
Total Potassium (K)	mg/kg	1150	7647061	1460	969	1040	1560	100	7646563
Total Selenium (Se)	mg/kg	1.14	7647061	0.56	1.38	0.66	0.56	0.50	7646563
Total Silver (Ag)	mg/kg	0.117	7647061	0.123	0.121	0.144	0.170	0.050	7646563
Total Sodium (Na)	mg/kg	538	7647061	1240	454	449	1060	100	7646563
Total Strontium (Sr)	mg/kg	336	7647061	649	154	164	517	0.10	7646563
Total Thallium (Tl)	mg/kg	0.094	7647061	0.055	0.128	0.112	0.098	0.050	7646563
Total Tin (Sn)	mg/kg	0.62	7647061	0.60	0.80	0.68	0.74	0.10	7646563
Total Titanium (Ti)	mg/kg	595	7647061	1050	426	265	1140	1.0	7646563
Total Uranium (U)	mg/kg	0.609	7647061	0.890	0.503	0.377	0.942	0.050	7646563
Total Vanadium (V)	mg/kg	70.6	7647061	92.6	72.7	89.6	68.2	2.0	7646563
Total Zinc (Zn)	mg/kg	42.7	7647061	24.3	48.7	80.3	48.1	1.0	7646563

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7885		KP7925	KP7926	KP7931	KP7932		
Sampling Date		2014/09/16		2014/09/16	2014/09/16	2014/09/16	2014/09/16		
COC Number		G087501		G087502	G087502	G087502	G087502		
	UNITS	**DUP.3**	**QC Batch**	**14BH03-1**	**14BH03-2**	**14BH04-2**	**14BH04-3**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg	13.3	7647061	25.4	6.74	9.21	16.4	0.50	7646563

RDL = Reportable Detection Limit

Tetra Tech EBA
Maxxam Job #: B482486 | Client Project #: ENVINO03511-01.003
Report Date: 2014/11/10 | Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7933	KP7935	KP7971	KP7974	KP7975	KP7976		
Sampling Date		2014/09/16	2014/09/16	2014/09/16	2014/09/16	2014/09/16	2014/09/16		
COC Number		G087502	G087502	G087503	G087503	G087503	G087503		
	UNITS	**14BH04-4**	**14BH08-2**	**14BH08-4**	**14BH09-2**	**14BH09-3**	**14BH20-1**	**RDL**	**QC Batch**
Physical Properties									
Soluble (2:1) pH	pH	7.19	7.96	7.81	7.78	7.32	7.48	N/A	7646569
Total Metals by ICPMS									
Total Aluminum (Al)	mg/kg	13900	24800	22200	14700	25500	16500	100	7646563
Total Antimony (Sb)	mg/kg	<0.10	0.37	0.34	1.15	0.33	0.46	0.10	7646563
Total Arsenic (As)	mg/kg	3.09	4.72	5.14	6.42	3.79	7.96	0.50	7646563
Total Barium (Ba)	mg/kg	50.4	345	198	263	528	81.4	0.10	7646563
Total Beryllium (Be)	mg/kg	<0.40	0.49	0.44	<0.40	0.54	0.54	0.40	7646563
Total Bismuth (Bi)	mg/kg	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	0.10	7646563
Total Cadmium (Cd)	mg/kg	0.156	0.414	0.417	0.295	0.403	0.321	0.050	7646563
Total Calcium (Ca)	mg/kg	7990	34200	22100	23700	32400	9310	100	7646563
Total Chromium (Cr)	mg/kg	18.9	75.0	64.0	56.2	56.3	109	1.0	7646563
Total Cobalt (Co)	mg/kg	6.35	17.0	11.8	17.2	11.4	23.6	0.30	7646563
Total Copper (Cu)	mg/kg	22.9	67.0	65.6	95.4	63.2	73.0	0.50	7646563
Total Iron (Fe)	mg/kg	15700	22600	29200	22300	22200	28800	100	7646563
Total Lead (Pb)	mg/kg	1.83	5.00	4.83	13.0	3.81	8.38	0.10	7646563
Total Lithium (Li)	mg/kg	18.0	31.9	29.9	18.8	32.8	23.4	5.0	7646563
Total Magnesium (Mg)	mg/kg	6110	7320	6910	5160	4740	8050	100	7646563
Total Manganese (Mn)	mg/kg	230	433	463	628	414	411	0.20	7646563
Total Mercury (Hg)	mg/kg	<0.050	0.312	0.333	0.404	0.145	0.330	0.050	7646563
Total Molybdenum (Mo)	mg/kg	0.47	2.39	2.41	2.61	2.41	3.26	0.10	7646563
Total Nickel (Ni)	mg/kg	19.1	138	97.9	105	105	171	0.80	7646563
Total Phosphorus (P)	mg/kg	401	673	521	477	795	134	10	7646563
Total Potassium (K)	mg/kg	669	1240	1280	1010	1590	1050	100	7646563
Total Selenium (Se)	mg/kg	<0.50	0.62	1.28	0.95	<0.50	0.92	0.50	7646563
Total Silver (Ag)	mg/kg	<0.050	0.109	0.104	0.110	0.103	0.154	0.050	7646563
Total Sodium (Na)	mg/kg	1470	632	570	420	774	266	100	7646563
Total Strontium (Sr)	mg/kg	37.5	504	312	312	581	75.0	0.10	7646563
Total Thallium (Tl)	mg/kg	<0.050	0.078	0.088	0.095	<0.050	0.125	0.050	7646563
Total Tin (Sn)	mg/kg	0.25	0.56	0.49	5.13	0.75	0.45	0.10	7646563
Total Titanium (Ti)	mg/kg	1420	620	640	631	1150	215	1.0	7646563
Total Uranium (U)	mg/kg	0.297	0.528	0.628	0.563	0.606	0.459	0.050	7646563
Total Vanadium (V)	mg/kg	46.2	76.8	67.5	65.3	77.0	80.9	2.0	7646563
Total Zinc (Zn)	mg/kg	34.2	45.9	41.0	48.2	22.5	73.1	1.0	7646563

RDL = Reportable Detection Limit

Maxxam
A Bureau Veritas Group Company

Tetra Tech EBA
Maxxam Job #: B482486
Report Date: 2014/11/10

Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7933	KP7935	KP7971	KP7974	KP7975	KP7976		
Sampling Date		2014/09/16	2014/09/16	2014/09/16	2014/09/16	2014/09/16	2014/09/16		
COC Number		G087502	G087502	G087503	G087503	G087503	G087503		
	UNITS	**14BH04-4**	**14BH08-2**	**14BH08-4**	**14BH09-2**	**14BH09-3**	**14BH20-1**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg	4.90	15.0	13.2	7.97	16.9	7.12	0.50	7646563

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7977	KP7978	KP7979		KP7980		
Sampling Date		2014/09/16	2014/09/16	2014/09/16		2014/09/16		
COC Number		G087503	G087503	G087503		G087503		
	UNITS	**14BH20-2**	**14BH20-3**	**14BH20-4**	**QC Batch**	**14BH20-5**	**RDL**	**QC Batch**
Physical Properties								
Soluble (2:1) pH	pH	7.48	7.34	7.37	7646569	7.71	N/A	7664566
Total Metals by ICPMS								
Total Aluminum (Al)	mg/kg	19100	16200	16400	7646563		100	
Total Antimony (Sb)	mg/kg	0.64	0.62	0.38	7646563		0.10	
Total Arsenic (As)	mg/kg	8.37	8.20	6.70	7646563		0.50	
Total Barium (Ba)	mg/kg	184	117	93.2	7646563		0.10	
Total Beryllium (Be)	mg/kg	0.69	0.44	0.51	7646563		0.40	
Total Bismuth (Bi)	mg/kg	0.12	<0.10	0.11	7646563		0.10	
Total Cadmium (Cd)	mg/kg	0.257	0.194	0.206	7646563		0.050	
Total Calcium (Ca)	mg/kg	3250	4020	2650	7646563		100	
Total Chromium (Cr)	mg/kg	115	81.6	96.8	7646563	77.1	1.0	7664561
Total Cobalt (Co)	mg/kg	23.3	20.6	14.7	7646563		0.30	
Total Copper (Cu)	mg/kg	90.7	95.1	93.9	7646563		0.50	
Total Iron (Fe)	mg/kg	28400	27900	22800	7646563		100	
Total Lead (Pb)	mg/kg	8.09	15.0	8.65	7646563		0.10	
Total Lithium (Li)	mg/kg	23.1	20.8	26.2	7646563		5.0	
Total Magnesium (Mg)	mg/kg	9640	8230	8430	7646563		100	
Total Manganese (Mn)	mg/kg	601	625	505	7646563		0.20	
Total Mercury (Hg)	mg/kg	0.426	0.613	0.404	7646563		0.050	
Total Molybdenum (Mo)	mg/kg	3.65	3.20	2.92	7646563		0.10	
Total Nickel (Ni)	mg/kg	142	110	111	7646563		0.80	
Total Phosphorus (P)	mg/kg	270	357	267	7646563		10	
Total Potassium (K)	mg/kg	1520	1110	1250	7646563		100	
Total Selenium (Se)	mg/kg	0.86	0.59	0.67	7646563		0.50	
Total Silver (Ag)	mg/kg	0.105	0.086	0.086	7646563		0.050	
Total Sodium (Na)	mg/kg	2550	2380	2980	7646563		100	
Total Strontium (Sr)	mg/kg	102	114	76.0	7646563		0.10	
Total Thallium (Tl)	mg/kg	0.102	0.063	0.060	7646563		0.050	
Total Tin (Sn)	mg/kg	0.55	2.49	0.65	7646563		0.10	
Total Titanium (Ti)	mg/kg	350	426	339	7646563		1.0	
Total Uranium (U)	mg/kg	0.754	0.483	0.514	7646563		0.050	
Total Vanadium (V)	mg/kg	94.1	73.1	77.6	7646563		2.0	
Total Zinc (Zn)	mg/kg	70.2	65.1	57.9	7646563		1.0	

RDL = Reportable Detection Limit

Tetra Tech EBA
Maxxam Job #: B482486 Client Project #: ENVINO03511-01.003
Report Date: 2014/11/10 Site Location: NANAIMO BC

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KP7977	KP7978	KP7979		KP7980		
Sampling Date		2014/09/16	2014/09/16	2014/09/16		2014/09/16		
COC Number		G087503	G087503	G087503		G087503		
	UNITS	**14BH20-2**	**14BH20-3**	**14BH20-4**	**QC Batch**	**14BH20-5**	**RDL**	**QC Batch**
Total Zirconium (Zr)	mg/kg	7.15	6.04	5.80	7646563		0.50	

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

SPLP METALS (SOIL)

Maxxam ID		KP7753	KP7815	KP7819			KP7931		
Sampling Date		2014/09/15	2014/09/15	2014/09/15			2014/09/16		
COC Number		G087499	G087500	G087500			G087502		
	UNITS	**14BH02-2**	**14BH18-2**	**14BH01-1**	**RDL**	**QC Batch**	**14BH04-2**	**RDL**	**QC Batch**
Metals									
SPLP Chromium (Cr)	mg/L	<0.0010		0.0011	0.0010	7666232	0.0101 (1)	0.0050	7675544
SPLP Copper (Cu)	mg/L		0.0261		0.0020	7666232			

RDL = Reportable Detection Limit
(1) Chromium blank outside acceptance criteria, detection limit adjusted accordingly

Maxxam ID		KP7977	KP7979		
Sampling Date		2014/09/16	2014/09/16		
COC Number		G087503	G087503		
	UNITS	**14BH20-2**	**14BH20-4**	**RDL**	**QC Batch**
Metals					
SPLP Chromium (Cr)	mg/L	0.0403	0.0231	0.0010	7666232

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

TCLP METALS (SOIL)

Maxxam ID		KP7931		
Sampling Date		2014/09/16		
COC Number		G087502		
	UNITS	**14BH04-2**	**RDL**	**QC Batch**
Metals				
LEACHATE Chromium (Cr)	mg/L	<0.10	0.10	7665745

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR PAH IN SOIL BY GC-MS (SOIL)

Maxxam ID		KP7753	KP7762	KP7763		KP7926	KP7932		
Sampling Date		2014/09/15	2014/09/15	2014/09/15		2014/09/16	2014/09/16		
COC Number		G087499	G087499	G087499		G087502	G087502		
	UNITS	**14BH02-2**	**14BH17-2**	**14BH17-3**	**QC Batch**	**14BH03-2**	**14BH04-3**	**RDL**	**QC Batch**
Polycyclic Aromatics									
Naphthalene	mg/kg	3.6	1.2	4.9	7645021	6.7	2.1	0.050	7651208
2-Methylnaphthalene	mg/kg	6.1	1.8	6.8	7645021	9.8	2.8	0.050	7651208
Acenaphthylene	mg/kg	<0.050	<0.050	<0.050	7645021	<0.050	<0.050	0.050	7651208
Acenaphthene	mg/kg	0.73	0.15	0.52	7645021	0.85	0.21	0.050	7651208
Fluorene	mg/kg	0.062	<0.050	0.066	7645021	0.16	<0.050	0.050	7651208
Phenanthrene	mg/kg	1.0	0.43	1.4	7645021	2.1	0.33	0.050	7651208
Anthracene	mg/kg	0.21	0.060	0.21	7645021	0.43	0.054	0.050	7651208
Fluoranthene	mg/kg	0.13	0.075	0.23	7645021	0.29	<0.050	0.050	7651208
Pyrene	mg/kg	0.23	0.11	0.31	7645021	0.40	0.073	0.050	7651208
Benzo(a)anthracene	mg/kg	0.17	0.073	0.20	7645021	0.25	<0.050	0.050	7651208
Chrysene	mg/kg	0.14	0.071	0.18	7645021	0.20	<0.050	0.050	7651208
Benzo(b&j)fluoranthene	mg/kg	0.063	<0.050	0.084	7645021	0.088	<0.050	0.050	7651208
Benzo(b)fluoranthene	mg/kg	<0.050	<0.050	0.050	7645021	0.050	<0.050	0.050	7651208
Benzo(k)fluoranthene	mg/kg	<0.050	<0.050	<0.050	7645021	<0.050	<0.050	0.050	7651208
Benzo(a)pyrene	mg/kg	0.051	<0.050	0.058	7645021	0.056	<0.050	0.050	7651208
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	<0.050	<0.050	7645021	<0.050	<0.050	0.050	7651208
Dibenz(a,h)anthracene	mg/kg	<0.050	<0.050	<0.050	7645021	<0.050	<0.050	0.050	7651208
Benzo(g,h,i)perylene	mg/kg	<0.050	<0.050	<0.050	7645021	<0.050	<0.050	0.050	7651208
Low Molecular Weight PAH`s	mg/kg	12	3.6	14	7641831	20	5.5	0.050	7645415
High Molecular Weight PAH`s	mg/kg	0.77	0.33	1.1	7641831	1.3	0.073	0.050	7645415
Total PAH	mg/kg	12	3.9	15	7641831	21	5.6	0.050	7645415
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	85	96	74	7645021	68	47 (1)		7651208
D8-ACENAPHTHYLENE (sur.)	%	89	96	81	7645021	73	71		7651208
D8-NAPHTHALENE (sur.)	%	94	96	89	7645021	84	81		7651208
TERPHENYL-D14 (sur.)	%	96	106	89	7645021	85	81		7651208

RDL = Reportable Detection Limit
(1) Surrogate recovery below control limit - Matrix interference - Pot. low bias

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR PAH IN SOIL BY GC-MS (SOIL)

Maxxam ID		KP7935		KP7974		
Sampling Date		2014/09/16		2014/09/16		
COC Number		G087502		G087503		
	UNITS	**14BH08-2**	**RDL**	**14BH09-2**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Naphthalene	mg/kg	5.5	0.050	12 (1)	0.50	7651208
2-Methylnaphthalene	mg/kg	7.5	0.050	25 (1)	0.50	7651208
Acenaphthylene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Acenaphthene	mg/kg	0.57	0.050	0.97	0.050	7651208
Fluorene	mg/kg	0.086	0.050	0.36	0.050	7651208
Phenanthrene	mg/kg	0.91	0.050	3.5	0.050	7651208
Anthracene	mg/kg	0.21	0.050	0.42	0.050	7651208
Fluoranthene	mg/kg	0.13	0.050	0.31	0.050	7651208
Pyrene	mg/kg	0.21	0.050	0.45	0.050	7651208
Benzo(a)anthracene	mg/kg	0.14	0.050	0.21	0.050	7651208
Chrysene	mg/kg	0.11	0.050	0.19	0.050	7651208
Benzo(b&j)fluoranthene	mg/kg	0.068	0.050	0.085	0.050	7651208
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	0.053	0.050	7651208
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Benzo(a)pyrene	mg/kg	<0.050	0.050	0.050	0.050	7651208
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Low Molecular Weight PAH`s	mg/kg	15	0.050	42	0.50	7645415
High Molecular Weight PAH`s	mg/kg	0.66	0.050	1.3	0.050	7645415
Total PAH	mg/kg	15	0.050	44	0.50	7645415
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	65		66		7651208
D8-ACENAPHTHYLENE (sur.)	%	73		70		7651208
D8-NAPHTHALENE (sur.)	%	83		83		7651208
TERPHENYL-D14 (sur.)	%	82		85		7651208

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR VOC + VPH IN SOIL (SOIL)

Maxxam ID		KP7887	KP7887		
Sampling Date		2014/09/16	2014/09/16		
COC Number		G087501	G087501		
	UNITS	**DUP.5**	**DUP.5 Lab-Dup**	**RDL**	**QC Batch**
Volatiles					
VPH (VH6 to 10 - BTEX)	mg/kg	70		10	7645734
Chloromethane	mg/kg	<0.10	<0.10	0.10	7649890
Vinyl chloride	mg/kg	<0.060	<0.060	0.060	7649890
Bromomethane	mg/kg	<0.30	<0.30	0.30	7649890
Chloroethane	mg/kg	<0.10	<0.10	0.10	7649890
Trichlorofluoromethane	mg/kg	<0.20	<0.20	0.20	7649890
1,1-dichloroethene	mg/kg	<0.025	<0.025	0.025	7649890
Dichloromethane	mg/kg	<0.10	<0.10	0.10	7649890
trans-1,2-dichloroethene	mg/kg	<0.025	<0.025	0.025	7649890
1,1-dichloroethane	mg/kg	<0.025	<0.025	0.025	7649890
cis-1,2-dichloroethene	mg/kg	<0.025	<0.025	0.025	7649890
Chloroform	mg/kg	<0.050	<0.050	0.050	7649890
1,1,1-trichloroethane	mg/kg	<0.025	<0.025	0.025	7649890
1,2-dichloroethane	mg/kg	<0.025	<0.025	0.025	7649890
Carbon tetrachloride	mg/kg	<0.025	<0.025	0.025	7649890
Benzene	mg/kg	0.26	0.32	0.0050	7649890
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	0.10	7649890
1,2-dichloropropane	mg/kg	<0.025	<0.025	0.025	7649890
Trichloroethene	mg/kg	<0.0090	<0.0090	0.0090	7649890
Bromodichloromethane	mg/kg	<0.050	<0.050	0.050	7649890
cis-1,3-dichloropropene	mg/kg	<0.050	<0.050	0.050	7649890
trans-1,3-dichloropropene	mg/kg	<0.050	<0.050	0.050	7649890
1,3-Butadiene	mg/kg	<0.10	<0.10	0.10	7649890
1,1,2-trichloroethane	mg/kg	<0.025	<0.025	0.025	7649890
Toluene	mg/kg	0.81	0.83	0.020	7649890
Chlorodibromomethane	mg/kg	<0.050	<0.050	0.050	7649890
Tetrachloroethene	mg/kg	<0.025	<0.025	0.025	7649890
Chlorobenzene	mg/kg	<0.025	<0.025	0.025	7649890
1,1,1,2-tetrachloroethane	mg/kg	<0.025	<0.025	0.025	7649890
Ethylbenzene	mg/kg	0.51	0.50	0.010	7649890
m & p-Xylene	mg/kg	1.5	1.3	0.040	7649890
Bromoform	mg/kg	<0.050	<0.050	0.050	7649890

RDL = Reportable Detection Limit

Maxxam Job #: B482486
Report Date: 2014/11/10

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Location: NANAIMO BC

CSR VOC + VPH IN SOIL (SOIL)

Maxxam ID		KP7887	KP7887		
Sampling Date		2014/09/16	2014/09/16		
COC Number		G087501	G087501		
	UNITS	**DUP.5**	**DUP.5 Lab-Dup**	**RDL**	**QC Batch**
Styrene	mg/kg	<0.030	<0.030	0.030	7649890
o-Xylene	mg/kg	0.69	0.65	0.040	7649890
Xylenes (Total)	mg/kg	2.1	2.0	0.040	7649890
1,1,2,2-tetrachloroethane	mg/kg	<0.025 (1)	<0.025	0.025	7649890
1,2-dichlorobenzene	mg/kg	<0.025 (1)	<0.025	0.025	7649890
1,3-dichlorobenzene	mg/kg	<0.025	<0.025	0.025	7649890
1,4-dichlorobenzene	mg/kg	<0.025	<0.025	0.025	7649890
Bromobenzene	mg/kg	<0.20	<0.20	0.20	7649890
Dibromomethane	mg/kg	<0.20	<0.20	0.20	7649890
VH C6-C10	mg/kg	73 (2)	120 (3)	10	7649890
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	103	97		7649890
4-Bromofluorobenzene (sur.)	%	127	128		7649890
D10-ETHYLBENZENE (sur.)	%	116	117		7649890
D4-1,2-Dichloroethane (sur.)	%	108	110		7649890

RDL = Reportable Detection Limit
(1) Matrix spike recovery above control limit - Confirmed by re-analysis - Pot. high bias (No impact - ND)
(2) Duplicate RPD above control limit - Reanalysis confirmed sample inhomogeneity - Increased variability of results
(3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Package 1	11.7°C
Package 2	7.0°C
Package 3	7.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments

[Partial/Revision V2P 2014/10/10 SF] All results except 14BH04-2
[Revision V3R 2014/10/10 SF] Added additional analysis requested
[Revision V4R 2014/10/28 SF] Added Chromium results for sample 14BH05-6
[Revision V5R 2014/11/10 SF] Reporting reworked Copper results of sample 14BH18-2. Results differ from original result due to lack of homogeniety in the sample matrix.

Sample KP7815, Elements by ICPMS (total): Test repeated.

Results relate only to the items tested.

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report

Maxxam Job Number: VB482486

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7642578	CG5	Method Blank	Moisture	2014/09/19	<0.30		%	
		RPD	Moisture	2014/09/19	2.6		%	20
7645021	CGP	Matrix Spike	D10-ANTHRACENE (sur.)	2014/09/19		101	%	60 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/09/19		100	%	50 - 130
			D8-NAPHTHALENE (sur.)	2014/09/19		100	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/09/19		109	%	60 - 130
			Naphthalene	2014/09/19		94	%	50 - 130
			2-Methylnaphthalene	2014/09/19		96	%	50 - 130
			Acenaphthylene	2014/09/19		95	%	50 - 130
			Acenaphthene	2014/09/19		98	%	50 - 130
			Fluorene	2014/09/19		96	%	50 - 130
			Phenanthrene	2014/09/19		94	%	60 - 130
			Anthracene	2014/09/19		99	%	60 - 130
			Fluoranthene	2014/09/19		104	%	60 - 130
			Pyrene	2014/09/19		103	%	60 - 130
			Benzo(a)anthracene	2014/09/19		97	%	60 - 130
			Chrysene	2014/09/19		99	%	60 - 130
			Benzo(b&j)fluoranthene	2014/09/19		91	%	60 - 130
			Benzo(k)fluoranthene	2014/09/19		98	%	60 - 130
			Benzo(a)pyrene	2014/09/19		95	%	60 - 130
			Indeno(1,2,3-cd)pyrene	2014/09/19		97	%	60 - 130
			Dibenz(a,h)anthracene	2014/09/19		93	%	60 - 130
			Benzo(g,h,i)perylene	2014/09/19		93	%	60 - 130
		Spiked Blank	D10-ANTHRACENE (sur.)	2014/09/19		103	%	60 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/09/19		99	%	50 - 130
			D8-NAPHTHALENE (sur.)	2014/09/19		100	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/09/19		112	%	60 - 130
			Naphthalene	2014/09/19		93	%	50 - 130
			2-Methylnaphthalene	2014/09/19		94	%	50 - 130
			Acenaphthylene	2014/09/19		92	%	50 - 130
			Acenaphthene	2014/09/19		95	%	50 - 130
			Fluorene	2014/09/19		93	%	50 - 130
			Phenanthrene	2014/09/19		93	%	60 - 130
			Anthracene	2014/09/19		99	%	60 - 130
			Fluoranthene	2014/09/19		101	%	60 - 130
			Pyrene	2014/09/19		102	%	60 - 130
			Benzo(a)anthracene	2014/09/19		93	%	60 - 130
			Chrysene	2014/09/19		96	%	60 - 130
			Benzo(b&j)fluoranthene	2014/09/19		86	%	60 - 130
			Benzo(k)fluoranthene	2014/09/19		99	%	60 - 130
			Benzo(a)pyrene	2014/09/19		92	%	60 - 130
			Indeno(1,2,3-cd)pyrene	2014/09/19		88	%	60 - 130
			Dibenz(a,h)anthracene	2014/09/19		85	%	60 - 130
			Benzo(g,h,i)perylene	2014/09/19		85	%	60 - 130
		Method Blank	D10-ANTHRACENE (sur.)	2014/09/19		106	%	60 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/09/19		102	%	50 - 130
			D8-NAPHTHALENE (sur.)	2014/09/19		105	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/09/19		114	%	60 - 130
			Naphthalene	2014/09/19	<0.050		mg/kg	
			2-Methylnaphthalene	2014/09/19	<0.050		mg/kg	
			Acenaphthylene	2014/09/19	<0.050		mg/kg	
			Acenaphthene	2014/09/19	<0.050		mg/kg	
			Fluorene	2014/09/19	<0.050		mg/kg	
			Phenanthrene	2014/09/19	<0.050		mg/kg	
			Anthracene	2014/09/19	<0.050		mg/kg	

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7645021 CGP	Method Blank	Fluoranthene	2014/09/19	<0.050		mg/kg	
		Pyrene	2014/09/19	<0.050		mg/kg	
		Benzo(a)anthracene	2014/09/19	<0.050		mg/kg	
		Chrysene	2014/09/19	<0.050		mg/kg	
		Benzo(b&j)fluoranthene	2014/09/19	<0.050		mg/kg	
		Benzo(b)fluoranthene	2014/09/19	<0.050		mg/kg	
		Benzo(k)fluoranthene	2014/09/19	<0.050		mg/kg	
		Benzo(a)pyrene	2014/09/19	<0.050		mg/kg	
		Indeno(1,2,3-cd)pyrene	2014/09/19	<0.050		mg/kg	
		Dibenz(a,h)anthracene	2014/09/19	<0.050		mg/kg	
		Benzo(g,h,i)perylene	2014/09/19	<0.050		mg/kg	
	RPD	Naphthalene	2014/09/19	NC		%	50
		2-Methylnaphthalene	2014/09/19	NC		%	50
		Acenaphthylene	2014/09/19	NC		%	50
		Acenaphthene	2014/09/19	NC		%	50
		Fluorene	2014/09/19	NC		%	50
		Phenanthrene	2014/09/19	NC		%	50
		Anthracene	2014/09/19	NC		%	50
		Fluoranthene	2014/09/19	NC		%	50
		Pyrene	2014/09/19	NC		%	50
		Benzo(a)anthracene	2014/09/19	NC		%	50
		Chrysene	2014/09/19	NC		%	50
		Benzo(b&j)fluoranthene	2014/09/19	NC		%	50
		Benzo(b)fluoranthene	2014/09/19	NC		%	50
		Benzo(k)fluoranthene	2014/09/19	NC		%	50
		Benzo(a)pyrene	2014/09/19	NC		%	50
		Indeno(1,2,3-cd)pyrene	2014/09/19	NC		%	50
		Dibenz(a,h)anthracene	2014/09/19	NC		%	50
		Benzo(g,h,i)perylene	2014/09/19	NC		%	50
7645052 TL2	Matrix Spike						
	[KP7882-01]	O-TERPHENYL (sur.)	2014/09/19		89	%	50 - 130
		EPH (C10-C19)	2014/09/19		75	%	50 - 130
		EPH (C19-C32)	2014/09/19		85	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2014/09/19		93	%	50 - 130
		EPH (C10-C19)	2014/09/19		77	%	50 - 130
		EPH (C19-C32)	2014/09/19		87	%	50 - 130
	Method Blank	O-TERPHENYL (sur.)	2014/09/19		89	%	50 - 130
		EPH (C10-C19)	2014/09/19	<100		mg/kg	
		EPH (C19-C32)	2014/09/19	<100		mg/kg	
	RPD [KP7882-01]	EPH (C10-C19)	2014/09/19	NC		%	40
		EPH (C19-C32)	2014/09/19	NC		%	40
7645053 CG5	Method Blank	Moisture	2014/09/20	<0.30		%	
	RPD	Moisture	2014/09/20	0		%	20
7645114 PN2	Matrix Spike	O-TERPHENYL (sur.)	2014/09/19		102	%	50 - 130
		EPH (C10-C19)	2014/09/19		77	%	50 - 130
		EPH (C19-C32)	2014/09/19		86	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2014/09/19		87	%	50 - 130
		EPH (C10-C19)	2014/09/19		78	%	50 - 130
		EPH (C19-C32)	2014/09/19		88	%	50 - 130
	Method Blank	O-TERPHENYL (sur.)	2014/09/19		94	%	50 - 130
		EPH (C10-C19)	2014/09/19	<100		mg/kg	
		EPH (C19-C32)	2014/09/19	<100		mg/kg	
	RPD	EPH (C10-C19)	2014/09/19	NC		%	40
		EPH (C19-C32)	2014/09/19	NC		%	40
7645296 CGP	Matrix Spike	D10-ANTHRACENE (sur.)	2014/09/20		106	%	60 - 130

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Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7645296 CGP	Matrix Spike	D8-ACENAPHTHYLENE (sur.)	2014/09/20		106	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/20		104	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/20		113	%	60 - 130
		Naphthalene	2014/09/20		98	%	50 - 130
		2-Methylnaphthalene	2014/09/20		99	%	50 - 130
		Acenaphthylene	2014/09/20		100	%	50 - 130
		Acenaphthene	2014/09/20		103	%	50 - 130
		Fluorene	2014/09/20		100	%	50 - 130
		Phenanthrene	2014/09/20		100	%	60 - 130
		Anthracene	2014/09/20		105	%	60 - 130
		Fluoranthene	2014/09/20		108	%	60 - 130
		Pyrene	2014/09/20		109	%	60 - 130
		Benzo(a)anthracene	2014/09/20		103	%	60 - 130
		Chrysene	2014/09/20		103	%	60 - 130
		Benzo(b&j)fluoranthene	2014/09/20		99	%	60 - 130
		Benzo(k)fluoranthene	2014/09/20		107	%	60 - 130
		Benzo(a)pyrene	2014/09/20		100	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2014/09/20		96	%	60 - 130
		Dibenz(a,h)anthracene	2014/09/20		92	%	60 - 130
		Benzo(g,h,i)perylene	2014/09/20		92	%	60 - 130
	Spiked Blank	D10-ANTHRACENE (sur.)	2014/09/20		112	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/20		108	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/20		112	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/20		118	%	60 - 130
		Naphthalene	2014/09/20		105	%	50 - 130
		2-Methylnaphthalene	2014/09/20		106	%	50 - 130
		Acenaphthylene	2014/09/20		103	%	50 - 130
		Acenaphthene	2014/09/20		109	%	50 - 130
		Fluorene	2014/09/20		105	%	50 - 130
		Phenanthrene	2014/09/20		103	%	60 - 130
		Anthracene	2014/09/20		111	%	60 - 130
		Fluoranthene	2014/09/20		113	%	60 - 130
		Pyrene	2014/09/20		112	%	60 - 130
		Benzo(a)anthracene	2014/09/20		106	%	60 - 130
		Chrysene	2014/09/20		109	%	60 - 130
		Benzo(b&j)fluoranthene	2014/09/20		94	%	60 - 130
		Benzo(k)fluoranthene	2014/09/20		107	%	60 - 130
		Benzo(a)pyrene	2014/09/20		102	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2014/09/20		99	%	60 - 130
		Dibenz(a,h)anthracene	2014/09/20		94	%	60 - 130
		Benzo(g,h,i)perylene	2014/09/20		93	%	60 - 130
	Method Blank	D10-ANTHRACENE (sur.)	2014/09/20		109	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/20		107	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/20		107	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/20		115	%	60 - 130
		Naphthalene	2014/09/20	<0.050		mg/kg	
		2-Methylnaphthalene	2014/09/20	<0.050		mg/kg	
		Acenaphthylene	2014/09/20	<0.050		mg/kg	
		Acenaphthene	2014/09/20	<0.050		mg/kg	
		Fluorene	2014/09/20	<0.050		mg/kg	
		Phenanthrene	2014/09/20	<0.050		mg/kg	
		Anthracene	2014/09/20	<0.050		mg/kg	
		Fluoranthene	2014/09/20	<0.050		mg/kg	
		Pyrene	2014/09/20	<0.050		mg/kg	
		Benzo(a)anthracene	2014/09/20	<0.050		mg/kg	

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7645296 CGP	Method Blank	Chrysene	2014/09/20	<0.050		mg/kg	
		Benzo(b&j)fluoranthene	2014/09/20	<0.050		mg/kg	
		Benzo(b)fluoranthene	2014/09/20	<0.050		mg/kg	
		Benzo(k)fluoranthene	2014/09/20	<0.050		mg/kg	
		Benzo(a)pyrene	2014/09/20	<0.050		mg/kg	
		Indeno(1,2,3-cd)pyrene	2014/09/20	<0.050		mg/kg	
		Dibenz(a,h)anthracene	2014/09/20	<0.050		mg/kg	
		Benzo(g,h,i)perylene	2014/09/20	<0.050		mg/kg	
	RPD	Naphthalene	2014/09/20	NC		%	50
		2-Methylnaphthalene	2014/09/20	NC		%	50
		Acenaphthylene	2014/09/20	NC		%	50
		Acenaphthene	2014/09/20	NC		%	50
		Fluorene	2014/09/20	NC		%	50
		Phenanthrene	2014/09/20	NC		%	50
		Anthracene	2014/09/20	NC		%	50
		Fluoranthene	2014/09/20	NC		%	50
		Pyrene	2014/09/20	NC		%	50
		Benzo(a)anthracene	2014/09/20	NC		%	50
		Chrysene	2014/09/20	NC		%	50
		Benzo(b&j)fluoranthene	2014/09/20	NC		%	50
		Benzo(b)fluoranthene	2014/09/20	NC		%	50
		Benzo(k)fluoranthene	2014/09/20	NC		%	50
		Benzo(a)pyrene	2014/09/20	NC		%	50
		Indeno(1,2,3-cd)pyrene	2014/09/20	NC		%	50
		Dibenz(a,h)anthracene	2014/09/20	NC		%	50
		Benzo(g,h,i)perylene	2014/09/20	NC		%	50
7645303 TL2	Matrix Spike	O-TERPHENYL (sur.)	2014/09/21		103	%	50 - 130
		EPH (C10-C19)	2014/09/21		79	%	50 - 130
		EPH (C19-C32)	2014/09/21		88	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2014/09/21		94	%	50 - 130
		EPH (C10-C19)	2014/09/21		79	%	50 - 130
		EPH (C19-C32)	2014/09/21		89	%	50 - 130
	Method Blank	O-TERPHENYL (sur.)	2014/09/21		94	%	50 - 130
		EPH (C10-C19)	2014/09/21	<100		mg/kg	
		EPH (C19-C32)	2014/09/21	<100		mg/kg	
	RPD	EPH (C10-C19)	2014/09/21	NC		%	40
		EPH (C19-C32)	2014/09/21	NC		%	40
7645310 CG5	Method Blank	Moisture	2014/09/20	<0.30		%	
	RPD	Moisture	2014/09/20	1.8		%	20
7645320 DJ	Matrix Spike	Total Antimony (Sb)	2014/09/19		97	%	75 - 125
		Total Arsenic (As)	2014/09/19		91	%	75 - 125
		Total Barium (Ba)	2014/09/19		NC	%	75 - 125
		Total Beryllium (Be)	2014/09/19		96	%	75 - 125
		Total Cadmium (Cd)	2014/09/19		101	%	75 - 125
		Total Chromium (Cr)	2014/09/19		87	%	75 - 125
		Total Cobalt (Co)	2014/09/19		88	%	75 - 125
		Total Copper (Cu)	2014/09/19		NC	%	75 - 125
		Total Lead (Pb)	2014/09/19		96	%	75 - 125
		Total Lithium (Li)	2014/09/19		96	%	75 - 125
		Total Manganese (Mn)	2014/09/19		NC	%	75 - 125
		Total Mercury (Hg)	2014/09/19		100	%	75 - 125
		Total Molybdenum (Mo)	2014/09/19		105	%	75 - 125
		Total Nickel (Ni)	2014/09/19		98	%	75 - 125
		Total Selenium (Se)	2014/09/19		96	%	75 - 125
		Total Silver (Ag)	2014/09/19		96	%	75 - 125

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7645320 DJ	Matrix Spike	Total Strontium (Sr)	2014/09/19		NC	%	75 - 125
		Total Thallium (Tl)	2014/09/19		96	%	75 - 125
		Total Tin (Sn)	2014/09/19		97	%	75 - 125
		Total Titanium (Ti)	2014/09/19		NC	%	75 - 125
		Total Uranium (U)	2014/09/19		96	%	75 - 125
		Total Vanadium (V)	2014/09/19		NC	%	75 - 125
		Total Zinc (Zn)	2014/09/19		NC	%	75 - 125
	QC Standard	Total Aluminum (Al)	2014/09/19		125	%	70 - 130
		Total Antimony (Sb)	2014/09/19		107	%	70 - 130
		Total Arsenic (As)	2014/09/19		96	%	70 - 130
		Total Barium (Ba)	2014/09/19		104	%	70 - 130
		Total Cadmium (Cd)	2014/09/19		101	%	70 - 130
		Total Calcium (Ca)	2014/09/19		99	%	70 - 130
		Total Chromium (Cr)	2014/09/19		107	%	70 - 130
		Total Cobalt (Co)	2014/09/19		94	%	70 - 130
		Total Copper (Cu)	2014/09/19		93	%	70 - 130
		Total Iron (Fe)	2014/09/19		96	%	70 - 130
		Total Lead (Pb)	2014/09/19		99	%	70 - 130
		Total Magnesium (Mg)	2014/09/19		96	%	70 - 130
		Total Manganese (Mn)	2014/09/19		100	%	70 - 130
		Total Mercury (Hg)	2014/09/19		99	%	70 - 130
		Total Molybdenum (Mo)	2014/09/19		114	%	70 - 130
		Total Nickel (Ni)	2014/09/19		96	%	70 - 130
		Total Phosphorus (P)	2014/09/19		95	%	70 - 130
		Total Strontium (Sr)	2014/09/19		101	%	70 - 130
		Total Thallium (Tl)	2014/09/19		98	%	70 - 130
		Total Titanium (Ti)	2014/09/19		113	%	70 - 130
		Total Uranium (U)	2014/09/19		99	%	70 - 130
		Total Vanadium (V)	2014/09/19		106	%	70 - 130
		Total Zinc (Zn)	2014/09/19		91	%	70 - 130
	Spiked Blank	Total Antimony (Sb)	2014/09/19		97	%	75 - 125
		Total Arsenic (As)	2014/09/19		97	%	75 - 125
		Total Barium (Ba)	2014/09/19		102	%	75 - 125
		Total Beryllium (Be)	2014/09/19		96	%	75 - 125
		Total Cadmium (Cd)	2014/09/19		102	%	75 - 125
		Total Chromium (Cr)	2014/09/19		98	%	75 - 125
		Total Cobalt (Co)	2014/09/19		98	%	75 - 125
		Total Copper (Cu)	2014/09/19		101	%	75 - 125
		Total Lead (Pb)	2014/09/19		102	%	75 - 125
		Total Lithium (Li)	2014/09/19		96	%	75 - 125
		Total Manganese (Mn)	2014/09/19		104	%	75 - 125
		Total Mercury (Hg)	2014/09/19		100	%	75 - 125
		Total Molybdenum (Mo)	2014/09/19		100	%	75 - 125
		Total Nickel (Ni)	2014/09/19		102	%	75 - 125
		Total Selenium (Se)	2014/09/19		101	%	75 - 125
		Total Silver (Ag)	2014/09/19		102	%	75 - 125
		Total Strontium (Sr)	2014/09/19		95	%	75 - 125
		Total Thallium (Tl)	2014/09/19		100	%	75 - 125
		Total Tin (Sn)	2014/09/19		95	%	75 - 125
		Total Titanium (Ti)	2014/09/19		101	%	75 - 125
		Total Uranium (U)	2014/09/19		96	%	75 - 125
		Total Vanadium (V)	2014/09/19		96	%	75 - 125
		Total Zinc (Zn)	2014/09/19		102	%	75 - 125
	Method Blank	Total Aluminum (Al)	2014/09/19	<100		mg/kg	
		Total Antimony (Sb)	2014/09/19	<0.10		mg/kg	

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Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7645320 DJ	Method Blank	Total Arsenic (As)	2014/09/19	<0.50		mg/kg	
		Total Barium (Ba)	2014/09/19	<0.10		mg/kg	
		Total Beryllium (Be)	2014/09/19	<0.40		mg/kg	
		Total Bismuth (Bi)	2014/09/19	<0.10		mg/kg	
		Total Cadmium (Cd)	2014/09/19	<0.050		mg/kg	
		Total Calcium (Ca)	2014/09/19	<100		mg/kg	
		Total Chromium (Cr)	2014/09/19	<1.0		mg/kg	
		Total Cobalt (Co)	2014/09/19	<0.30		mg/kg	
		Total Copper (Cu)	2014/09/19	<0.50		mg/kg	
		Total Iron (Fe)	2014/09/19	<100		mg/kg	
		Total Lead (Pb)	2014/09/19	<0.10		mg/kg	
		Total Lithium (Li)	2014/09/19	<5.0		mg/kg	
		Total Magnesium (Mg)	2014/09/19	<100		mg/kg	
		Total Manganese (Mn)	2014/09/19	<0.20		mg/kg	
		Total Mercury (Hg)	2014/09/19	<0.050		mg/kg	
		Total Molybdenum (Mo)	2014/09/19	<0.10		mg/kg	
		Total Nickel (Ni)	2014/09/19	<0.80		mg/kg	
		Total Phosphorus (P)	2014/09/19	<10		mg/kg	
		Total Potassium (K)	2014/09/19	<100		mg/kg	
		Total Selenium (Se)	2014/09/19	<0.50		mg/kg	
		Total Silver (Ag)	2014/09/19	<0.050		mg/kg	
		Total Sodium (Na)	2014/09/19	<100		mg/kg	
		Total Strontium (Sr)	2014/09/19	<0.10		mg/kg	
		Total Thallium (Tl)	2014/09/19	<0.050		mg/kg	
		Total Tin (Sn)	2014/09/19	<0.10		mg/kg	
		Total Titanium (Ti)	2014/09/19	<1.0		mg/kg	
		Total Uranium (U)	2014/09/19	<0.050		mg/kg	
		Total Vanadium (V)	2014/09/19	<2.0		mg/kg	
		Total Zinc (Zn)	2014/09/19	<1.0		mg/kg	
		Total Zirconium (Zr)	2014/09/19	<0.50		mg/kg	
	RPD	Total Barium (Ba)	2014/09/19	2.9		%	35
		Total Copper (Cu)	2014/09/19	2.3		%	30
		Total Lead (Pb)	2014/09/19	3.7		%	35
		Total Zinc (Zn)	2014/09/19	3.5		%	30
7645363 NS6	Spiked Blank	Soluble (2:1) pH	2014/09/22		100	%	97 - 103
	RPD	Soluble (2:1) pH	2014/09/22	0.2		%	N/A
7646032 AC2	Matrix Spike	1,4-Difluorobenzene (sur.)	2014/09/20		101	%	70 - 130
		4-Bromofluorobenzene (sur.)	2014/09/20		100	%	70 - 130
		D10-ETHYLBENZENE (sur.)	2014/09/20		86	%	50 - 130
		D4-1,2-Dichloroethane (sur.)	2014/09/20		99	%	70 - 130
		Benzene	2014/09/20		89	%	60 - 140
		Toluene	2014/09/20		89	%	60 - 140
		Ethylbenzene	2014/09/20		90	%	60 - 140
		m & p-Xylene	2014/09/20		90	%	60 - 140
		o-Xylene	2014/09/20		86	%	60 - 140
	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/09/20		102	%	70 - 130
		4-Bromofluorobenzene (sur.)	2014/09/20		100	%	70 - 130
		D10-ETHYLBENZENE (sur.)	2014/09/20		79	%	50 - 130
		D4-1,2-Dichloroethane (sur.)	2014/09/20		99	%	70 - 130
		Benzene	2014/09/20		89	%	60 - 140
		Toluene	2014/09/20		89	%	60 - 140
		Ethylbenzene	2014/09/20		91	%	60 - 140
		m & p-Xylene	2014/09/20		91	%	60 - 140
		o-Xylene	2014/09/20		87	%	60 - 140
		VH C6-C10	2014/09/20		96	%	60 - 140

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7646032 AC2	Method Blank	1,4-Difluorobenzene (sur.)	2014/09/20		103	%	70 - 130
		4-Bromofluorobenzene (sur.)	2014/09/20		99	%	70 - 130
		D10-ETHYLBENZENE (sur.)	2014/09/20		87	%	50 - 130
		D4-1,2-Dichloroethane (sur.)	2014/09/20		101	%	70 - 130
		Methyl-tert-butylether (MTBE)	2014/09/20	<0.10		mg/kg	
		Benzene	2014/09/20	<0.0050		mg/kg	
		Toluene	2014/09/20	<0.020		mg/kg	
		Ethylbenzene	2014/09/20	<0.010		mg/kg	
		m & p-Xylene	2014/09/20	<0.040		mg/kg	
		o-Xylene	2014/09/20	<0.040		mg/kg	
		Styrene	2014/09/20	<0.030		mg/kg	
		Xylenes (Total)	2014/09/20	<0.040		mg/kg	
		VH C6-C10	2014/09/20	<10		mg/kg	
	RPD	Benzene	2014/09/20	NC		%	40
		Toluene	2014/09/20	NC		%	40
		Ethylbenzene	2014/09/20	NC		%	40
		m & p-Xylene	2014/09/20	NC		%	40
		o-Xylene	2014/09/20	NC		%	40
		Xylenes (Total)	2014/09/20	NC		%	40
		VH C6-C10	2014/09/20	NC		%	40
7646559 DJ	Matrix Spike	Total Antimony (Sb)	2014/09/22		97	%	75 - 125
		Total Arsenic (As)	2014/09/22		98	%	75 - 125
		Total Barium (Ba)	2014/09/22		NC	%	75 - 125
		Total Beryllium (Be)	2014/09/22		105	%	75 - 125
		Total Cadmium (Cd)	2014/09/22		102	%	75 - 125
		Total Chromium (Cr)	2014/09/22		100	%	75 - 125
		Total Cobalt (Co)	2014/09/22		100	%	75 - 125
		Total Copper (Cu)	2014/09/22		99	%	75 - 125
		Total Lead (Pb)	2014/09/22		104	%	75 - 125
		Total Lithium (Li)	2014/09/22		99	%	75 - 125
		Total Manganese (Mn)	2014/09/22		NC	%	75 - 125
		Total Mercury (Hg)	2014/09/22		97	%	75 - 125
		Total Molybdenum (Mo)	2014/09/22		103	%	75 - 125
		Total Nickel (Ni)	2014/09/22		96	%	75 - 125
		Total Selenium (Se)	2014/09/22		105	%	75 - 125
		Total Silver (Ag)	2014/09/22		103	%	75 - 125
		Total Strontium (Sr)	2014/09/22		NC	%	75 - 125
		Total Thallium (Tl)	2014/09/22		105	%	75 - 125
		Total Tin (Sn)	2014/09/22		95	%	75 - 125
		Total Titanium (Ti)	2014/09/22		NC	%	75 - 125
		Total Uranium (U)	2014/09/22		103	%	75 - 125
		Total Vanadium (V)	2014/09/22		NC	%	75 - 125
		Total Zinc (Zn)	2014/09/22		NC	%	75 - 125
	QC Standard	Total Aluminum (Al)	2014/09/22		128	%	70 - 130
		Total Antimony (Sb)	2014/09/22		108	%	70 - 130
		Total Arsenic (As)	2014/09/22		102	%	70 - 130
		Total Barium (Ba)	2014/09/22		103	%	70 - 130
		Total Cadmium (Cd)	2014/09/22		102	%	70 - 130
		Total Calcium (Ca)	2014/09/22		105	%	70 - 130
		Total Chromium (Cr)	2014/09/22		122	%	70 - 130
		Total Cobalt (Co)	2014/09/22		97	%	70 - 130
		Total Copper (Cu)	2014/09/22		94	%	70 - 130
		Total Iron (Fe)	2014/09/22		104	%	70 - 130
		Total Lead (Pb)	2014/09/22		103	%	70 - 130
		Total Magnesium (Mg)	2014/09/22		107	%	70 - 130

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Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7646559 DJ	QC Standard	Total Manganese (Mn)	2014/09/22		106	%	70 - 130
		Total Mercury (Hg)	2014/09/22		87	%	70 - 130
		Total Molybdenum (Mo)	2014/09/22		124	%	70 - 130
		Total Nickel (Ni)	2014/09/22		99	%	70 - 130
		Total Phosphorus (P)	2014/09/22		100	%	70 - 130
		Total Strontium (Sr)	2014/09/22		104	%	70 - 130
		Total Thallium (Tl)	2014/09/22		100	%	70 - 130
		Total Titanium (Ti)	2014/09/22		124	%	70 - 130
		Total Uranium (U)	2014/09/22		108	%	70 - 130
		Total Vanadium (V)	2014/09/22		117	%	70 - 130
		Total Zinc (Zn)	2014/09/22		94	%	70 - 130
	Spiked Blank	Total Antimony (Sb)	2014/09/22		105	%	75 - 125
		Total Arsenic (As)	2014/09/22		97	%	75 - 125
		Total Barium (Ba)	2014/09/22		99	%	75 - 125
		Total Beryllium (Be)	2014/09/22		101	%	75 - 125
		Total Cadmium (Cd)	2014/09/22		100	%	75 - 125
		Total Chromium (Cr)	2014/09/22		102	%	75 - 125
		Total Cobalt (Co)	2014/09/22		100	%	75 - 125
		Total Copper (Cu)	2014/09/22		99	%	75 - 125
		Total Lead (Pb)	2014/09/22		100	%	75 - 125
		Total Lithium (Li)	2014/09/22		94	%	75 - 125
		Total Manganese (Mn)	2014/09/22		99	%	75 - 125
		Total Mercury (Hg)	2014/09/22		103	%	75 - 125
		Total Molybdenum (Mo)	2014/09/22		104	%	75 - 125
		Total Nickel (Ni)	2014/09/22		97	%	75 - 125
		Total Selenium (Se)	2014/09/22		105	%	75 - 125
		Total Silver (Ag)	2014/09/22		100	%	75 - 125
		Total Strontium (Sr)	2014/09/22		94	%	75 - 125
		Total Thallium (Tl)	2014/09/22		101	%	75 - 125
		Total Tin (Sn)	2014/09/22		98	%	75 - 125
		Total Titanium (Ti)	2014/09/22		99	%	75 - 125
		Total Uranium (U)	2014/09/22		98	%	75 - 125
		Total Vanadium (V)	2014/09/22		97	%	75 - 125
		Total Zinc (Zn)	2014/09/22		109	%	75 - 125
	Method Blank	Total Aluminum (Al)	2014/09/22	<100		mg/kg	
		Total Antimony (Sb)	2014/09/22	<0.10		mg/kg	
		Total Arsenic (As)	2014/09/22	<0.50		mg/kg	
		Total Barium (Ba)	2014/09/22	0.20, RDL=0.10		mg/kg	
		Total Beryllium (Be)	2014/09/22	<0.40		mg/kg	
		Total Bismuth (Bi)	2014/09/22	<0.10		mg/kg	
		Total Cadmium (Cd)	2014/09/22	<0.050		mg/kg	
		Total Calcium (Ca)	2014/09/22	<100		mg/kg	
		Total Chromium (Cr)	2014/09/22	<1.0		mg/kg	
		Total Cobalt (Co)	2014/09/22	<0.30		mg/kg	
		Total Copper (Cu)	2014/09/22	<0.50		mg/kg	
		Total Iron (Fe)	2014/09/22	<100		mg/kg	
		Total Lead (Pb)	2014/09/22	0.12, RDL=0.10		mg/kg	
		Total Lithium (Li)	2014/09/22	<5.0		mg/kg	
		Total Magnesium (Mg)	2014/09/22	<100		mg/kg	
		Total Manganese (Mn)	2014/09/22	0.22, RDL=0.20		mg/kg	
		Total Mercury (Hg)	2014/09/22	<0.050		mg/kg	
		Total Molybdenum (Mo)	2014/09/22	<0.10		mg/kg	
		Total Nickel (Ni)	2014/09/22	<0.80		mg/kg	
		Total Phosphorus (P)	2014/09/22	<10		mg/kg	
		Total Potassium (K)	2014/09/22	<100		mg/kg	

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Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7646559 DJ	Method Blank	Total Selenium (Se)	2014/09/22	<0.50		mg/kg	
		Total Silver (Ag)	2014/09/22	<0.050		mg/kg	
		Total Sodium (Na)	2014/09/22	<100		mg/kg	
		Total Strontium (Sr)	2014/09/22	<0.10		mg/kg	
		Total Thallium (Tl)	2014/09/22	<0.050		mg/kg	
		Total Tin (Sn)	2014/09/22	<0.10		mg/kg	
		Total Titanium (Ti)	2014/09/22	1.7, RDL=1.0		mg/kg	
		Total Uranium (U)	2014/09/22	<0.050		mg/kg	
		Total Vanadium (V)	2014/09/22	<2.0		mg/kg	
		Total Zinc (Zn)	2014/09/22	<1.0		mg/kg	
		Total Zirconium (Zr)	2014/09/22	<0.50		mg/kg	
	RPD	Total Arsenic (As)	2014/09/22	5.5		%	30
		Total Barium (Ba)	2014/09/22	0.2		%	35
		Total Chromium (Cr)	2014/09/22	1.1		%	30
		Total Copper (Cu)	2014/09/22	2.7		%	30
		Total Lead (Pb)	2014/09/22	2.1		%	35
		Total Zinc (Zn)	2014/09/22	4.1		%	30
7646562 NS6	Spiked Blank	Soluble (2:1) pH	2014/09/22		100	%	97 - 103
	RPD	Soluble (2:1) pH	2014/09/22	1		%	N/A
7646563 DJ	Matrix Spike	Total Antimony (Sb)	2014/09/22		108	%	75 - 125
		Total Arsenic (As)	2014/09/22		101	%	75 - 125
		Total Barium (Ba)	2014/09/22		NC	%	75 - 125
		Total Beryllium (Be)	2014/09/22		108	%	75 - 125
		Total Cadmium (Cd)	2014/09/22		105	%	75 - 125
		Total Chromium (Cr)	2014/09/22		110	%	75 - 125
		Total Cobalt (Co)	2014/09/22		104	%	75 - 125
		Total Copper (Cu)	2014/09/22		113	%	75 - 125
		Total Lead (Pb)	2014/09/22		107	%	75 - 125
		Total Lithium (Li)	2014/09/22		102	%	75 - 125
		Total Manganese (Mn)	2014/09/22		NC	%	75 - 125
		Total Mercury (Hg)	2014/09/22		107	%	75 - 125
		Total Molybdenum (Mo)	2014/09/22		110	%	75 - 125
		Total Nickel (Ni)	2014/09/22		108	%	75 - 125
		Total Selenium (Se)	2014/09/22		108	%	75 - 125
		Total Silver (Ag)	2014/09/22		102	%	75 - 125
		Total Strontium (Sr)	2014/09/22		NC	%	75 - 125
		Total Thallium (Tl)	2014/09/22		104	%	75 - 125
		Total Tin (Sn)	2014/09/22		102	%	75 - 125
		Total Titanium (Ti)	2014/09/22		NC	%	75 - 125
		Total Uranium (U)	2014/09/22		107	%	75 - 125
		Total Vanadium (V)	2014/09/22		NC	%	75 - 125
		Total Zinc (Zn)	2014/09/22		NC	%	75 - 125
	QC Standard	Total Aluminum (Al)	2014/09/22		127	%	70 - 130
		Total Antimony (Sb)	2014/09/22		109	%	70 - 130
		Total Arsenic (As)	2014/09/22		100	%	70 - 130
		Total Barium (Ba)	2014/09/22		104	%	70 - 130
		Total Cadmium (Cd)	2014/09/22		102	%	70 - 130
		Total Calcium (Ca)	2014/09/22		103	%	70 - 130
		Total Chromium (Cr)	2014/09/22		118	%	70 - 130
		Total Cobalt (Co)	2014/09/22		97	%	70 - 130
		Total Copper (Cu)	2014/09/22		94	%	70 - 130
		Total Iron (Fe)	2014/09/22		104	%	70 - 130
		Total Lead (Pb)	2014/09/22		102	%	70 - 130
		Total Magnesium (Mg)	2014/09/22		105	%	70 - 130
		Total Manganese (Mn)	2014/09/22		104	%	70 - 130

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Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7646563 DJ	QC Standard	Total Mercury (Hg)	2014/09/22		87	%	70 - 130
		Total Molybdenum (Mo)	2014/09/22		128	%	70 - 130
		Total Nickel (Ni)	2014/09/22		97	%	70 - 130
		Total Phosphorus (P)	2014/09/22		98	%	70 - 130
		Total Strontium (Sr)	2014/09/22		104	%	70 - 130
		Total Thallium (Tl)	2014/09/22		95	%	70 - 130
		Total Titanium (Ti)	2014/09/22		122	%	70 - 130
		Total Uranium (U)	2014/09/22		105	%	70 - 130
		Total Vanadium (V)	2014/09/22		113	%	70 - 130
		Total Zinc (Zn)	2014/09/22		95	%	70 - 130
	Spiked Blank	Total Antimony (Sb)	2014/09/22		98	%	75 - 125
		Total Arsenic (As)	2014/09/22		97	%	75 - 125
		Total Barium (Ba)	2014/09/22		101	%	75 - 125
		Total Beryllium (Be)	2014/09/22		99	%	75 - 125
		Total Cadmium (Cd)	2014/09/22		103	%	75 - 125
		Total Chromium (Cr)	2014/09/22		107	%	75 - 125
		Total Cobalt (Co)	2014/09/22		103	%	75 - 125
		Total Copper (Cu)	2014/09/22		100	%	75 - 125
		Total Lead (Pb)	2014/09/22		102	%	75 - 125
		Total Lithium (Li)	2014/09/22		94	%	75 - 125
		Total Manganese (Mn)	2014/09/22		107	%	75 - 125
		Total Mercury (Hg)	2014/09/22		97	%	75 - 125
		Total Molybdenum (Mo)	2014/09/22		100	%	75 - 125
		Total Nickel (Ni)	2014/09/22		99	%	75 - 125
		Total Selenium (Se)	2014/09/22		105	%	75 - 125
		Total Silver (Ag)	2014/09/22		99	%	75 - 125
		Total Strontium (Sr)	2014/09/22		96	%	75 - 125
		Total Thallium (Tl)	2014/09/22		104	%	75 - 125
		Total Tin (Sn)	2014/09/22		95	%	75 - 125
		Total Titanium (Ti)	2014/09/22		96	%	75 - 125
		Total Uranium (U)	2014/09/22		100	%	75 - 125
		Total Vanadium (V)	2014/09/22		100	%	75 - 125
		Total Zinc (Zn)	2014/09/22		105	%	75 - 125
	Method Blank	Total Aluminum (Al)	2014/09/22	<100		mg/kg	
		Total Antimony (Sb)	2014/09/22	<0.10		mg/kg	
		Total Arsenic (As)	2014/09/22	<0.50		mg/kg	
		Total Barium (Ba)	2014/09/22	<0.10		mg/kg	
		Total Beryllium (Be)	2014/09/22	<0.40		mg/kg	
		Total Bismuth (Bi)	2014/09/22	<0.10		mg/kg	
		Total Cadmium (Cd)	2014/09/22	<0.050		mg/kg	
		Total Calcium (Ca)	2014/09/22	<100		mg/kg	
		Total Chromium (Cr)	2014/09/22	<1.0		mg/kg	
		Total Cobalt (Co)	2014/09/22	<0.30		mg/kg	
		Total Copper (Cu)	2014/09/22	<0.50		mg/kg	
		Total Iron (Fe)	2014/09/22	<100		mg/kg	
		Total Lead (Pb)	2014/09/22	<0.10		mg/kg	
		Total Lithium (Li)	2014/09/22	<5.0		mg/kg	
		Total Magnesium (Mg)	2014/09/22	<100		mg/kg	
		Total Manganese (Mn)	2014/09/22	<0.20		mg/kg	
		Total Mercury (Hg)	2014/09/22	<0.050		mg/kg	
		Total Molybdenum (Mo)	2014/09/22	<0.10		mg/kg	
		Total Nickel (Ni)	2014/09/22	<0.80		mg/kg	
		Total Phosphorus (P)	2014/09/22	<10		mg/kg	
		Total Potassium (K)	2014/09/22	<100		mg/kg	
		Total Selenium (Se)	2014/09/22	<0.50		mg/kg	

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Attention: Lora J Paul
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P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7646563 DJ	Method Blank	Total Silver (Ag)	2014/09/22	<0.050		mg/kg	
		Total Sodium (Na)	2014/09/22	<100		mg/kg	
		Total Strontium (Sr)	2014/09/22	<0.10		mg/kg	
		Total Thallium (Tl)	2014/09/22	<0.050		mg/kg	
		Total Tin (Sn)	2014/09/22	<0.10		mg/kg	
		Total Titanium (Ti)	2014/09/22	<1.0		mg/kg	
		Total Uranium (U)	2014/09/22	<0.050		mg/kg	
		Total Vanadium (V)	2014/09/22	<2.0		mg/kg	
		Total Zinc (Zn)	2014/09/22	<1.0		mg/kg	
		Total Zirconium (Zr)	2014/09/22	<0.50		mg/kg	
	RPD	Total Arsenic (As)	2014/09/22	NC		%	30
		Total Cadmium (Cd)	2014/09/22	NC		%	30
		Total Chromium (Cr)	2014/09/22	14.9		%	30
		Total Copper (Cu)	2014/09/22	13.8		%	30
		Total Lead (Pb)	2014/09/22	1.6		%	35
		Total Silver (Ag)	2014/09/22	NC		%	35
		Total Zinc (Zn)	2014/09/22	0.7		%	30
7646567 TL2	Matrix Spike	O-TERPHENYL (sur.)	2014/09/22		100	%	50 - 130
		EPH (C10-C19)	2014/09/22		78	%	50 - 130
		EPH (C19-C32)	2014/09/22		86	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2014/09/22		99	%	50 - 130
		EPH (C10-C19)	2014/09/22		74	%	50 - 130
		EPH (C19-C32)	2014/09/22		83	%	50 - 130
	Method Blank	O-TERPHENYL (sur.)	2014/09/22		101	%	50 - 130
		EPH (C10-C19)	2014/09/22	<100		mg/kg	
		EPH (C19-C32)	2014/09/22	<100		mg/kg	
	RPD	EPH (C10-C19)	2014/09/22	NC		%	40
		EPH (C19-C32)	2014/09/22	NC		%	40
7646569 NS6	Spiked Blank	Soluble (2:1) pH	2014/09/22		100	%	97 - 103
	RPD	Soluble (2:1) pH	2014/09/22	1.8		%	N/A
7647061 DJ	Matrix Spike	Total Antimony (Sb)	2014/09/22		98	%	75 - 125
		Total Arsenic (As)	2014/09/22		90	%	75 - 125
		Total Barium (Ba)	2014/09/22		NC	%	75 - 125
		Total Beryllium (Be)	2014/09/22		97	%	75 - 125
		Total Cadmium (Cd)	2014/09/22		100	%	75 - 125
		Total Chromium (Cr)	2014/09/22		NC	%	75 - 125
		Total Cobalt (Co)	2014/09/22		94	%	75 - 125
		Total Copper (Cu)	2014/09/22		92	%	75 - 125
		Total Lead (Pb)	2014/09/22		100	%	75 - 125
		Total Lithium (Li)	2014/09/22		NC	%	75 - 125
		Total Manganese (Mn)	2014/09/22		NC	%	75 - 125
		Total Mercury (Hg)	2014/09/22		98	%	75 - 125
		Total Molybdenum (Mo)	2014/09/22		104	%	75 - 125
		Total Nickel (Ni)	2014/09/22		93	%	75 - 125
		Total Selenium (Se)	2014/09/22		95	%	75 - 125
		Total Silver (Ag)	2014/09/22		98	%	75 - 125
		Total Strontium (Sr)	2014/09/22		NC	%	75 - 125
		Total Thallium (Tl)	2014/09/22		103	%	75 - 125
		Total Tin (Sn)	2014/09/22		95	%	75 - 125
		Total Titanium (Ti)	2014/09/22		NC	%	75 - 125
		Total Uranium (U)	2014/09/22		101	%	75 - 125
		Total Vanadium (V)	2014/09/22		93	%	75 - 125
		Total Zinc (Zn)	2014/09/22		NC	%	75 - 125
	QC Standard	Total Aluminum (Al)	2014/09/22		119	%	70 - 130
		Total Antimony (Sb)	2014/09/22		97	%	70 - 130

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7647061 DJ	QC Standard	Total Arsenic (As)	2014/09/22		103	%	70 - 130
		Total Barium (Ba)	2014/09/22		104	%	70 - 130
		Total Cadmium (Cd)	2014/09/22		107	%	70 - 130
		Total Calcium (Ca)	2014/09/22		104	%	70 - 130
		Total Chromium (Cr)	2014/09/22		115	%	70 - 130
		Total Cobalt (Co)	2014/09/22		98	%	70 - 130
		Total Copper (Cu)	2014/09/22		96	%	70 - 130
		Total Iron (Fe)	2014/09/22		103	%	70 - 130
		Total Lead (Pb)	2014/09/22		104	%	70 - 130
		Total Magnesium (Mg)	2014/09/22		104	%	70 - 130
		Total Manganese (Mn)	2014/09/22		105	%	70 - 130
		Total Mercury (Hg)	2014/09/22		100	%	70 - 130
		Total Molybdenum (Mo)	2014/09/22		114	%	70 - 130
		Total Nickel (Ni)	2014/09/22		96	%	70 - 130
		Total Phosphorus (P)	2014/09/22		98	%	70 - 130
		Total Strontium (Sr)	2014/09/22		107	%	70 - 130
		Total Thallium (Tl)	2014/09/22		101	%	70 - 130
		Total Titanium (Ti)	2014/09/22		112	%	70 - 130
		Total Uranium (U)	2014/09/22		108	%	70 - 130
		Total Vanadium (V)	2014/09/22		107	%	70 - 130
		Total Zinc (Zn)	2014/09/22		94	%	70 - 130
	Spiked Blank	Total Antimony (Sb)	2014/09/22		106	%	75 - 125
		Total Arsenic (As)	2014/09/22		91	%	75 - 125
		Total Barium (Ba)	2014/09/22		95	%	75 - 125
		Total Beryllium (Be)	2014/09/22		96	%	75 - 125
		Total Cadmium (Cd)	2014/09/22		93	%	75 - 125
		Total Chromium (Cr)	2014/09/22		97	%	75 - 125
		Total Cobalt (Co)	2014/09/22		96	%	75 - 125
		Total Copper (Cu)	2014/09/22		98	%	75 - 125
		Total Lead (Pb)	2014/09/22		99	%	75 - 125
		Total Lithium (Li)	2014/09/22		89	%	75 - 125
		Total Manganese (Mn)	2014/09/22		97	%	75 - 125
		Total Mercury (Hg)	2014/09/22		101	%	75 - 125
		Total Molybdenum (Mo)	2014/09/22		107	%	75 - 125
		Total Nickel (Ni)	2014/09/22		93	%	75 - 125
		Total Selenium (Se)	2014/09/22		95	%	75 - 125
		Total Silver (Ag)	2014/09/22		93	%	75 - 125
		Total Strontium (Sr)	2014/09/22		94	%	75 - 125
		Total Thallium (Tl)	2014/09/22		100	%	75 - 125
		Total Tin (Sn)	2014/09/22		102	%	75 - 125
		Total Titanium (Ti)	2014/09/22		101	%	75 - 125
		Total Uranium (U)	2014/09/22		93	%	75 - 125
		Total Vanadium (V)	2014/09/22		91	%	75 - 125
		Total Zinc (Zn)	2014/09/22		95	%	75 - 125
	Method Blank	Total Aluminum (Al)	2014/09/22	<100		mg/kg	
		Total Antimony (Sb)	2014/09/22	<0.10		mg/kg	
		Total Arsenic (As)	2014/09/22	<0.50		mg/kg	
		Total Barium (Ba)	2014/09/22	<0.10		mg/kg	
		Total Beryllium (Be)	2014/09/22	<0.40		mg/kg	
		Total Bismuth (Bi)	2014/09/22	<0.10		mg/kg	
		Total Cadmium (Cd)	2014/09/22	<0.050		mg/kg	
		Total Calcium (Ca)	2014/09/22	<100		mg/kg	
		Total Chromium (Cr)	2014/09/22	<1.0		mg/kg	
		Total Cobalt (Co)	2014/09/22	<0.30		mg/kg	
		Total Copper (Cu)	2014/09/22	<0.50		mg/kg	

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7647061 DJ	Method Blank	Total Iron (Fe)	2014/09/22	<100		mg/kg	
		Total Lead (Pb)	2014/09/22	<0.10		mg/kg	
		Total Lithium (Li)	2014/09/22	<5.0		mg/kg	
		Total Magnesium (Mg)	2014/09/22	<100		mg/kg	
		Total Manganese (Mn)	2014/09/22	<0.20		mg/kg	
		Total Mercury (Hg)	2014/09/22	<0.050		mg/kg	
		Total Molybdenum (Mo)	2014/09/22	<0.10		mg/kg	
		Total Nickel (Ni)	2014/09/22	<0.80		mg/kg	
		Total Phosphorus (P)	2014/09/22	<10		mg/kg	
		Total Potassium (K)	2014/09/22	<100		mg/kg	
		Total Selenium (Se)	2014/09/22	<0.50		mg/kg	
		Total Silver (Ag)	2014/09/22	<0.050		mg/kg	
		Total Sodium (Na)	2014/09/22	<100		mg/kg	
		Total Strontium (Sr)	2014/09/22	<0.10		mg/kg	
		Total Thallium (Tl)	2014/09/22	<0.050		mg/kg	
		Total Tin (Sn)	2014/09/22	<0.10		mg/kg	
		Total Titanium (Ti)	2014/09/22	<1.0		mg/kg	
		Total Uranium (U)	2014/09/22	<0.050		mg/kg	
		Total Vanadium (V)	2014/09/22	<2.0		mg/kg	
		Total Zinc (Zn)	2014/09/22	<1.0		mg/kg	
		Total Zirconium (Zr)	2014/09/22	<0.50		mg/kg	
	RPD	Total Aluminum (Al)	2014/09/22	0.9		%	35
		Total Antimony (Sb)	2014/09/22	NC		%	30
		Total Arsenic (As)	2014/09/22	NC		%	30
		Total Barium (Ba)	2014/09/22	4.9		%	35
		Total Beryllium (Be)	2014/09/22	8.3		%	30
		Total Bismuth (Bi)	2014/09/22	NC		%	30
		Total Cadmium (Cd)	2014/09/22	3.9		%	30
		Total Calcium (Ca)	2014/09/22	9.0		%	30
		Total Chromium (Cr)	2014/09/22	6.4		%	30
		Total Cobalt (Co)	2014/09/22	NC		%	30
		Total Copper (Cu)	2014/09/22	11.6		%	30
		Total Iron (Fe)	2014/09/22	10.1		%	30
		Total Lead (Pb)	2014/09/22	2.4		%	35
		Total Magnesium (Mg)	2014/09/22	NC		%	30
		Total Manganese (Mn)	2014/09/22	5.2		%	30
		Total Mercury (Hg)	2014/09/22	NC		%	35
		Total Molybdenum (Mo)	2014/09/22	3.3		%	35
		Total Nickel (Ni)	2014/09/22	11.4		%	30
		Total Phosphorus (P)	2014/09/22	5.4		%	30
		Total Potassium (K)	2014/09/22	1.2		%	35
		Total Selenium (Se)	2014/09/22	NC		%	30
		Total Silver (Ag)	2014/09/22	9.0		%	35
		Total Sodium (Na)	2014/09/22	NC		%	35
		Total Strontium (Sr)	2014/09/22	1.2		%	35
		Total Thallium (Tl)	2014/09/22	NC		%	30
		Total Tin (Sn)	2014/09/22	6.5		%	35
		Total Titanium (Ti)	2014/09/22	3.0		%	35
		Total Vanadium (V)	2014/09/22	1.9		%	30
		Total Zinc (Zn)	2014/09/22	7.5		%	30
		Total Zirconium (Zr)	2014/09/22	1.8		%	30
7648427 CG5	Method Blank	Moisture	2014/09/24	<0.30		%	
7648515 RW4	Matrix Spike [KP7883-01]	2,4,6-TRIBROMOPHENOL (sur.)	2014/09/24		111	%	19 - 122
		2-FLUOROPHENOL (sur.)	2014/09/24		76	%	25 - 121

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7648515 RW4	Matrix Spike						
	[KP7883-01]	Phenol	2014/09/24		125	%	60 - 130
		2-chlorophenol	2014/09/24		113	%	27 - 123
		3 & 4-chlorophenol	2014/09/24		114	%	27 - 123
		2-methylphenol	2014/09/24		115	%	25 - 120
		3 & 4-methylphenol	2014/09/24		114	%	25 - 120
		2-nitrophenol	2014/09/24		110	%	29 - 182
		2,4-dimethylphenol	2014/09/24		100	%	60 - 130
		2,4 + 2,5-Dichlorophenol	2014/09/24		117	%	39 - 135
		2,3-Dichlorophenol	2014/09/24		101	%	39 - 135
		2,6-dichlorophenol	2014/09/24		128	%	39 - 135
		3,5-Dichlorophenol	2014/09/24		116	%	39 - 135
		3,4-Dichlorophenol	2014/09/24		108	%	39 - 135
		2,4,5-trichlorophenol	2014/09/24		122	%	37 - 144
		2,4,6-trichlorophenol	2014/09/24		122	%	37 - 144
		2,3,5-trichlorophenol	2014/09/24		119	%	37 - 144
		2,3,6-Trichlorophenol	2014/09/24		123	%	37 - 144
		2,3,4-trichlorophenol	2014/09/24		121	%	37 - 144
		3,4,5-Trichlorophenol	2014/09/24		142	%	37 - 144
		2,4-dinitrophenol	2014/09/24		148	%	1 - 191
		4,6-dinitro-2-methylphenol	2014/09/24		130	%	1 - 181
		2,3,4,6-tetrachlorophenol	2014/09/24		126	%	14 - 176
		2,3,4,5-tetrachlorophenol	2014/09/24		121	%	14 - 176
		2,3,5,6-tetrachlorophenol	2014/09/24		121	%	14 - 176
		4-nitrophenol	2014/09/24		112	%	1 - 132
		2,6-Dimethylphenol	2014/09/24		104	%	60 - 130
		3,4-Dimethylphenol	2014/09/24		104	%	60 - 130
		Pentachlorophenol	2014/09/24		132	%	14 - 176
	Spiked Blank	2,4,6-TRIBROMOPHENOL (sur.)	2014/09/25		114	%	19 - 122
		2-FLUOROPHENOL (sur.)	2014/09/25		71	%	25 - 121
		Phenol	2014/09/25		104	%	60 - 130
		2-chlorophenol	2014/09/25		93	%	27 - 123
		3 & 4-chlorophenol	2014/09/25		117	%	27 - 123
		2-methylphenol	2014/09/25		100	%	25 - 120
		3 & 4-methylphenol	2014/09/25		104	%	25 - 120
		2-nitrophenol	2014/09/25		89	%	29 - 182
		2,4-dimethylphenol	2014/09/25		99	%	60 - 130
		2,4 + 2,5-Dichlorophenol	2014/09/25		105	%	39 - 135
		2,3-Dichlorophenol	2014/09/25		103	%	39 - 135
		2,6-dichlorophenol	2014/09/25		109	%	39 - 135
		3,5-Dichlorophenol	2014/09/25		116	%	39 - 135
		3,4-Dichlorophenol	2014/09/25		122	%	39 - 135
		2,4,5-trichlorophenol	2014/09/25		126	%	37 - 144
		2,4,6-trichlorophenol	2014/09/25		122	%	37 - 144
		2,3,5-trichlorophenol	2014/09/25		120	%	37 - 144
		2,3,6-Trichlorophenol	2014/09/25		126	%	37 - 144
		2,3,4-trichlorophenol	2014/09/25		130	%	37 - 144
		3,4,5-Trichlorophenol	2014/09/25		137	%	37 - 144
		2,4-dinitrophenol	2014/09/25		124	%	1 - 191
		4,6-dinitro-2-methylphenol	2014/09/25		108	%	1 - 181
		2,3,4,6-tetrachlorophenol	2014/09/25		130	%	14 - 176
		2,3,4,5-tetrachlorophenol	2014/09/25		129	%	14 - 176
		2,3,5,6-tetrachlorophenol	2014/09/25		120	%	14 - 176
		4-nitrophenol	2014/09/25		117	%	1 - 132
		2,6-Dimethylphenol	2014/09/25		92	%	60 - 130

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Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7648515 RW4	Spiked Blank	3,4-Dimethylphenol	2014/09/25		104	%	60 - 130
		Pentachlorophenol	2014/09/25		128	%	14 - 176
	Method Blank	2,4,6-TRIBROMOPHENOL (sur.)	2014/09/24		104	%	19 - 122
		2-FLUOROPHENOL (sur.)	2014/09/24		65	%	25 - 121
		Phenol	2014/09/24	<0.050		mg/kg	
		2-chlorophenol	2014/09/24	<0.0050		mg/kg	
		3 & 4-chlorophenol	2014/09/24	<0.0050		mg/kg	
		2-methylphenol	2014/09/24	<0.050		mg/kg	
		3 & 4-methylphenol	2014/09/24	<0.050		mg/kg	
		2-nitrophenol	2014/09/24	<0.050		mg/kg	
		2,4-dimethylphenol	2014/09/24	<0.050		mg/kg	
		2,4 + 2,5-Dichlorophenol	2014/09/24	<0.0050		mg/kg	
		2,3-Dichlorophenol	2014/09/24	<0.0050		mg/kg	
		2,6-dichlorophenol	2014/09/24	<0.0050		mg/kg	
		3,5-Dichlorophenol	2014/09/24	<0.0050		mg/kg	
		3,4-Dichlorophenol	2014/09/24	<0.0050		mg/kg	
		2,4,5-trichlorophenol	2014/09/24	<0.0050		mg/kg	
		2,4,6-trichlorophenol	2014/09/24	<0.0050		mg/kg	
		2,3,5-trichlorophenol	2014/09/24	<0.0050		mg/kg	
		2,3,6-Trichlorophenol	2014/09/24	<0.0050		mg/kg	
		2,3,4-trichlorophenol	2014/09/24	<0.0050		mg/kg	
		3,4,5-Trichlorophenol	2014/09/24	<0.0050		mg/kg	
		2,4-dinitrophenol	2014/09/24	<0.080		mg/kg	
		4,6-dinitro-2-methylphenol	2014/09/24	<0.080		mg/kg	
		2,3,4,6-tetrachlorophenol	2014/09/24	<0.0050		mg/kg	
		2,3,4,5-tetrachlorophenol	2014/09/24	<0.0050		mg/kg	
		2,3,5,6-tetrachlorophenol	2014/09/24	<0.0050		mg/kg	
		4-nitrophenol	2014/09/24	<0.050		mg/kg	
		2,6-Dimethylphenol	2014/09/24	<0.050		mg/kg	
		3,4-Dimethylphenol	2014/09/24	<0.050		mg/kg	
		Pentachlorophenol	2014/09/24	<0.0050		mg/kg	
	RPD [KP7883-01]	Phenol	2014/09/24	NC (1)		%	50
		2-chlorophenol	2014/09/24	NC (1)		%	50
		3 & 4-chlorophenol	2014/09/24	NC (2)		%	50
		2-methylphenol	2014/09/24	NC (1)		%	50
		3 & 4-methylphenol	2014/09/24	NC (1)		%	50
		2-nitrophenol	2014/09/24	NC (1)		%	50
		2,4-dimethylphenol	2014/09/24	NC (1)		%	50
		2,4 + 2,5-Dichlorophenol	2014/09/24	NC (1)		%	50
		2,3-Dichlorophenol	2014/09/24	NC (1)		%	50
		2,6-dichlorophenol	2014/09/24	NC (1)		%	50
		3,5-Dichlorophenol	2014/09/24	NC (1)		%	50
		3,4-Dichlorophenol	2014/09/24	NC (1)		%	50
		2,4,5-trichlorophenol	2014/09/24	NC (1)		%	50
		2,4,6-trichlorophenol	2014/09/24	NC (1)		%	50
		2,3,5-trichlorophenol	2014/09/24	NC (1)		%	50
		2,3,6-Trichlorophenol	2014/09/24	NC (1)		%	50
		2,3,4-trichlorophenol	2014/09/24	NC (1)		%	50
		3,4,5-Trichlorophenol	2014/09/24	NC (1)		%	50
		2,4-dinitrophenol	2014/09/24	NC (1)		%	50
		4,6-dinitro-2-methylphenol	2014/09/24	NC (1)		%	50
		2,3,4,6-tetrachlorophenol	2014/09/24	NC (1)		%	50
		2,3,4,5-tetrachlorophenol	2014/09/24	NC (1)		%	50
		2,3,5,6-tetrachlorophenol	2014/09/24	NC (1)		%	50
		4-nitrophenol	2014/09/24	NC (1)		%	50

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Attention: Lora J Paul
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P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7648515 RW4	RPD [KP7883-01]	2,6-Dimethylphenol	2014/09/24	NC (1)		%	50
		3,4-Dimethylphenol	2014/09/24	NC (1)		%	50
		Pentachlorophenol	2014/09/24	NC (1)		%	50
7648571 PN2	Matrix Spike	O-TERPHENYL (sur.)	2014/09/23		91	%	50 - 130
		EPH (C10-C19)	2014/09/23		83	%	50 - 130
		EPH (C19-C32)	2014/09/23		92	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2014/09/23		92	%	50 - 130
		EPH (C10-C19)	2014/09/23		82	%	50 - 130
		EPH (C19-C32)	2014/09/23		91	%	50 - 130
	Method Blank	O-TERPHENYL (sur.)	2014/09/23		91	%	50 - 130
		EPH (C10-C19)	2014/09/23	<100		mg/kg	
		EPH (C19-C32)	2014/09/23	<100		mg/kg	
	RPD	EPH (C10-C19)	2014/09/23	NC		%	40
		EPH (C19-C32)	2014/09/23	NC		%	40
7648583 CGP	Matrix Spike	D10-ANTHRACENE (sur.)	2014/09/23		109	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/23		106	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/23		108	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/23		118	%	60 - 130
		Naphthalene	2014/09/23		98	%	50 - 130
		2-Methylnaphthalene	2014/09/23		100	%	50 - 130
		Acenaphthylene	2014/09/23		99	%	50 - 130
		Acenaphthene	2014/09/23		102	%	50 - 130
		Fluorene	2014/09/23		98	%	50 - 130
		Phenanthrene	2014/09/23		99	%	60 - 130
		Anthracene	2014/09/23		104	%	60 - 130
		Fluoranthene	2014/09/23		107	%	60 - 130
		Pyrene	2014/09/23		107	%	60 - 130
		Benzo(a)anthracene	2014/09/23		104	%	60 - 130
		Chrysene	2014/09/23		107	%	60 - 130
		Benzo(b&j)fluoranthene	2014/09/23		102	%	60 - 130
		Benzo(k)fluoranthene	2014/09/23		106	%	60 - 130
		Benzo(a)pyrene	2014/09/23		101	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2014/09/23		94	%	60 - 130
		Dibenz(a,h)anthracene	2014/09/23		89	%	60 - 130
		Benzo(g,h,i)perylene	2014/09/23		92	%	60 - 130
	Spiked Blank	D10-ANTHRACENE (sur.)	2014/09/23		103	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/23		99	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/23		103	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/23		111	%	60 - 130
		Naphthalene	2014/09/23		97	%	50 - 130
		2-Methylnaphthalene	2014/09/23		98	%	50 - 130
		Acenaphthylene	2014/09/23		96	%	50 - 130
		Acenaphthene	2014/09/23		99	%	50 - 130
		Fluorene	2014/09/23		96	%	50 - 130
		Phenanthrene	2014/09/23		99	%	60 - 130
		Anthracene	2014/09/23		103	%	60 - 130
		Fluoranthene	2014/09/23		106	%	60 - 130
		Pyrene	2014/09/23		107	%	60 - 130
		Benzo(a)anthracene	2014/09/23		105	%	60 - 130
		Chrysene	2014/09/23		108	%	60 - 130
		Benzo(b&j)fluoranthene	2014/09/23		97	%	60 - 130
		Benzo(k)fluoranthene	2014/09/23		105	%	60 - 130
		Benzo(a)pyrene	2014/09/23		98	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2014/09/23		82	%	60 - 130
		Dibenz(a,h)anthracene	2014/09/23		77	%	60 - 130

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Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7648583	CGP	Spiked Blank	Benzo(g,h,i)perylene	2014/09/23		81	%	60 - 130
		Method Blank	D10-ANTHRACENE (sur.)	2014/09/23		104	%	60 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/09/23		100	%	50 - 130
			D8-NAPHTHALENE (sur.)	2014/09/23		103	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/09/23		111	%	60 - 130
			Naphthalene	2014/09/23	<0.050		mg/kg	
			2-Methylnaphthalene	2014/09/23	<0.050		mg/kg	
			Acenaphthylene	2014/09/23	<0.050		mg/kg	
			Acenaphthene	2014/09/23	<0.050		mg/kg	
			Fluorene	2014/09/23	<0.050		mg/kg	
			Phenanthrene	2014/09/23	<0.050		mg/kg	
			Anthracene	2014/09/23	<0.050		mg/kg	
			Fluoranthene	2014/09/23	<0.050		mg/kg	
			Pyrene	2014/09/23	<0.050		mg/kg	
			Benzo(a)anthracene	2014/09/23	<0.050		mg/kg	
			Chrysene	2014/09/23	<0.050		mg/kg	
			Benzo(b&j)fluoranthene	2014/09/23	<0.050		mg/kg	
			Benzo(b)fluoranthene	2014/09/23	<0.050		mg/kg	
			Benzo(k)fluoranthene	2014/09/23	<0.050		mg/kg	
			Benzo(a)pyrene	2014/09/23	<0.050		mg/kg	
			Indeno(1,2,3-cd)pyrene	2014/09/23	<0.050		mg/kg	
			Dibenz(a,h)anthracene	2014/09/23	<0.050		mg/kg	
			Benzo(g,h,i)perylene	2014/09/23	<0.050		mg/kg	
		RPD	Naphthalene	2014/09/23	NC		%	50
			2-Methylnaphthalene	2014/09/23	NC		%	50
			Acenaphthylene	2014/09/23	NC		%	50
			Acenaphthene	2014/09/23	NC		%	50
			Fluorene	2014/09/23	NC		%	50
			Phenanthrene	2014/09/23	NC		%	50
			Anthracene	2014/09/23	NC		%	50
			Fluoranthene	2014/09/23	NC		%	50
			Pyrene	2014/09/23	NC		%	50
			Benzo(a)anthracene	2014/09/23	NC		%	50
			Chrysene	2014/09/23	NC		%	50
			Benzo(b&j)fluoranthene	2014/09/23	NC		%	50
			Benzo(b)fluoranthene	2014/09/23	NC		%	50
			Benzo(k)fluoranthene	2014/09/23	NC		%	50
			Benzo(a)pyrene	2014/09/23	NC		%	50
			Indeno(1,2,3-cd)pyrene	2014/09/23	NC		%	50
			Dibenz(a,h)anthracene	2014/09/23	NC		%	50
			Benzo(g,h,i)perylene	2014/09/23	NC		%	50
7649890	KL	Matrix Spike						
		[KP7887-01]	1,4-Difluorobenzene (sur.)	2014/09/26		102	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/09/26		143 (3)	%	70 - 130
			D10-ETHYLBENZENE (sur.)	2014/09/26		103	%	50 - 130
			D4-1,2-Dichloroethane (sur.)	2014/09/26		101	%	70 - 130
			Chloromethane	2014/09/26		68	%	40 - 150
			Vinyl chloride	2014/09/26		91	%	40 - 150
			Bromomethane	2014/09/26		73	%	40 - 150
			Chloroethane	2014/09/26		85	%	40 - 150
			Trichlorofluoromethane	2014/09/26		104	%	40 - 150
			1,1-dichloroethene	2014/09/26		89	%	60 - 140
			Dichloromethane	2014/09/26		98	%	60 - 140
			trans-1,2-dichloroethene	2014/09/26		85	%	60 - 140
			1,1-dichloroethane	2014/09/26		83	%	60 - 140

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7649890 KL	Matrix Spike						
	[KP7887-01]	cis-1,2-dichloroethene	2014/09/26		86	%	60 - 140
		Chloroform	2014/09/26		90	%	60 - 140
		1,1,1-trichloroethane	2014/09/26		94	%	60 - 140
		1,2-dichloroethane	2014/09/26		84	%	60 - 140
		Carbon tetrachloride	2014/09/26		111	%	60 - 140
		Benzene	2014/09/26		82	%	60 - 140
		1,2-dichloropropane	2014/09/26		96	%	60 - 140
		Trichloroethene	2014/09/26		88	%	60 - 140
		Bromodichloromethane	2014/09/26		94	%	60 - 140
		cis-1,3-dichloropropene	2014/09/26		86	%	60 - 140
		trans-1,3-dichloropropene	2014/09/26		83	%	60 - 140
		1,1,2-trichloroethane	2014/09/26		97	%	60 - 140
		Toluene	2014/09/26		88	%	60 - 140
		Chlorodibromomethane	2014/09/26		98	%	60 - 140
		Tetrachloroethene	2014/09/26		93	%	60 - 140
		Chlorobenzene	2014/09/26		96	%	60 - 140
		1,1,1,2-tetrachloroethane	2014/09/26		112	%	60 - 140
		Ethylbenzene	2014/09/26		111	%	60 - 140
		m & p-Xylene	2014/09/26		111	%	60 - 140
		Bromoform	2014/09/26		107	%	60 - 140
		Styrene	2014/09/26		97	%	60 - 140
		o-Xylene	2014/09/26		116	%	60 - 140
		1,1,2,2-tetrachloroethane	2014/09/26		155 (4)	%	60 - 140
		1,2-dichlorobenzene	2014/09/26		162 (4)	%	60 - 140
		1,3-dichlorobenzene	2014/09/26		145 (4)	%	60 - 140
		1,4-dichlorobenzene	2014/09/26		145 (4)	%	60 - 140
		Bromobenzene	2014/09/26		111	%	60 - 140
		Dibromomethane	2014/09/26		94	%	60 - 140
	Spiked Blank	1,4-Difluorobenzene (sur.)	2014/09/23		103	%	70 - 130
		4-Bromofluorobenzene (sur.)	2014/09/23		108	%	70 - 130
		D10-ETHYLBENZENE (sur.)	2014/09/23		108	%	50 - 130
		D4-1,2-Dichloroethane (sur.)	2014/09/23		120	%	70 - 130
		Chloromethane	2014/09/23		77	%	40 - 150
		Vinyl chloride	2014/09/23		116	%	40 - 150
		Bromomethane	2014/09/23		88	%	40 - 150
		Chloroethane	2014/09/23		95	%	40 - 150
		Trichlorofluoromethane	2014/09/23		125	%	40 - 150
		1,1-dichloroethene	2014/09/23		113	%	60 - 140
		Dichloromethane	2014/09/23		130	%	60 - 140
		trans-1,2-dichloroethene	2014/09/23		113	%	60 - 140
		1,1-dichloroethane	2014/09/23		112	%	60 - 140
		cis-1,2-dichloroethene	2014/09/23		117	%	60 - 140
		Chloroform	2014/09/23		114	%	60 - 140
		1,1,1-trichloroethane	2014/09/23		116	%	60 - 140
		1,2-dichloroethane	2014/09/23		110	%	60 - 140
		Carbon tetrachloride	2014/09/23		117	%	60 - 140
		Benzene	2014/09/23		116	%	60 - 140
		1,2-dichloropropane	2014/09/23		114	%	60 - 140
		Trichloroethene	2014/09/23		114	%	60 - 140
		Bromodichloromethane	2014/09/23		114	%	60 - 140
		cis-1,3-dichloropropene	2014/09/23		117	%	60 - 140
		trans-1,3-dichloropropene	2014/09/23		116	%	60 - 140
		1,1,2-trichloroethane	2014/09/23		121	%	60 - 140
		Toluene	2014/09/23		114	%	60 - 140

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7649890 KL	Spiked Blank	Chlorodibromomethane	2014/09/23		113	%	60 - 140
		Tetrachloroethene	2014/09/23		114	%	60 - 140
		Chlorobenzene	2014/09/23		112	%	60 - 140
		1,1,1,2-tetrachloroethane	2014/09/23		117	%	60 - 140
		Ethylbenzene	2014/09/23		119	%	60 - 140
		m & p-Xylene	2014/09/23		116	%	60 - 140
		Bromoform	2014/09/23		108	%	60 - 140
		Styrene	2014/09/23		105	%	60 - 140
		o-Xylene	2014/09/23		111	%	60 - 140
		1,1,2,2-tetrachloroethane	2014/09/23		102	%	60 - 140
		1,2-dichlorobenzene	2014/09/23		106	%	60 - 140
		1,3-dichlorobenzene	2014/09/23		113	%	60 - 140
		1,4-dichlorobenzene	2014/09/23		109	%	60 - 140
		Bromobenzene	2014/09/23		111	%	60 - 140
		Dibromomethane	2014/09/23		117	%	60 - 140
		VH C6-C10	2014/09/23		79	%	60 - 140
	Method Blank	1,4-Difluorobenzene (sur.)	2014/09/23		102	%	70 - 130
		4-Bromofluorobenzene (sur.)	2014/09/23		105	%	70 - 130
		D10-ETHYLBENZENE (sur.)	2014/09/23		117	%	50 - 130
		D4-1,2-Dichloroethane (sur.)	2014/09/23		105	%	70 - 130
		Chloromethane	2014/09/23	<0.10		mg/kg	
		Vinyl chloride	2014/09/23	<0.060		mg/kg	
		Bromomethane	2014/09/23	<0.30		mg/kg	
		Chloroethane	2014/09/23	<0.10		mg/kg	
		Trichlorofluoromethane	2014/09/23	<0.20		mg/kg	
		1,1-dichloroethene	2014/09/23	<0.025		mg/kg	
		Dichloromethane	2014/09/23	<0.10		mg/kg	
		trans-1,2-dichloroethene	2014/09/23	<0.025		mg/kg	
		1,1-dichloroethane	2014/09/23	<0.025		mg/kg	
		cis-1,2-dichloroethene	2014/09/23	<0.025		mg/kg	
		Chloroform	2014/09/23	<0.050		mg/kg	
		1,1,1-trichloroethane	2014/09/23	<0.025		mg/kg	
		1,2-dichloroethane	2014/09/23	<0.025		mg/kg	
		Carbon tetrachloride	2014/09/23	<0.025		mg/kg	
		Benzene	2014/09/23	<0.0050		mg/kg	
		Methyl-tert-butylether (MTBE)	2014/09/23	<0.10		mg/kg	
		1,2-dichloropropane	2014/09/23	<0.025		mg/kg	
		Trichloroethene	2014/09/23	<0.0090		mg/kg	
		Bromodichloromethane	2014/09/23	<0.050		mg/kg	
		cis-1,3-dichloropropene	2014/09/23	<0.050		mg/kg	
		trans-1,3-dichloropropene	2014/09/23	<0.050		mg/kg	
		1,3-Butadiene	2014/09/23	<0.10		mg/kg	
		1,1,2-trichloroethane	2014/09/23	<0.025		mg/kg	
		Toluene	2014/09/23	<0.020		mg/kg	
		Chlorodibromomethane	2014/09/23	<0.050		mg/kg	
		Tetrachloroethene	2014/09/23	<0.025		mg/kg	
		Chlorobenzene	2014/09/23	<0.025		mg/kg	
		1,1,1,2-tetrachloroethane	2014/09/23	<0.025		mg/kg	
		Ethylbenzene	2014/09/23	<0.010		mg/kg	
		m & p-Xylene	2014/09/23	<0.040		mg/kg	
		Bromoform	2014/09/23	<0.050		mg/kg	
		Styrene	2014/09/23	<0.030		mg/kg	
		o-Xylene	2014/09/23	<0.040		mg/kg	
		Xylenes (Total)	2014/09/23	<0.040		mg/kg	
		1,1,2,2-tetrachloroethane	2014/09/23	<0.025		mg/kg	

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Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7649890 KL	Method Blank	1,2-dichlorobenzene	2014/09/23	<0.025		mg/kg	
		1,3-dichlorobenzene	2014/09/23	<0.025		mg/kg	
		1,4-dichlorobenzene	2014/09/23	<0.025		mg/kg	
		Bromobenzene	2014/09/23	<0.20		mg/kg	
		Dibromomethane	2014/09/23	<0.20		mg/kg	
		VH C6-C10	2014/09/23	<10		mg/kg	
	RPD [KP7887-01]	Chloromethane	2014/09/26	NC		%	40
		Vinyl chloride	2014/09/26	NC		%	40
		Bromomethane	2014/09/26	NC		%	40
		Chloroethane	2014/09/26	NC		%	40
		Trichlorofluoromethane	2014/09/26	NC		%	40
		1,1-dichloroethene	2014/09/26	NC		%	40
		Dichloromethane	2014/09/26	NC		%	40
		trans-1,2-dichloroethene	2014/09/26	NC		%	40
		1,1-dichloroethane	2014/09/26	NC		%	40
		cis-1,2-dichloroethene	2014/09/26	NC		%	40
		Chloroform	2014/09/26	NC		%	40
		1,1,1-trichloroethane	2014/09/26	NC		%	40
		1,2-dichloroethane	2014/09/26	NC		%	40
		Carbon tetrachloride	2014/09/26	NC		%	40
		Benzene	2014/09/26	20.3		%	40
		Methyl-tert-butylether (MTBE)	2014/09/26	NC		%	40
		1,2-dichloropropane	2014/09/26	NC		%	40
		Trichloroethene	2014/09/26	NC		%	40
		Bromodichloromethane	2014/09/26	NC		%	40
		cis-1,3-dichloropropene	2014/09/26	NC		%	40
		trans-1,3-dichloropropene	2014/09/26	NC		%	40
		1,3-Butadiene	2014/09/26	NC		%	40
		1,1,2-trichloroethane	2014/09/26	NC		%	40
		Toluene	2014/09/26	2.9		%	40
		Chlorodibromomethane	2014/09/26	NC		%	40
		Tetrachloroethene	2014/09/26	NC		%	40
		Chlorobenzene	2014/09/26	NC		%	40
		1,1,1,2-tetrachloroethane	2014/09/26	NC		%	40
		Ethylbenzene	2014/09/26	2.0		%	40
		m & p-Xylene	2014/09/26	8.6		%	40
		Bromoform	2014/09/26	NC		%	40
		Styrene	2014/09/26	NC		%	40
		o-Xylene	2014/09/26	4.7		%	40
		Xylenes (Total)	2014/09/26	7.3		%	40
		1,1,2,2-tetrachloroethane	2014/09/26	NC		%	40
		1,2-dichlorobenzene	2014/09/26	NC		%	40
		1,3-dichlorobenzene	2014/09/26	NC		%	40
		1,4-dichlorobenzene	2014/09/26	NC		%	40
		Bromobenzene	2014/09/26	NC		%	40
		Dibromomethane	2014/09/26	NC		%	40
		VH C6-C10	2014/09/26	46.3 (4)		%	40
7650315 PN2	Matrix Spike	O-TERPHENYL (sur.)	2014/09/24		88	%	50 - 130
		EPH (C10-C19)	2014/09/24		83	%	50 - 130
		EPH (C19-C32)	2014/09/24		92	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2014/09/24		94	%	50 - 130
		EPH (C10-C19)	2014/09/24		83	%	50 - 130
		EPH (C19-C32)	2014/09/24		91	%	50 - 130
	Method Blank	O-TERPHENYL (sur.)	2014/09/24		100	%	50 - 130
		EPH (C10-C19)	2014/09/24	<100		mg/kg	

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Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7650315 PN2	Method Blank	EPH (C19-C32)	2014/09/24	<100		mg/kg	
	RPD	EPH (C10-C19)	2014/09/24	NC		%	40
		EPH (C19-C32)	2014/09/24	NC		%	40
7650323 CGP	Matrix Spike	D10-ANTHRACENE (sur.)	2014/09/23		93	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/23		95	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/23		98	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/23		101	%	60 - 130
		Naphthalene	2014/09/23		91	%	50 - 130
		2-Methylnaphthalene	2014/09/23		89	%	50 - 130
		Acenaphthylene	2014/09/23		86	%	50 - 130
		Acenaphthene	2014/09/23		88	%	50 - 130
		Fluorene	2014/09/23		84	%	50 - 130
		Phenanthrene	2014/09/23		86	%	60 - 130
		Anthracene	2014/09/23		84	%	60 - 130
		Fluoranthene	2014/09/23		86	%	60 - 130
		Pyrene	2014/09/23		91	%	60 - 130
		Benzo(a)anthracene	2014/09/23		84	%	60 - 130
		Chrysene	2014/09/23		87	%	60 - 130
		Benzo(b&j)fluoranthene	2014/09/23		83	%	60 - 130
		Benzo(k)fluoranthene	2014/09/23		90	%	60 - 130
		Benzo(a)pyrene	2014/09/23		77	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2014/09/23		78	%	60 - 130
		Dibenz(a,h)anthracene	2014/09/23		77	%	60 - 130
		Benzo(g,h,i)perylene	2014/09/23		74	%	60 - 130
	Spiked Blank	D10-ANTHRACENE (sur.)	2014/09/23		101	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/23		100	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/23		102	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/23		108	%	60 - 130
		Naphthalene	2014/09/23		96	%	50 - 130
		2-Methylnaphthalene	2014/09/23		96	%	50 - 130
		Acenaphthylene	2014/09/23		93	%	50 - 130
		Acenaphthene	2014/09/23		96	%	50 - 130
		Fluorene	2014/09/23		91	%	50 - 130
		Phenanthrene	2014/09/23		93	%	60 - 130
		Anthracene	2014/09/23		97	%	60 - 130
		Fluoranthene	2014/09/23		94	%	60 - 130
		Pyrene	2014/09/23		101	%	60 - 130
		Benzo(a)anthracene	2014/09/23		94	%	60 - 130
		Chrysene	2014/09/23		96	%	60 - 130
		Benzo(b&j)fluoranthene	2014/09/23		101	%	60 - 130
		Benzo(k)fluoranthene	2014/09/23		97	%	60 - 130
		Benzo(a)pyrene	2014/09/23		91	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2014/09/23		92	%	60 - 130
		Dibenz(a,h)anthracene	2014/09/23		86	%	60 - 130
		Benzo(g,h,i)perylene	2014/09/23		89	%	60 - 130
	Method Blank	D10-ANTHRACENE (sur.)	2014/09/23		103	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/23		103	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/23		105	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/23		108	%	60 - 130
		Naphthalene	2014/09/23	<0.050		mg/kg	
		2-Methylnaphthalene	2014/09/23	<0.050		mg/kg	
		Acenaphthylene	2014/09/23	<0.050		mg/kg	
		Acenaphthene	2014/09/23	<0.050		mg/kg	
		Fluorene	2014/09/23	<0.050		mg/kg	
		Phenanthrene	2014/09/23	<0.050		mg/kg	

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Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7650323 CGP	Method Blank	Anthracene	2014/09/23	<0.050		mg/kg	
		Fluoranthene	2014/09/23	<0.050		mg/kg	
		Pyrene	2014/09/23	<0.050		mg/kg	
		Benzo(a)anthracene	2014/09/23	<0.050		mg/kg	
		Chrysene	2014/09/23	<0.050		mg/kg	
		Benzo(b&j)fluoranthene	2014/09/23	<0.050		mg/kg	
		Benzo(b)fluoranthene	2014/09/23	<0.050		mg/kg	
		Benzo(k)fluoranthene	2014/09/23	<0.050		mg/kg	
		Benzo(a)pyrene	2014/09/23	<0.050		mg/kg	
		Indeno(1,2,3-cd)pyrene	2014/09/23	<0.050		mg/kg	
		Dibenz(a,h)anthracene	2014/09/23	<0.050		mg/kg	
		Benzo(g,h,i)perylene	2014/09/23	<0.050		mg/kg	
	RPD	Naphthalene	2014/09/23	NC		%	50
		2-Methylnaphthalene	2014/09/23	NC		%	50
		Acenaphthylene	2014/09/23	NC		%	50
		Acenaphthene	2014/09/23	NC		%	50
		Fluorene	2014/09/23	NC		%	50
		Phenanthrene	2014/09/23	NC		%	50
		Anthracene	2014/09/23	NC		%	50
		Fluoranthene	2014/09/23	NC		%	50
		Pyrene	2014/09/23	NC		%	50
		Benzo(a)anthracene	2014/09/23	NC		%	50
		Chrysene	2014/09/23	NC		%	50
		Benzo(b&j)fluoranthene	2014/09/23	NC		%	50
		Benzo(k)fluoranthene	2014/09/23	NC		%	50
		Benzo(a)pyrene	2014/09/23	NC		%	50
		Indeno(1,2,3-cd)pyrene	2014/09/23	NC		%	50
		Dibenz(a,h)anthracene	2014/09/23	NC		%	50
		Benzo(g,h,i)perylene	2014/09/23	NC		%	50
7650832 NS6	Spiked Blank	Soluble (2:1) pH	2014/09/24		101	%	97 - 103
	RPD	Soluble (2:1) pH	2014/09/24	0.3		%	N/A
7651208 CGP	Matrix Spike	D10-ANTHRACENE (sur.)	2014/09/24		101	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/24		102	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/24		101	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/24		112	%	60 - 130
		Naphthalene	2014/09/24		94	%	50 - 130
		2-Methylnaphthalene	2014/09/24		96	%	50 - 130
		Acenaphthylene	2014/09/24		96	%	50 - 130
		Acenaphthene	2014/09/24		98	%	50 - 130
		Fluorene	2014/09/24		96	%	50 - 130
		Phenanthrene	2014/09/24		96	%	60 - 130
		Anthracene	2014/09/24		100	%	60 - 130
		Fluoranthene	2014/09/24		107	%	60 - 130
		Pyrene	2014/09/24		105	%	60 - 130
		Benzo(a)anthracene	2014/09/24		100	%	60 - 130
		Chrysene	2014/09/24		102	%	60 - 130
		Benzo(b&j)fluoranthene	2014/09/24		105	%	60 - 130
		Benzo(k)fluoranthene	2014/09/24		98	%	60 - 130
		Benzo(a)pyrene	2014/09/24		99	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2014/09/24		99	%	60 - 130
		Dibenz(a,h)anthracene	2014/09/24		94	%	60 - 130
		Benzo(g,h,i)perylene	2014/09/24		96	%	60 - 130
	Spiked Blank	D10-ANTHRACENE (sur.)	2014/09/24		104	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/24		101	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/24		101	%	50 - 130

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Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7651208 CGP	Spiked Blank	TERPHENYL-D14 (sur.)	2014/09/24		112	%	60 - 130
		Naphthalene	2014/09/24		92	%	50 - 130
		2-Methylnaphthalene	2014/09/24		95	%	50 - 130
		Acenaphthylene	2014/09/24		94	%	50 - 130
		Acenaphthene	2014/09/24		99	%	50 - 130
		Fluorene	2014/09/24		95	%	50 - 130
		Phenanthrene	2014/09/24		96	%	60 - 130
		Anthracene	2014/09/24		101	%	60 - 130
		Fluoranthene	2014/09/24		104	%	60 - 130
		Pyrene	2014/09/24		104	%	60 - 130
		Benzo(a)anthracene	2014/09/24		100	%	60 - 130
		Chrysene	2014/09/24		103	%	60 - 130
		Benzo(b&j)fluoranthene	2014/09/24		99	%	60 - 130
		Benzo(k)fluoranthene	2014/09/24		101	%	60 - 130
		Benzo(a)pyrene	2014/09/24		98	%	60 - 130
		Indeno(1,2,3-cd)pyrene	2014/09/24		92	%	60 - 130
		Dibenz(a,h)anthracene	2014/09/24		87	%	60 - 130
		Benzo(g,h,i)perylene	2014/09/24		91	%	60 - 130
	Method Blank	D10-ANTHRACENE (sur.)	2014/09/24		107	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/09/24		105	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/09/24		105	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/09/24		115	%	60 - 130
		Naphthalene	2014/09/24	<0.050		mg/kg	
		2-Methylnaphthalene	2014/09/24	<0.050		mg/kg	
		Acenaphthylene	2014/09/24	<0.050		mg/kg	
		Acenaphthene	2014/09/24	<0.050		mg/kg	
		Fluorene	2014/09/24	<0.050		mg/kg	
		Phenanthrene	2014/09/24	<0.050		mg/kg	
		Anthracene	2014/09/24	<0.050		mg/kg	
		Fluoranthene	2014/09/24	<0.050		mg/kg	
		Pyrene	2014/09/24	<0.050		mg/kg	
		Benzo(a)anthracene	2014/09/24	<0.050		mg/kg	
		Chrysene	2014/09/24	<0.050		mg/kg	
		Benzo(b&j)fluoranthene	2014/09/24	<0.050		mg/kg	
		Benzo(b)fluoranthene	2014/09/24	<0.050		mg/kg	
		Benzo(k)fluoranthene	2014/09/24	<0.050		mg/kg	
		Benzo(a)pyrene	2014/09/24	<0.050		mg/kg	
		Indeno(1,2,3-cd)pyrene	2014/09/24	<0.050		mg/kg	
		Dibenz(a,h)anthracene	2014/09/24	<0.050		mg/kg	
		Benzo(g,h,i)perylene	2014/09/24	<0.050		mg/kg	
	RPD	Naphthalene	2014/09/24	NC		%	50
		2-Methylnaphthalene	2014/09/24	NC		%	50
		Acenaphthylene	2014/09/24	NC		%	50
		Acenaphthene	2014/09/24	NC		%	50
		Fluorene	2014/09/24	NC		%	50
		Phenanthrene	2014/09/24	NC		%	50
		Anthracene	2014/09/24	NC		%	50
		Fluoranthene	2014/09/24	NC		%	50
		Pyrene	2014/09/24	NC		%	50
		Benzo(a)anthracene	2014/09/24	NC		%	50
		Chrysene	2014/09/24	NC		%	50
		Benzo(b&j)fluoranthene	2014/09/24	NC		%	50
		Benzo(b)fluoranthene	2014/09/24	NC		%	50
		Benzo(k)fluoranthene	2014/09/24	NC		%	50
		Benzo(a)pyrene	2014/09/24	NC		%	50

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Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7651208 CGP	RPD	Indeno(1,2,3-cd)pyrene	2014/09/24	NC		%	50
		Dibenz(a,h)anthracene	2014/09/24	NC		%	50
		Benzo(g,h,i)perylene	2014/09/24	NC		%	50
7651230 PN2	Matrix Spike	O-TERPHENYL (sur.)	2014/09/24		88	%	50 - 130
		EPH (C10-C19)	2014/09/24		84	%	50 - 130
		EPH (C19-C32)	2014/09/24		91	%	50 - 130
	Spiked Blank	O-TERPHENYL (sur.)	2014/09/24		104	%	50 - 130
		EPH (C10-C19)	2014/09/24		83	%	50 - 130
		EPH (C19-C32)	2014/09/24		90	%	50 - 130
	Method Blank	O-TERPHENYL (sur.)	2014/09/24		105	%	50 - 130
		EPH (C10-C19)	2014/09/24	<100		mg/kg	
		EPH (C19-C32)	2014/09/24	<100		mg/kg	
	RPD	EPH (C10-C19)	2014/09/24	NC		%	40
		EPH (C19-C32)	2014/09/24	NC		%	40
7663039 TMB	Method Blank	Initial pH of Sample	2014/10/03	4.96		pH	
		Final pH of Leachate	2014/10/03	4.96		pH	
		pH of Leaching Fluid	2014/10/03	4.96		pH	
	RPD	Initial pH of Sample	2014/10/03	3.2		%	N/A
		pH after HCl	2014/10/03	0.8		%	N/A
		Final pH of Leachate	2014/10/03	0.2		%	N/A
		pH of Leaching Fluid	2014/10/03	0		%	N/A
7664406 JGD	Method Blank	Moisture	2014/10/04	<0.30		%	
	RPD	Moisture	2014/10/04	15.6		%	20
7664561 DJ	Matrix Spike	Total Chromium (Cr)	2014/10/03		99	%	75 - 125
		Total Copper (Cu)	2014/10/03		105	%	75 - 125
	QC Standard	Total Chromium (Cr)	2014/10/03		103	%	70 - 130
		Total Copper (Cu)	2014/10/03		96	%	70 - 130
	Spiked Blank	Total Chromium (Cr)	2014/10/03		97	%	75 - 125
		Total Copper (Cu)	2014/10/03		105	%	75 - 125
	Method Blank	Total Chromium (Cr)	2014/10/03	<1.0		mg/kg	
		Total Copper (Cu)	2014/10/03	<0.50		mg/kg	
	RPD	Total Chromium (Cr)	2014/10/03	2.4		%	30
		Total Copper (Cu)	2014/10/03	4.3		%	30
7664566 NS6	Spiked Blank	Soluble (2:1) pH	2014/10/03		100	%	97 - 103
	RPD	Soluble (2:1) pH	2014/10/03	0.8		%	N/A
7665745 DJ	Matrix Spike	LEACHATE Chromium (Cr)	2014/10/03		96	%	75 - 125
	Spiked Blank	LEACHATE Chromium (Cr)	2014/10/03		96	%	75 - 125
	Method Blank	LEACHATE Chromium (Cr)	2014/10/03	<0.10		mg/L	
	RPD	LEACHATE Chromium (Cr)	2014/10/03	NC		%	35
7666232 AA1	Matrix Spike	SPLP Chromium (Cr)	2014/10/04		NC	%	75 - 125
		SPLP Copper (Cu)	2014/10/04		NC	%	75 - 125
	Spiked Blank	SPLP Chromium (Cr)	2014/10/04		104	%	75 - 125
		SPLP Copper (Cu)	2014/10/04		110	%	75 - 125
	Method Blank	SPLP Chromium (Cr)	2014/10/04	<0.0010		mg/L	
		SPLP Copper (Cu)	2014/10/04	<0.0020		mg/L	
	RPD	SPLP Chromium (Cr)	2014/10/04	0.9		%	35
7669648 EPE	Matrix Spike						
	[KP7753-02]	Hex. Chromium (Cr 6+)	2014/10/07		59 (4)	%	75 - 125
	Spiked Blank	Hex. Chromium (Cr 6+)	2014/10/07		109	%	75 - 125
	Method Blank	Hex. Chromium (Cr 6+)	2014/10/07	<1.0		mg/kg	
	RPD [KP7753-02]	Hex. Chromium (Cr 6+)	2014/10/07	NC		%	30
7675544 AA1	Spiked Blank	SPLP Chromium (Cr)	2014/10/07		123	%	75 - 125
	Method Blank	SPLP Chromium (Cr)	2014/10/07	<0.0050		mg/L	
7697590 DJ	Matrix Spike	Total Chromium (Cr)	2014/10/29		103	%	75 - 125
	QC Standard	Total Chromium (Cr)	2014/10/29		94	%	70 - 130

Tetra Tech EBA
Attention: Lora J Paul
Client Project #: ENVINO03511-01.003
P.O. #:
Site Location: NANAIMO BC

Quality Assurance Report (Continued)

Maxxam Job Number: VB482486

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7697590 DJ	Spiked Blank	Total Chromium (Cr)	2014/10/29		103	%	75 - 125
	Method Blank	Total Chromium (Cr)	2014/10/29	<1.0		mg/kg	
	RPD	Total Chromium (Cr)	2014/10/29	6.0		%	30
7697594 NS6	Spiked Blank	Soluble (2:1) pH	2014/10/29		100	%	97 - 103
	RPD	Soluble (2:1) pH	2014/10/29	0.3		%	N/A
7710805 DJ	Matrix Spike	Total Copper (Cu)	2014/11/07		102	%	75 - 125
	QC Standard	Total Copper (Cu)	2014/11/07		102	%	70 - 130
	Spiked Blank	Total Copper (Cu)	2014/11/07		104	%	75 - 125
	Method Blank	Total Copper (Cu)	2014/11/07	<0.50		mg/kg	
	RPD	Total Copper (Cu)	2014/11/07	1.3		%	30

N/A = Not Applicable
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).
(1) Detection limits raised due to dilution as a result of sample matrix inteference.
(2) RDL raised due to sample matrix interference.
(3) Surrogate recovery above control limit - Matrix interference - Pot. high bias (No impact - ND)
Confirmed by re-analysis.
(4) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Validation Signature Page

Maxxam Job #: B482486

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B482486

CHAIN OF CUSTODY RECORD

Page: 1 of 5

G 087499

Invoice To: Require Report? Yes ☐ No ☐

Company Name: TETRA TECH EBA INC
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC
Contact Name: LORA PAUL & KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
PC: V9T 6A7
Phone / Fax#: Ph (250) 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 Port Drive DSI
Location: Nanaimo BC
Sampled By: Mike Gallo

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☐ CCME
- ☐ BC Water Quality
- ☐ Other
- ☐ DRINKING WATER

- ☒ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab)
- ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ **Ship Sample Bottles (please specify)** ☐

ANALYSIS REQUESTED

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH ☒ / MTBE ☒	VOC/VPH	EPH / TEH	PAH ☒ / LEPH/HEPH ☒	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP / Phenols by GCMS	TOG / MOG / SWOG	Dissolved Metals / Field Filtered? Y N	Field Acidified? Y N	Totals Metals Field Acidified? Y N	Nitrate / Nitrite / Ammonia	Chloride / Fluoride / Sulphate	Total Suspended Solids-TSS / TDS	pH / Conductivity / Alkalinity	BOD	COD	Coliform, Total & E.coli / Fecal	Asbestos	METALS	PAH ONLY	CHLORINATED PHENOLS				HOLD
1	14BH02-1	KP7752	SOIL	Sep15/14																						X						
2	14BH02-2	KP7753																								X	X	X				
3	14BH02-3	KP7754						X																		X						
4	14BH02-4	KP7755																								X						
5	14BH02-5	KP7756																														X
6	14BH19-1	KP7757																								X						
7	14BH19-2	KP7758																														X
8	14BH19-3	KP7759						X																		X		X				
9	14BH19-4	KP7760																														X
10	14BH17-1	KP7761																														X
11	14BH17-2	KP7762																								X	X					
12	14BH17-3	KP7763	↓	↓																						X	X	X				

B482486

Samples are from a Drinking Water Source? YES ☐ NO ☐
Does source supply multiple households? YES ☐ NO ☐

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
			Rebecca REBECCA BANZON	2014/09/17	08:00	☐	11,12,12 / 5,8,8 /	N/A ~~Yes~~ No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

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Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B482486

CHAIN OF CUSTODY RECORD

Page: 3 of 5

G 087501

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL & KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756 2256 Fax:
E-mail: LORA.PAUL@Tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: Nanaimo BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day

Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH [X] / MTBE	VOC/VPH	EPH [X] / TEH	PAH [X] / LEPH/HEPH [X]	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP / Phenols by GCMS	TOG / MOG / SWOG	Dissolved Metals	Field Filtered? Y N	Field Acidified? Y N	Totals Metals Field Acidified? Y N	Nitrate / Nitrite / Ammonia	Chloride / Fluoride / Sulphate	Total Suspended Solids-TSS / TDS	pH / Conductivity / Alkalinity	BOD	COD	Coliform, Total & E.coli / Fecal	Asbestos	METALS	CHLORINATED PHENOLS	HOLD
1	14BH05-1	KP7876	SOIL	SEP15/14																									X
2	14BH05-2	KP7877																									X		
3	14BH05-3	KP7878						X																					
4	14BH05-4	KP7879																											X
5	14BH05-5	KP7880						X																					
6	14BH05-6	KP7881						X																					
7	14BH05-7	KP7882					X																						
8	DUP. 1	KP7883						X																			X	X	
9	DUP. 2	KP7884																									X		
10	DUP. 3	KP7885		SEP16/15																									
11	DUP. 4	KP7886																											X
12	DUP. 5	KP7887																											X

B482486

Samples are from a Drinking Water Source? YES [ ] NO [ ]
Does source supply multiple households? YES [ ] NO [ ]

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
			Rebecca REBECCA BARROW	2014/09/17	08:00

Laboratory Use Only

Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
[ ]	11,12,12 / 5,8,8	N/A Yes [ ] No [ ]

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

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Maxxam

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CHAIN OF CUSTODY RECORD

Page: 2 of 5

G 087500

Maxxam Job#: B482486

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph (250) 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day

Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Header checkboxes marked: BTEX/VPH [X], MTBE [X], PAH [X], LEPH/HEPH [X]

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH	VOC/VPH	EPH	PAH	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP	TOG	Dissolved Metals	Totals Metals Field Acidified?	Nitrate	Chloride	Total Suspended Solids-TSS	pH	BOD	COD	Coliform, Total & E.coli	Asbestos	METALS	PAH only					HOLD
1	14BH17-4	KP7812	SOIL	Sep 15/14																											X
2	14BH17-5	KP7813	↓	↓																											X
3	14BH18-1	KP7814																													X
4	14BH18-2	KP7815																							X						
5	14BH18-3	KP7816						X																	X						
6	14BH18-4	KP7817																													X
7	14BH18-5	KP7818																													X
8	14BH01-1	KP7819																							X						
9	14BH01-2	KP7820						X																	X						
10	14BH01-3	KP7821																							X						
11	14BH01-4	KP7822																													X
12	14BH01-5	KP7823	↓	↓	X																										

B482486

Samples are from a Drinking Water Source? YES [ ] NO [ ]
Does source supply multiple households? YES [ ] NO [ ]

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
			REBECCA BARRON	2014/09/17	08:00	[ ]	11,12,12 / 5,8,8	N/A Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

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Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

CHAIN OF CUSTODY RECORD

Page: 4 of 5

G 087502

Maxxam Job#: B482486

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL & KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Ph: (250) 756-2256 Fax:
E-mail: LORA.PAUL@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day

Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GC/MS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N), Field Acidified? Y/N, Total Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

Samples are from a Drinking Water Source? YES / NO

Does source supply multiple households? YES / NO

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH03-1	KP7925	SOIL	SEPT 16/14	X
2	14BH03-2	KP7926	↓		X
3	14BH03-3	KP7927			X
4	14BH03-4	KP7928			X
5	14BH03-5	KP7929			X
6	14BH04-1	KP7930			X
7	14BH04-2	KP7931			X
8	14BH04-3	KP7932			X
9	14BH04-4	KP7933			X
10	14BH08-1	KP7934			X
11	14BH08-2	KP7935			X
12	14BH08-3	KP7936	↓		X

B482486

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
			REBECCA BANTON	2014/09/17	08:00

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C): 11,12,12 / 5,8,8 / 9,7,7

Custody Seal Intact on Cooler? Yes / No — N/A

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B482486

CHAIN OF CUSTODY RECORD

Page: 5 of 5

G 087503

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL/KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N), Field Acidified? Y/N, Totals Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH08-4	KP7971	SOIL	SEPT16/14	X
2	14BH08-5	KP7972			X
3	14BH09-1	KP7973			X
4	14BH09-2	KP7974			X
5	14BH09-3	KP7975			X
6	14BH20-1	KP7976			X
7	14BH20-2	KP7977			X
8	14BH20-3	KP7978			X
9	14BH20-4	KP7979			X
10	14BH20-5	KP7980			X
11					X
12					X

B482486

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
			REBECCA BANSON	2014/09/17	08:00		11,12,12 / 5,8,8	~~Yes~~ No N/A

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

9,7,7

Maxxam

4606 Canada Way Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B482486

CHAIN OF CUSTODY RECORD

Page: 3 of 5

G 087501

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL & KRISTY GABELHAUSE
Address: 1-4376 BORBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: LORA.PAUL@Tetratech.com
Kristy.Gabelhause@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.007
Proj. Name: 1 PORT DRIVE DSI
Location: Nanaimo BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Checked in header: BTEX/VPH [X], EPH [X], PAH [X], LEPH/HEPH [X]

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH	VOC/VPH	EPH	PAH	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-RHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP	TOG	Dissolved Metals	Total Metals Field Acidified?	Nitrate	Chloride	Total Suspended Solids-TSS	pH	BOD	COD	Coliform, Total & E.coli	Asbestos	METALS	CHLORINATED PHENOLS	HOLD
1	14BH05-1		SOIL	SEP 15/14																							X
2	14BH05-2																								X		
3	14BH05-3							X																			
4	14BH05-4																										X
5	14BH05-5							X																			
6	14BH05-6							X																			
7	14BH05-7						X																				
8	DUP.1							X																	X	X	
9	DUP.2																								X		
10	DUP.3			SEP 16/15				X																	X		
11	DUP.4																										X
12	DUP.5																										X

B482486

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:

Laboratory Use Only

Time Sensitive | Temperature on Receipt (°C) | Custody Seal Intact on Cooler? Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

CHAIN OF CUSTODY RECORD

Page: 4 of 5

G 387502

Maxxam Job#:

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC
Contact Name: LORA PAUL & KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: LORA.PAUL@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [x] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH	VOC/VPH	EPH (TEH)	PAH (LEPH/HEPH)	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP (Phenols by GCMS)	TOG (SWOG / MOG)	Dissolved Metals (Field Filtered?)	Total Metals (Field Acidified?)	Nitrate (Ammonia / Nitrite)	Chloride (Sulphate / Fluoride)	Total Suspended Solids-TSS (TDS)	pH (Conductivity / Alkalinity)	BOD	COD	Coliform, Total & E.coli (Fecal)	Asbestos	Metals	PAH					HOLD
1	14BH03-1		Soil	Sep 16/14																					X						X
2	14BH03-2																								X	X					X
3	14BH03-3																														X
4	14BH03-4						X																								X
5	14BH03-5																														X
6	14BH04-1																														X
7	14BH04-2						X																		X						X
8	14BH04-3																								X	X					X
9	14BH04-4																								X						X
10	14BH08-1																														X
11	14BH08-2																								X	X					X
12	14BH08-3		↓				X																								X

B482486

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
								Yes / No

Laboratory Use Only

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way Burnaby BC Canada V5G 1K5 Ph 604 734 7276 Toll Free 1 800 665 8566 Fax 604 731 2386

Maxxam Job#: ______

CHAIN OF CUSTODY RECORD

Page: 5 of 5

G 087503

Invoice To: Require Report? Yes ☐ No ☐

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND02511-01.003
Proj. Name: 1 PORT DRIVE DST
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☐ CCME
- ☐ BC Water Quality
- ☐ Other
- ☐ DRINKING WATER

☐ Regular Turn Around Time (TAT) (5 days for most tests)
☐ RUSH (Please contact the lab)
☐ 1 Day ☐ 2 Day ☐ 3 Day
Date Required: ______

Special Instructions:
Return Cooler ☐ **Ship Sample Bottles (please specify)** ☐

ANALYSIS REQUESTED

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	MTBE / BTEX/VPH	VOC/VPH	TEH / EPH	LEPH/HEPH / PAH	CCME PHC (Fractions 1-4 Plus BTEX)	CCME PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by GCMS / Phenols by 4AAP	SWOG / MOG / TOG	N Y Field Filtered? / Dissolved Metals	N Y Field Acidified?	N Y Totals Metals Field Acidified?	Ammonia / Nitrite / Nitrate	Sulphate / Fluoride / Chloride	TDS / Total Suspended Solids-TSS	Alkalinity / Conductivity / pH	BOD	COD	Fecal / Coliform, Total & E.coli	Asbestos	METALS	PAH only					HOLD
1	14BH08-4		SOIL	SEP 16/14				X																		X						X
2	14BH08-5						X																									X
3	14BH09-1																															X
4	14BH09-2																									X	X					X
5	14BH09-3							X																		X						X
6	14BH20-1																									X						X
7	14BH20-2							X																		X						X
8	14BH20-3																									X						X
9	14BH20-4																									X						X
10	14BH20-5																															X
11																																X
12																																X

B482486

Samples are from a Drinking Water Source? NO / YES
Does source supply multiple households? NO / YES

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
						☐		Yes ☐ No ☐

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

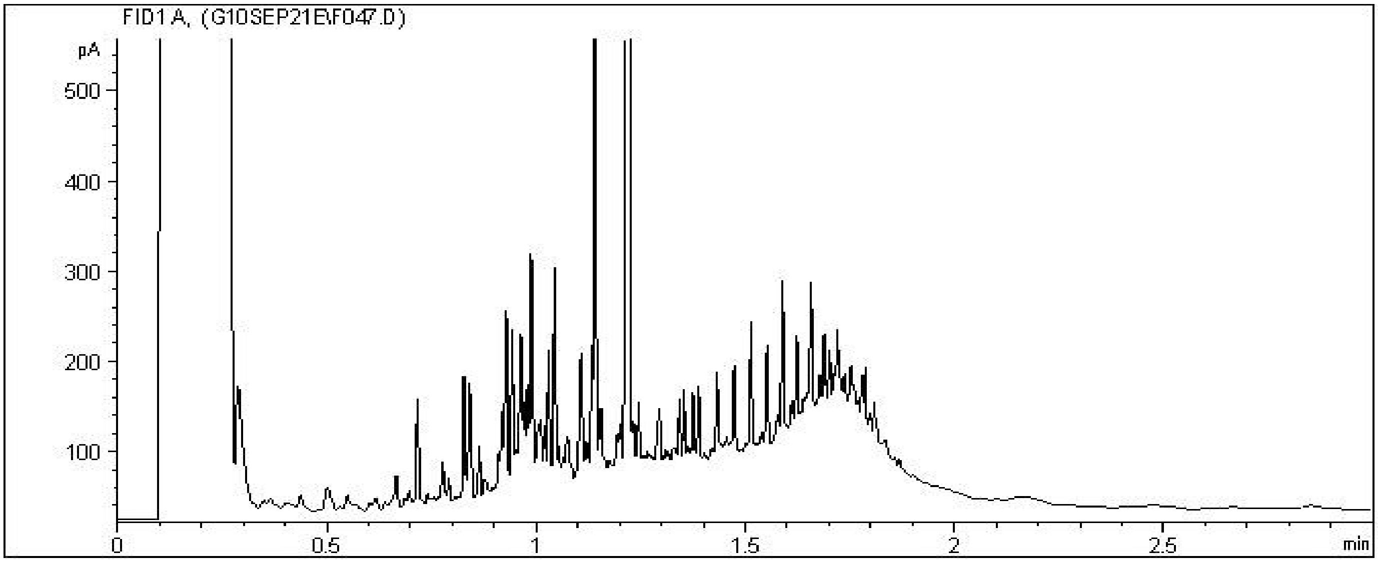
Maxxam International Corporation o/a Maxxam Analytics

Success Through Science®

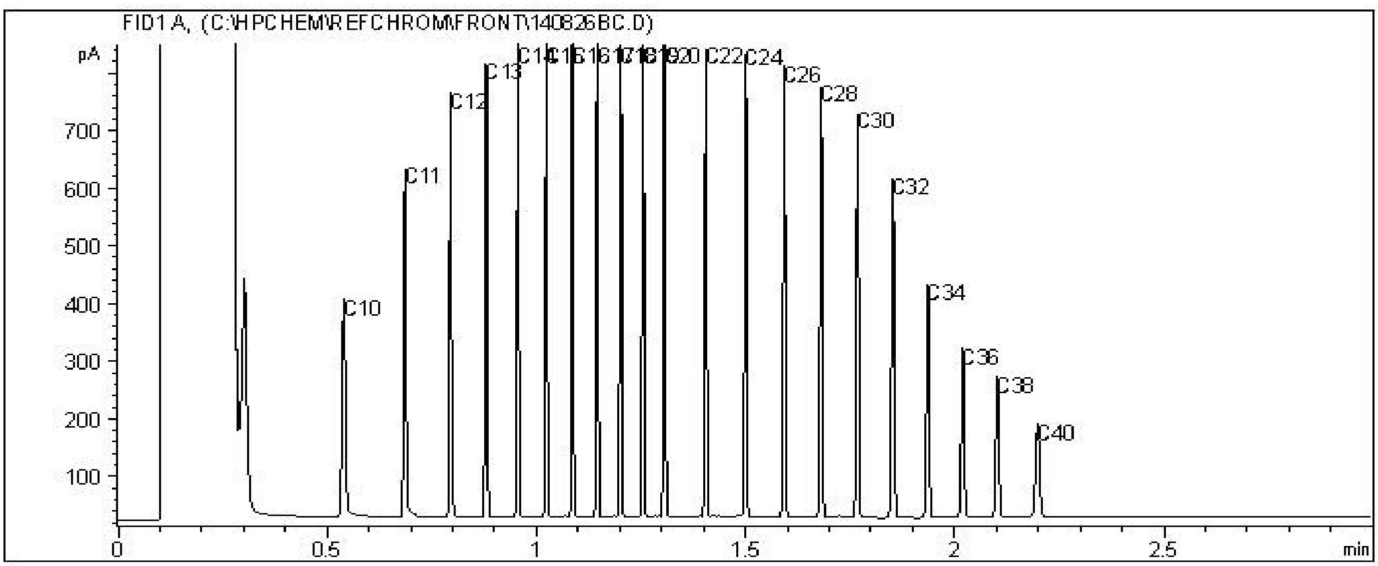
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7754

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH02-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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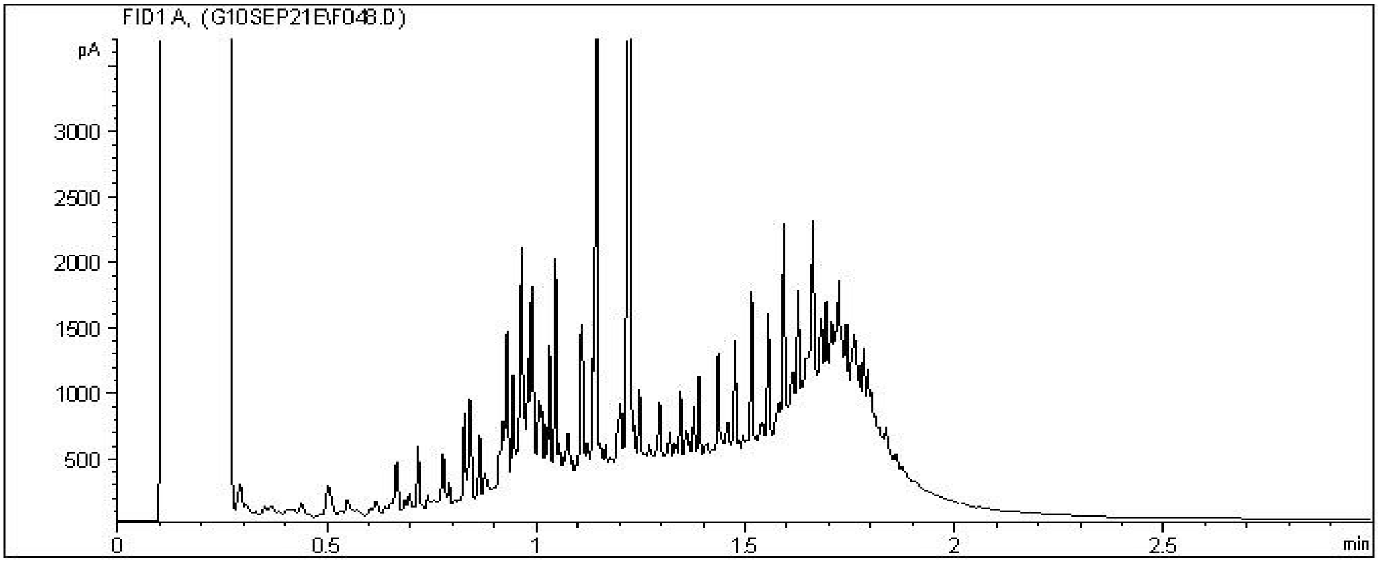
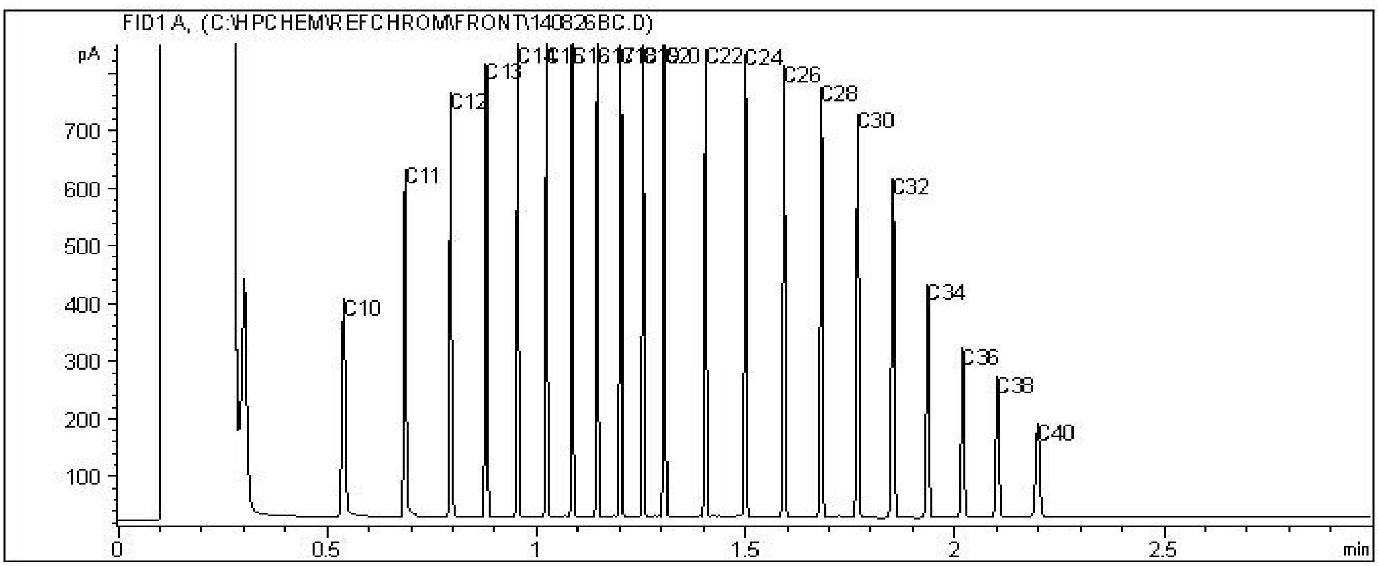
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7759

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH19-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



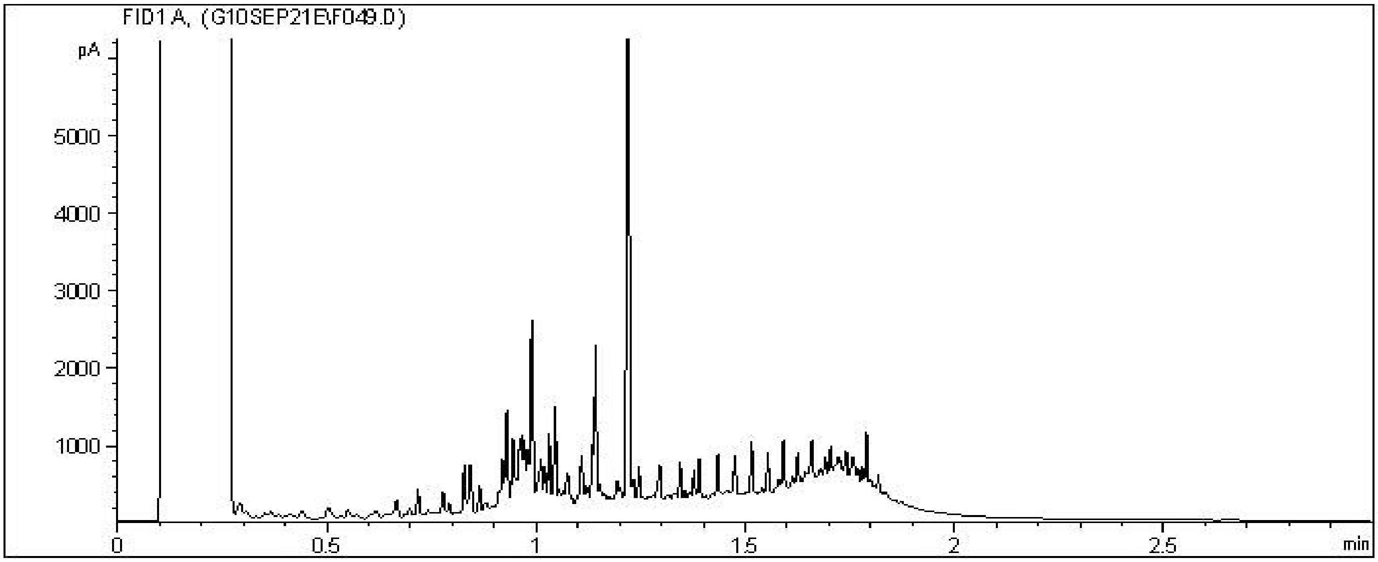
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

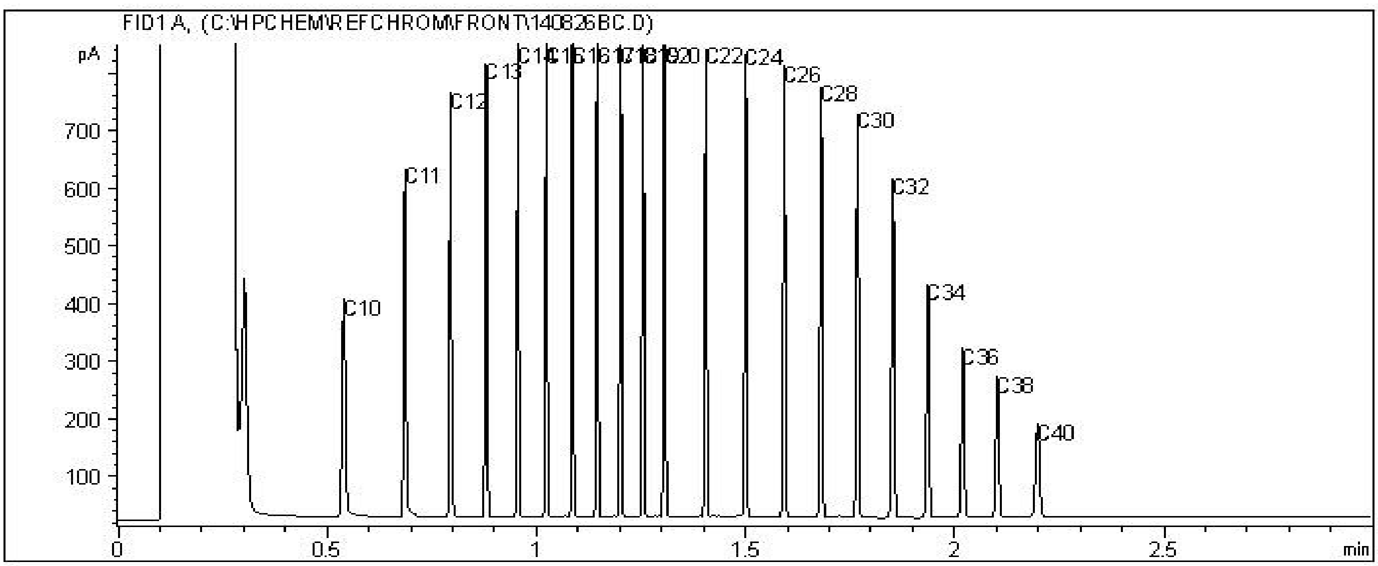
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Tetra Tech EBA
Report Date: 2014/11/10 Client Project #: ENVINO03511-01.003
Maxxam Job #: B482486 Site Reference: NANAIMO BC
Maxxam Sample: KP7816 Client ID: 14BH18-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
A Bureau Veritas Group Company

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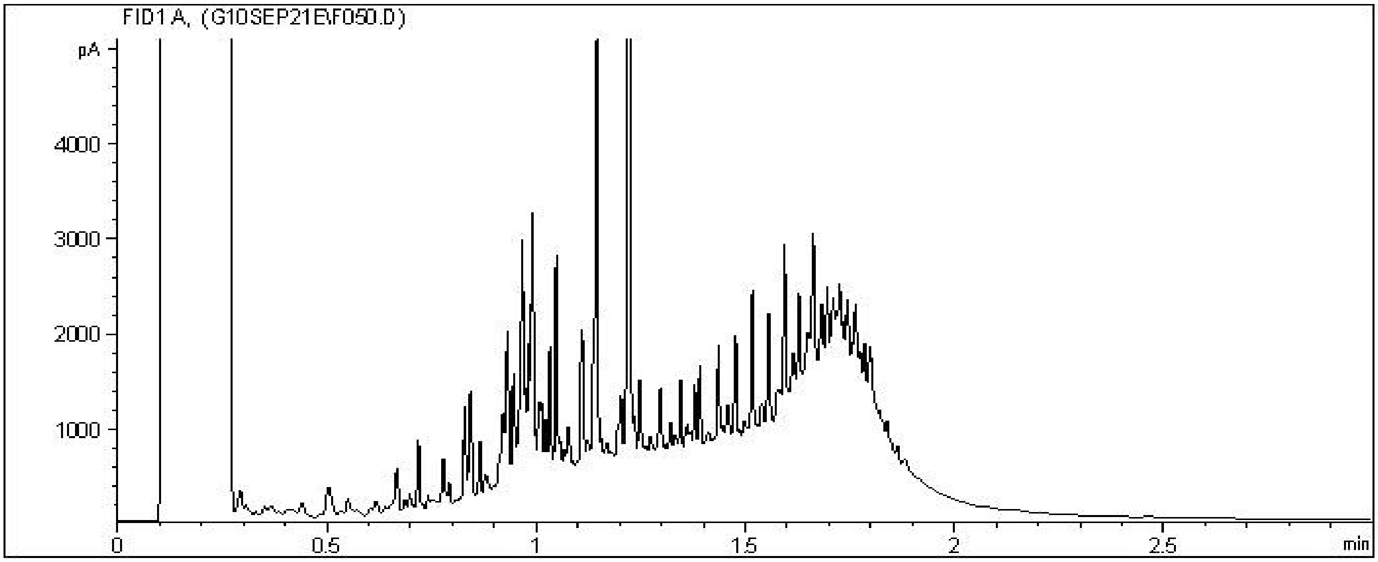
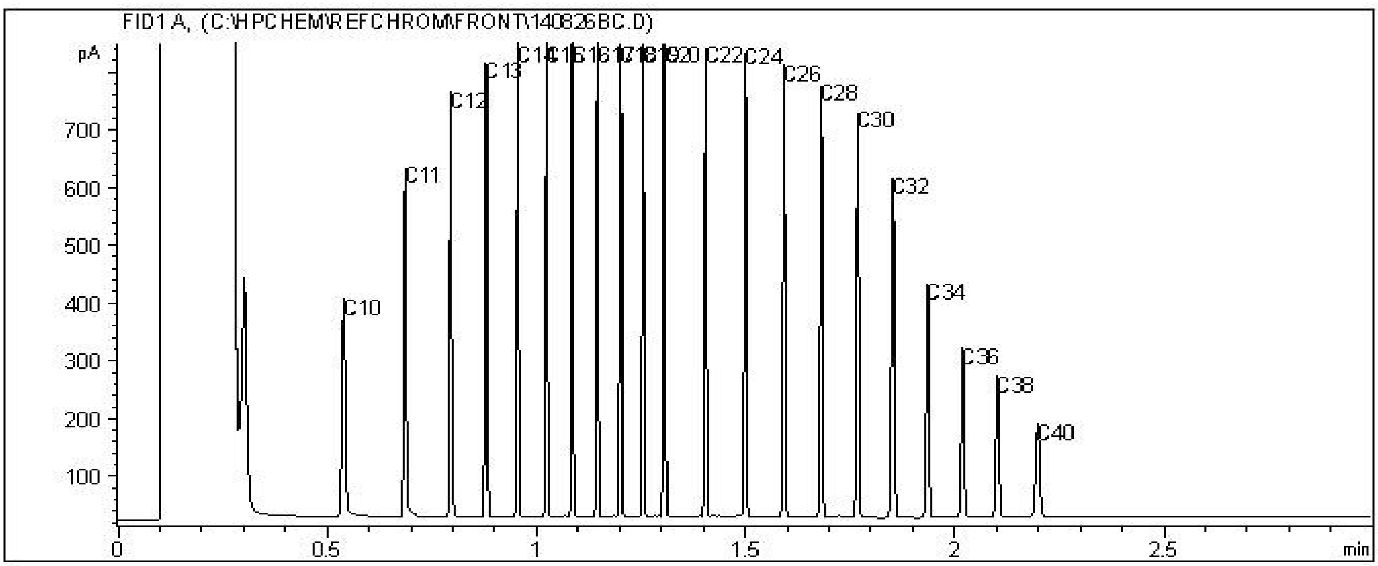
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7820

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH01-2

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



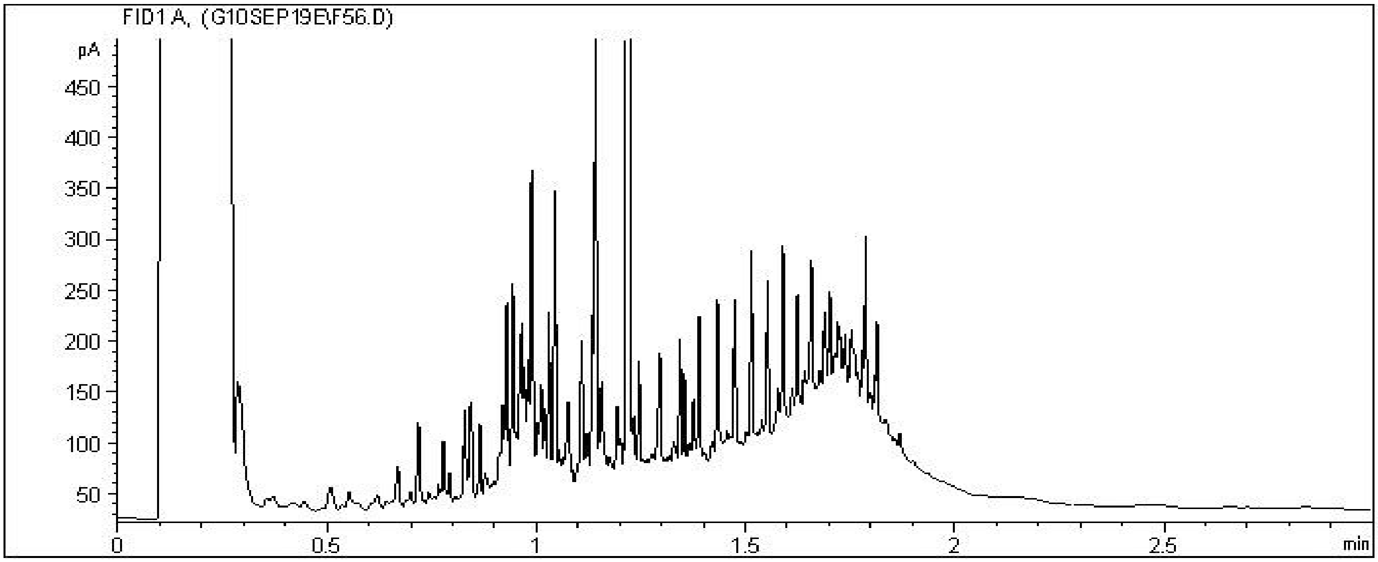
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

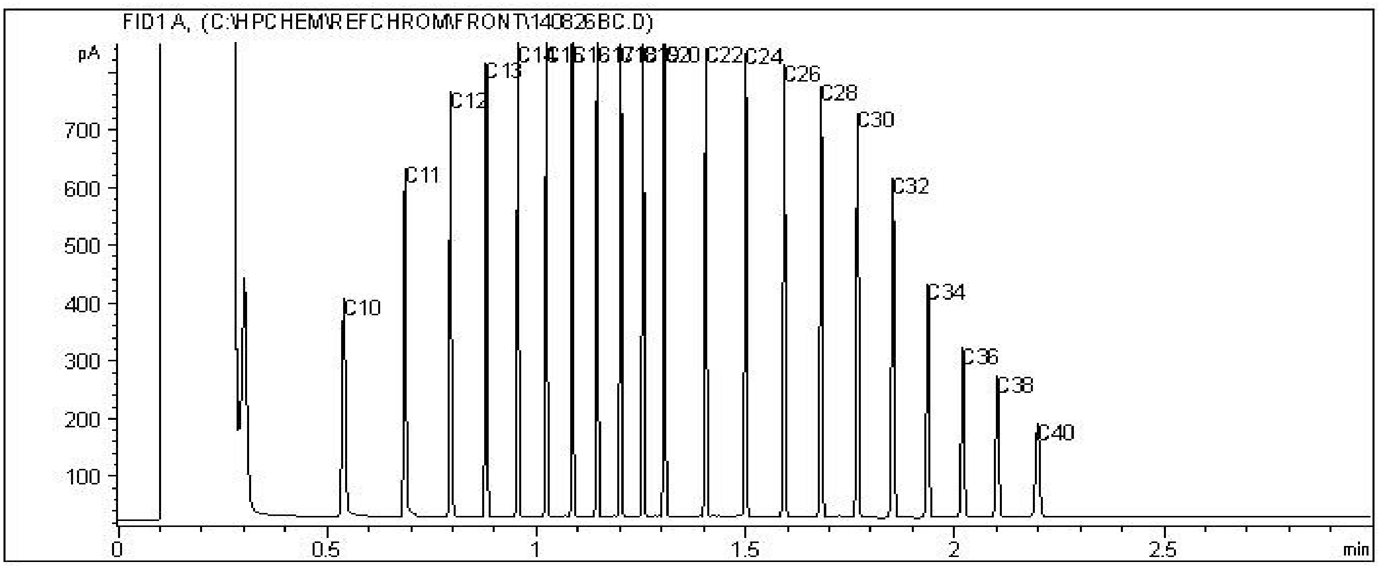
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Tetra Tech EBA
Report Date: 2014/11/10 Client Project #: ENVINO03511-01.003
Maxxam Job #: B482486 Site Reference: NANAIMO BC
Maxxam Sample: KP7878 Client ID: 14BH05-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

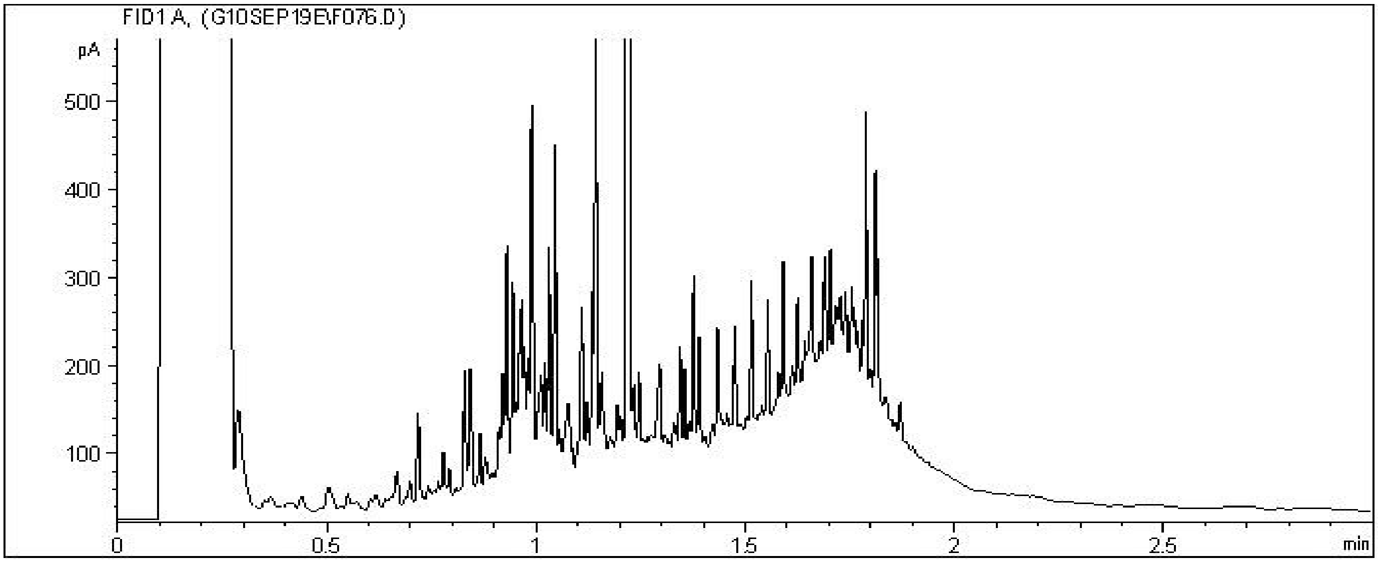
Success Through Science®

Tetra Tech EBA

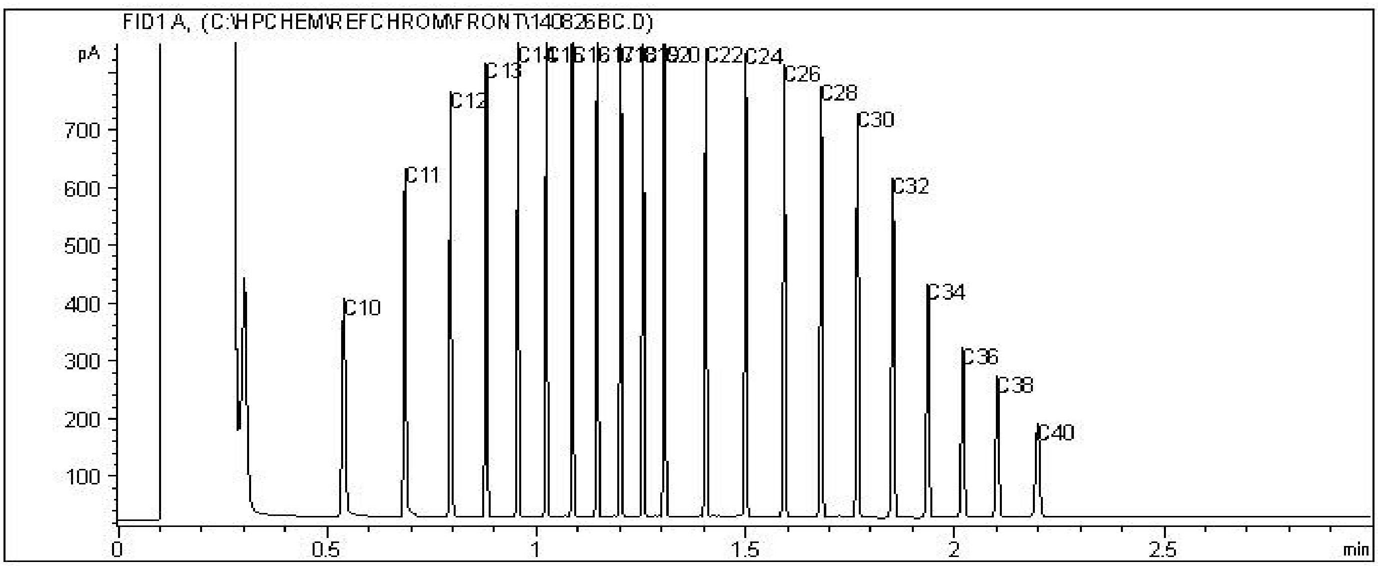
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7880

Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH05-5

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

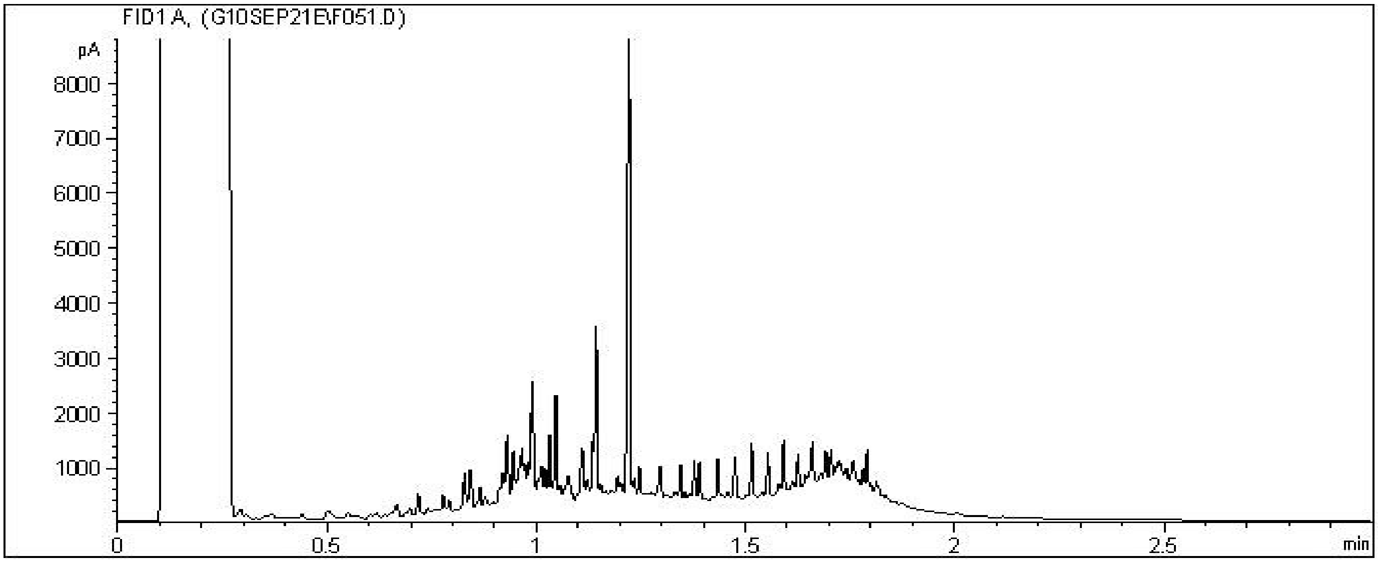
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

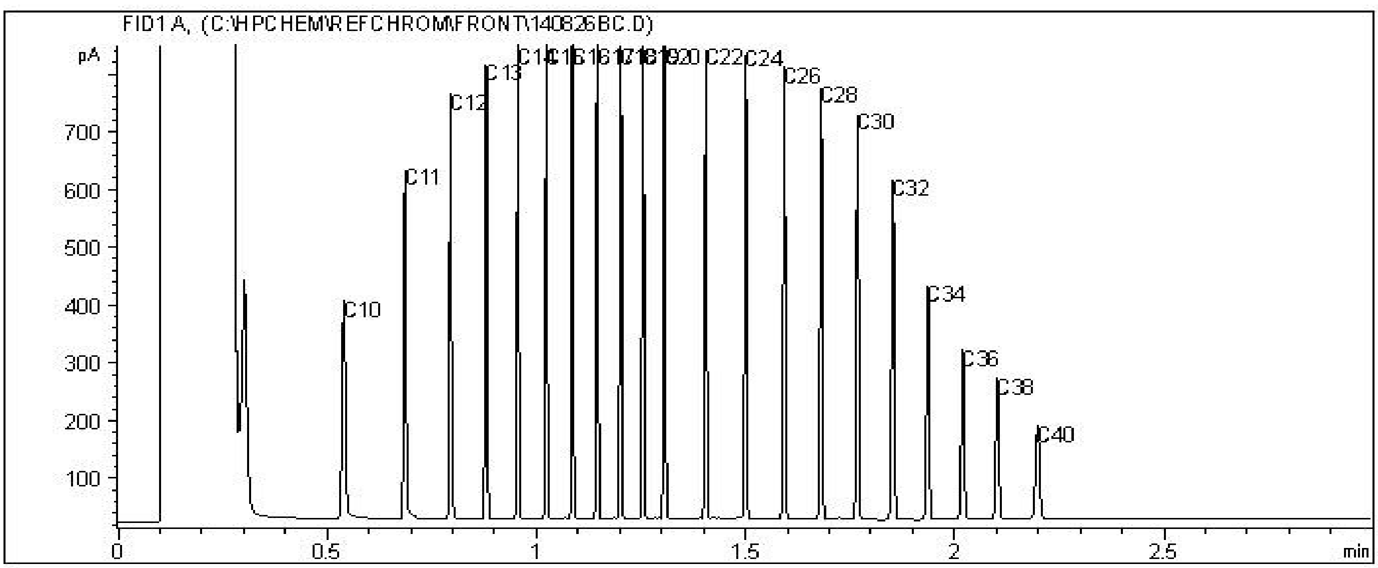
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7881

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH05-6

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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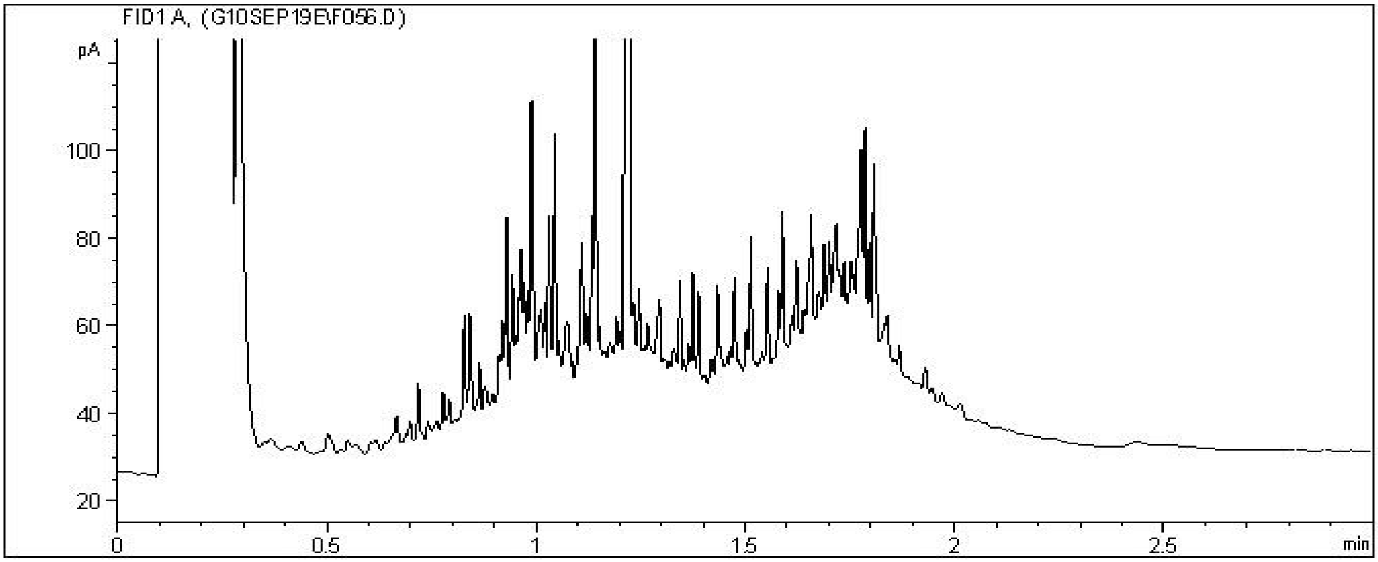
Tetra Tech EBA

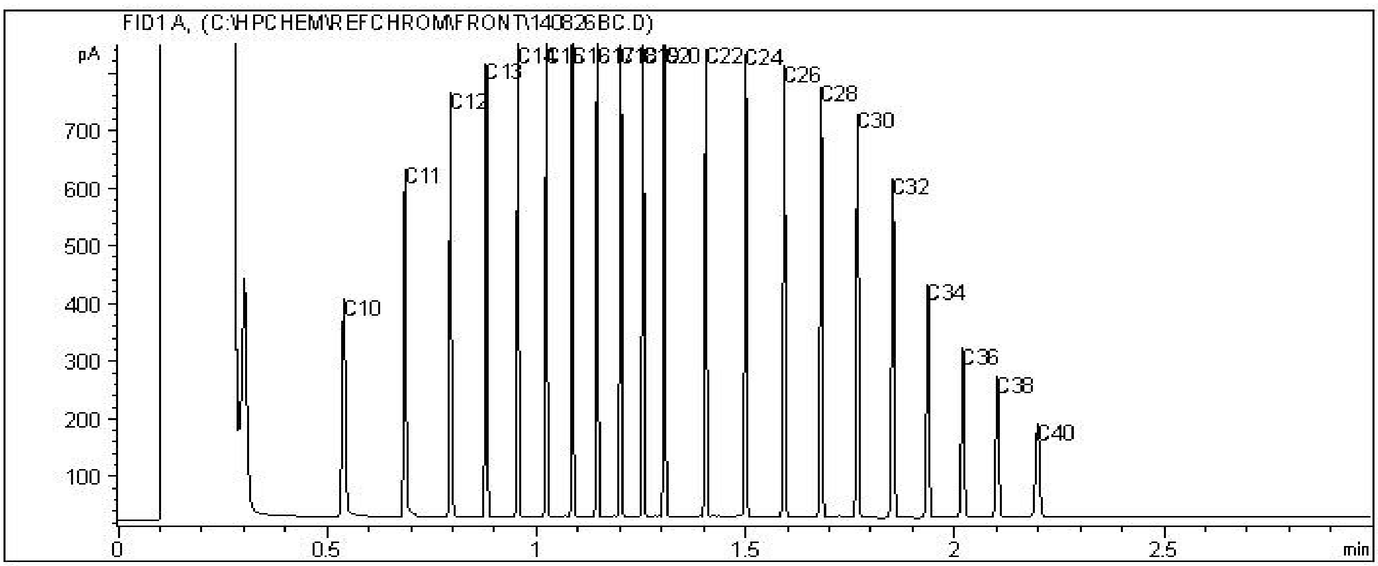
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7882

Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH05-7

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

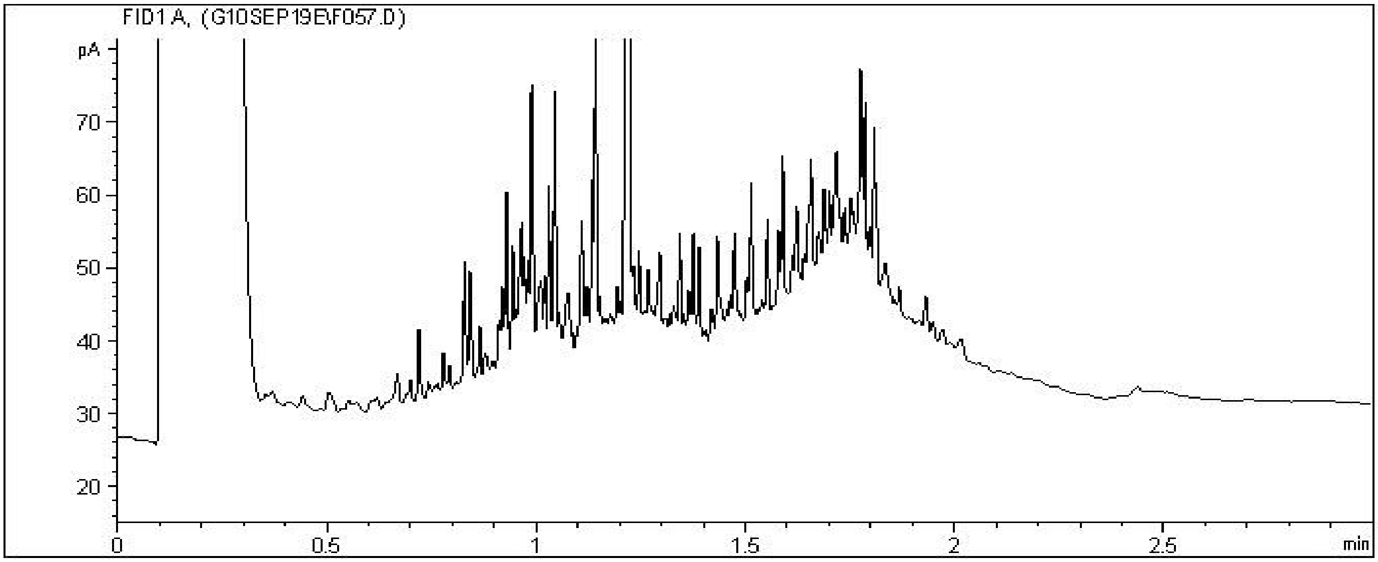
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

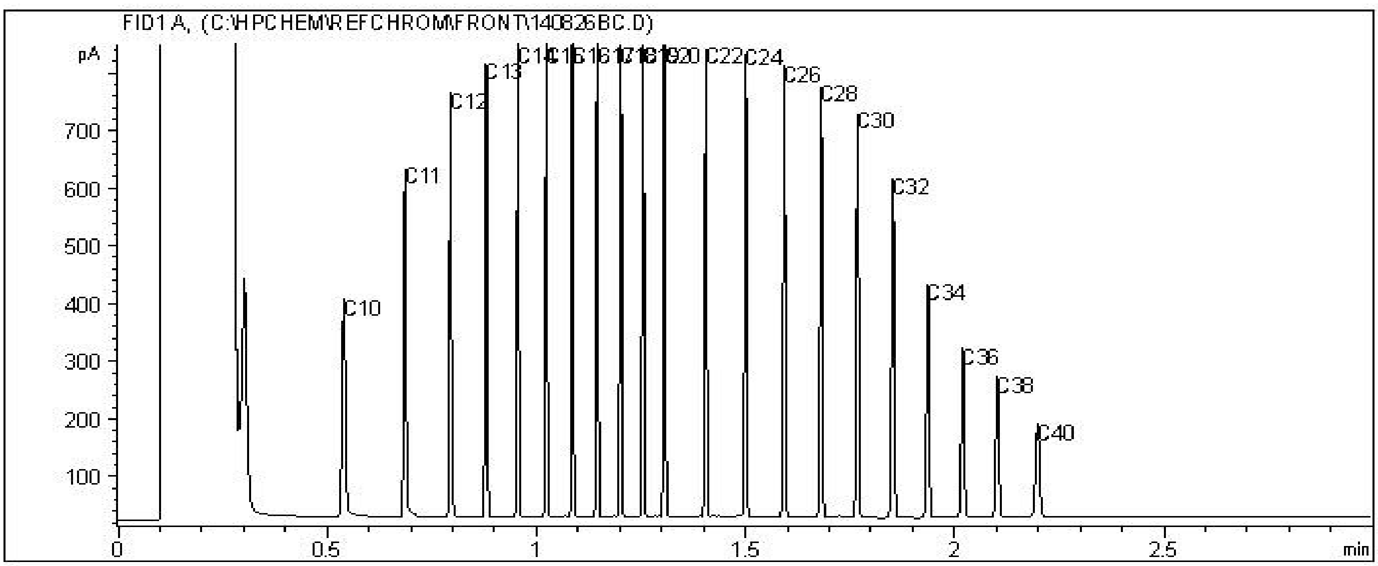
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7882 Lab-Dup

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH05-7

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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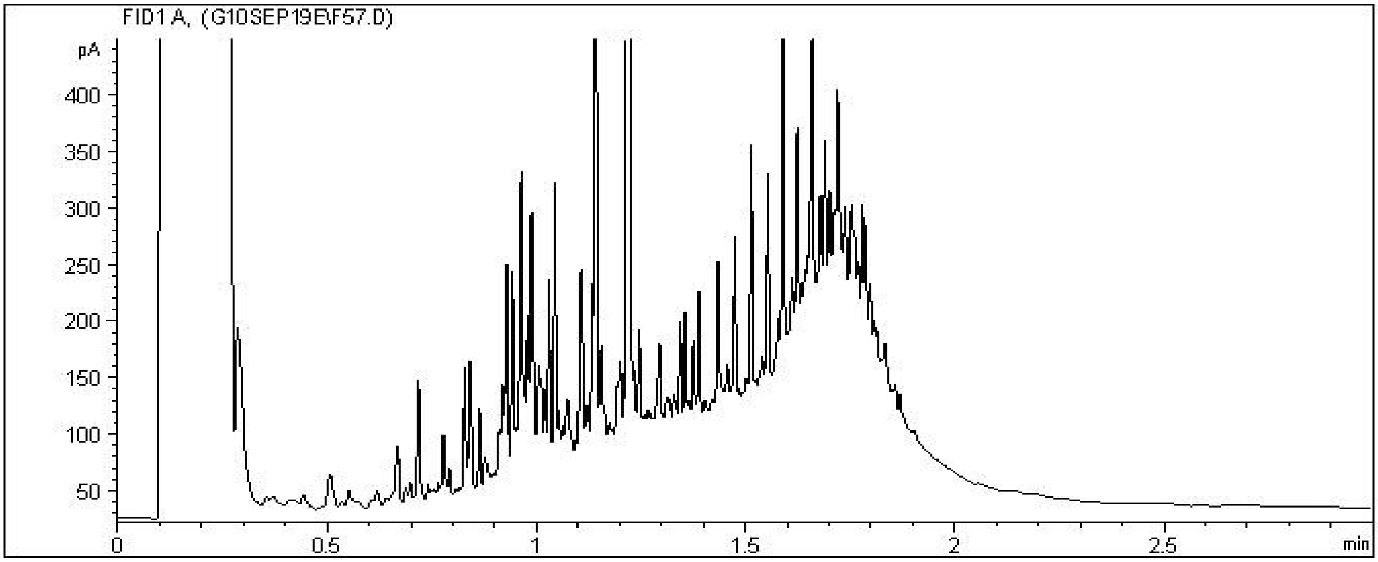
Tetra Tech EBA

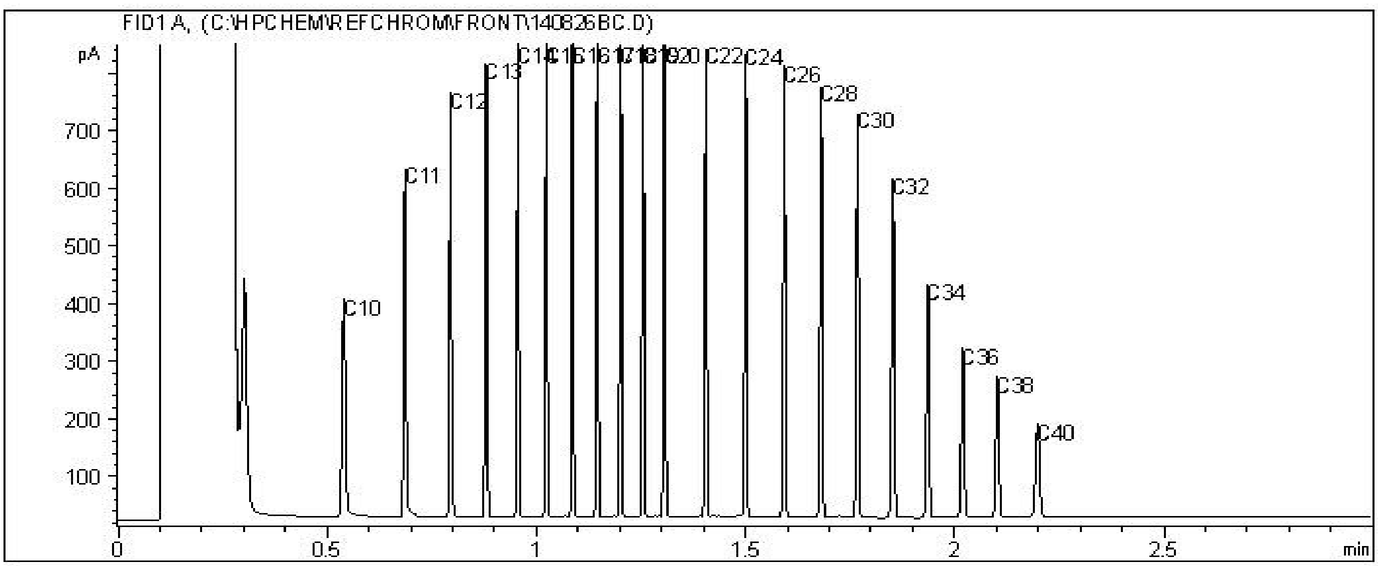
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7883

Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: DUP.1

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

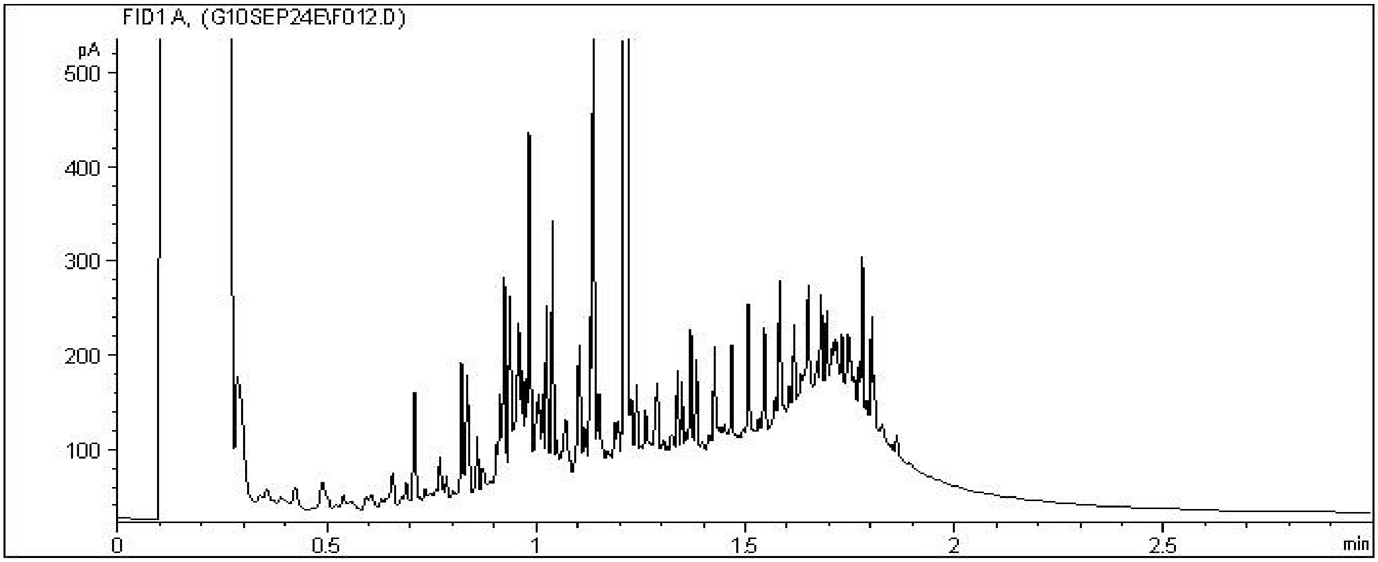
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

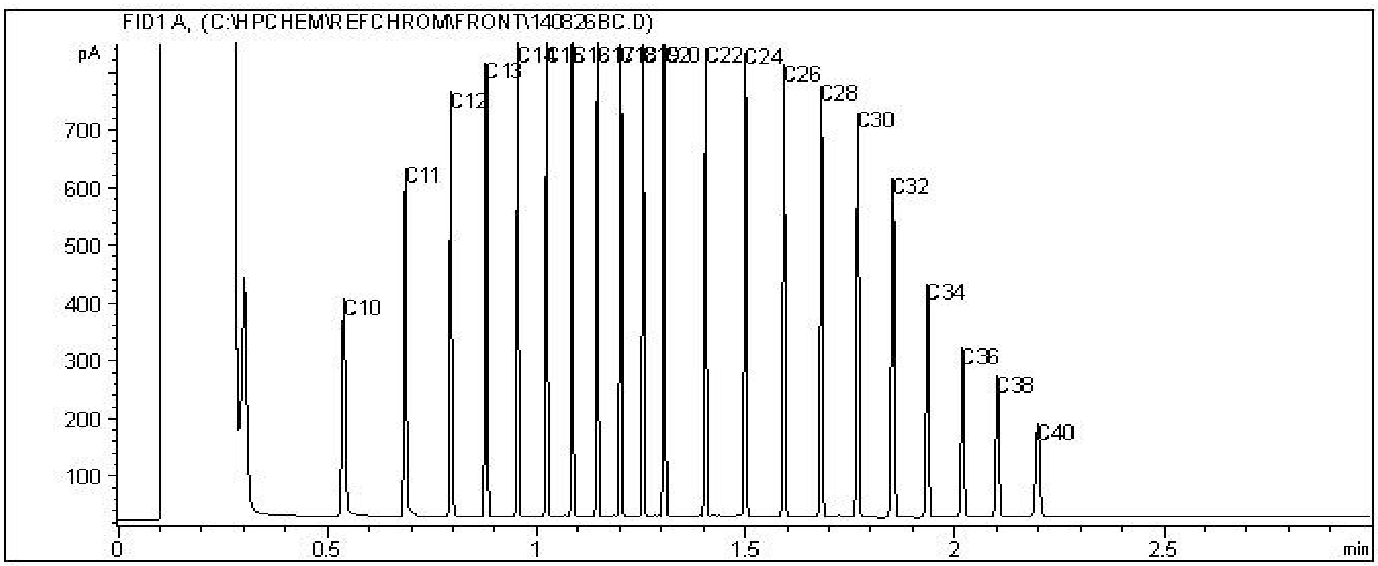
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7885

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: DUP.3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



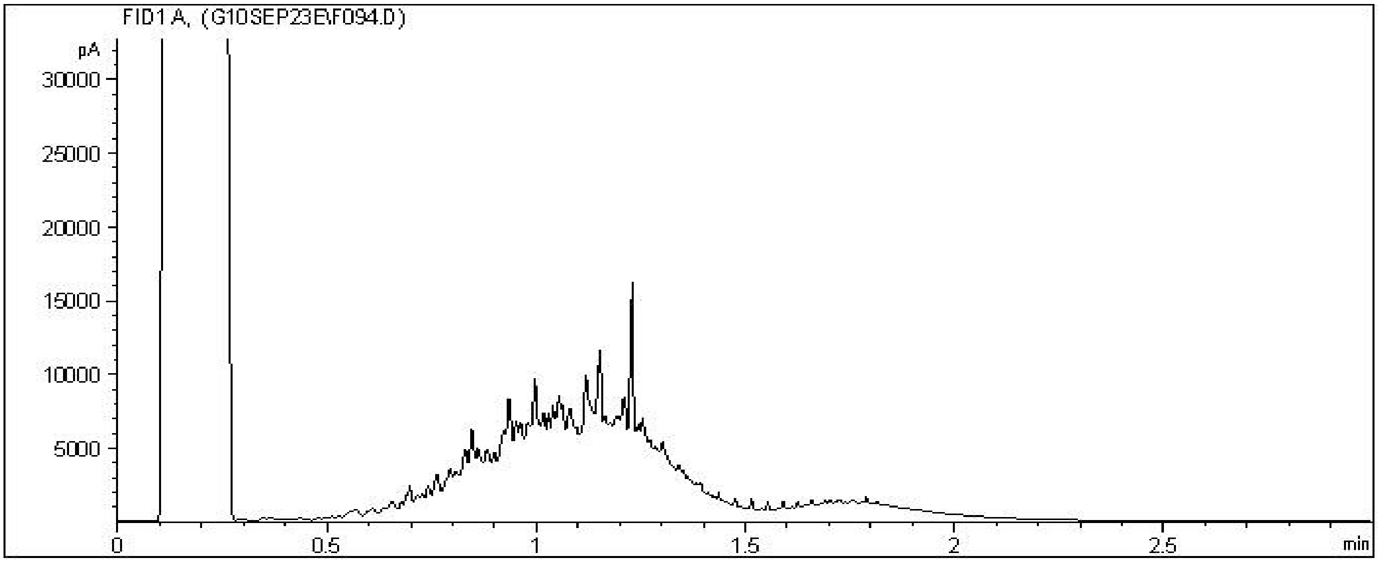
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

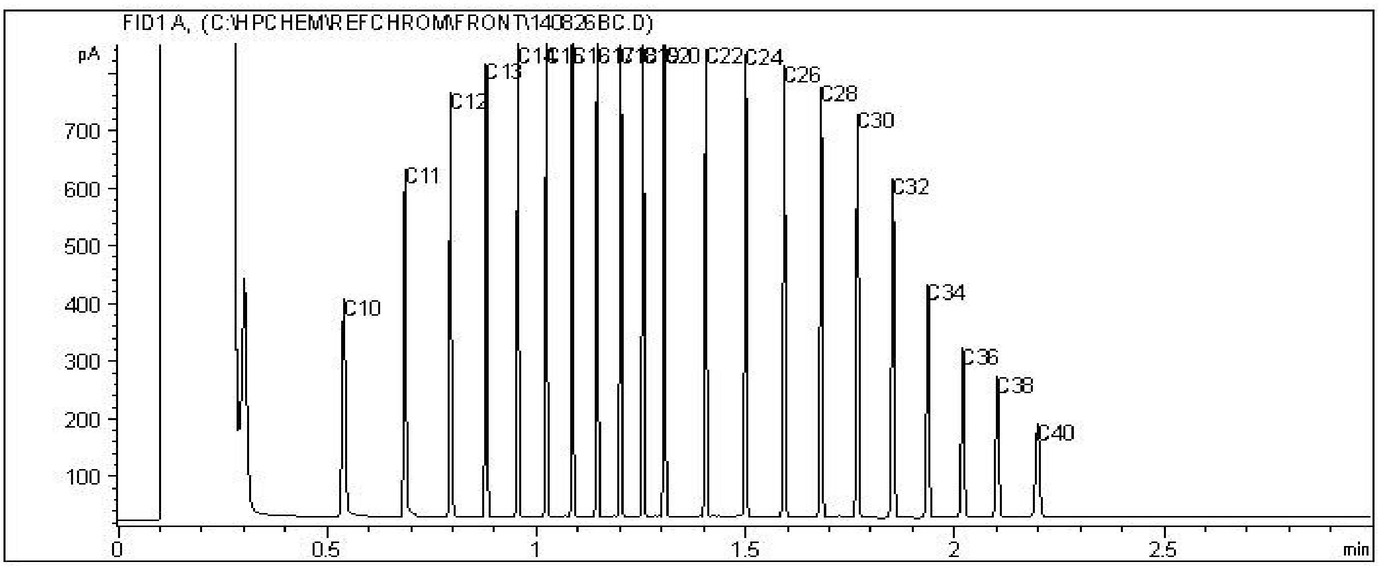
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Tetra Tech EBA
Report Date: 2014/11/10 | Client Project #: ENVINO03511-01.003
Maxxam Job #: B482486 | Site Reference: NANAIMO BC
Maxxam Sample: KP7887 | Client ID: DUP.5

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

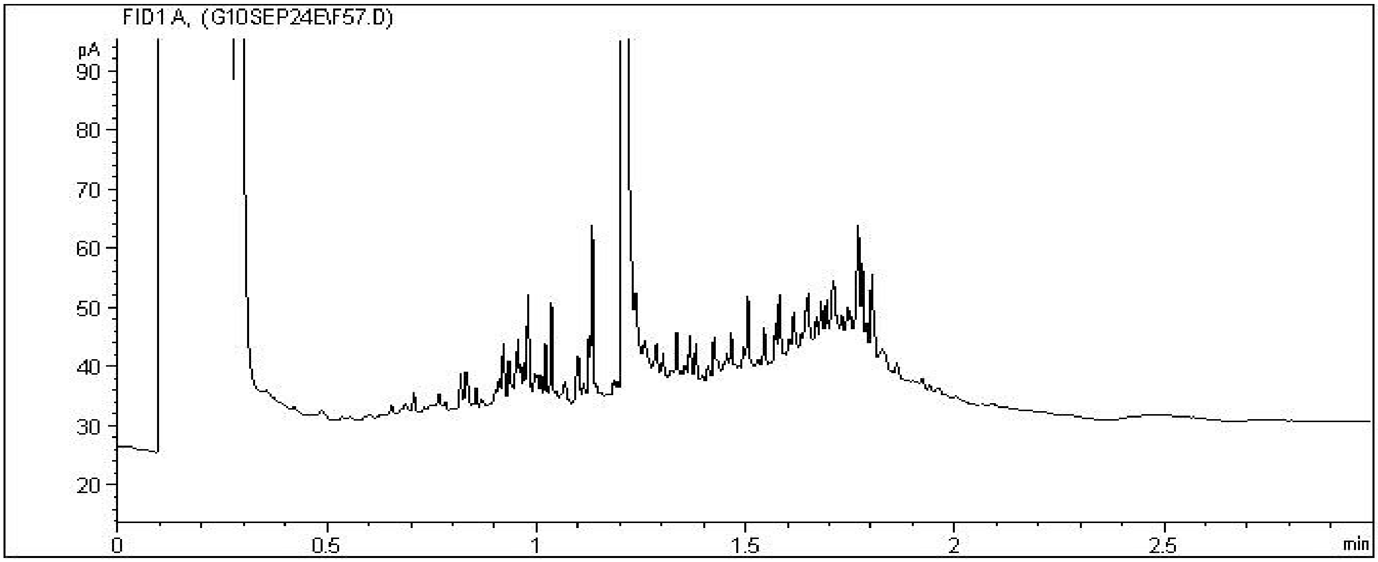
Gasoline:	C4 - C12		Diesel:	C8 - C22
Varsol:	C8 - C12		Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

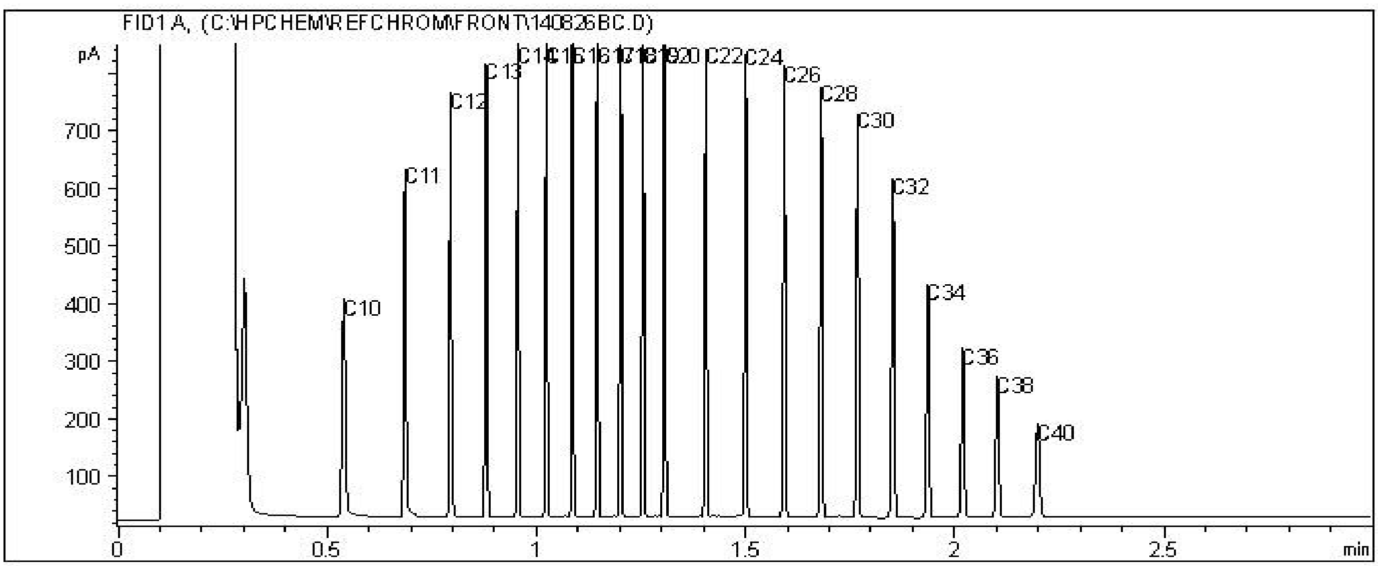
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7928

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH03-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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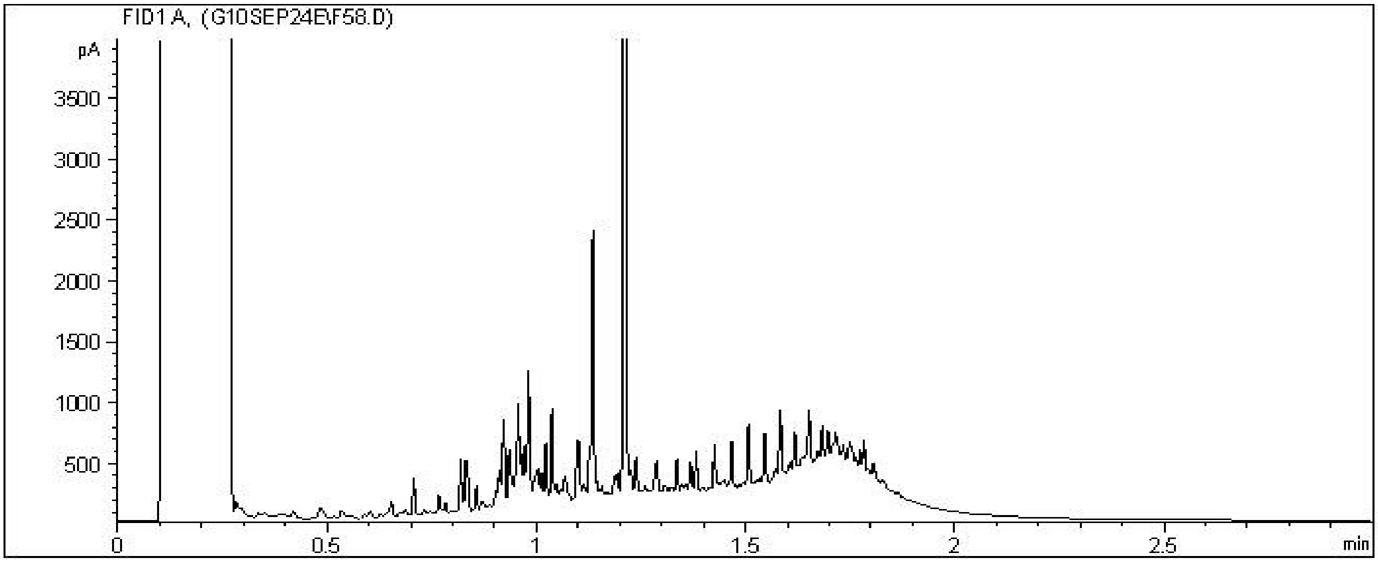
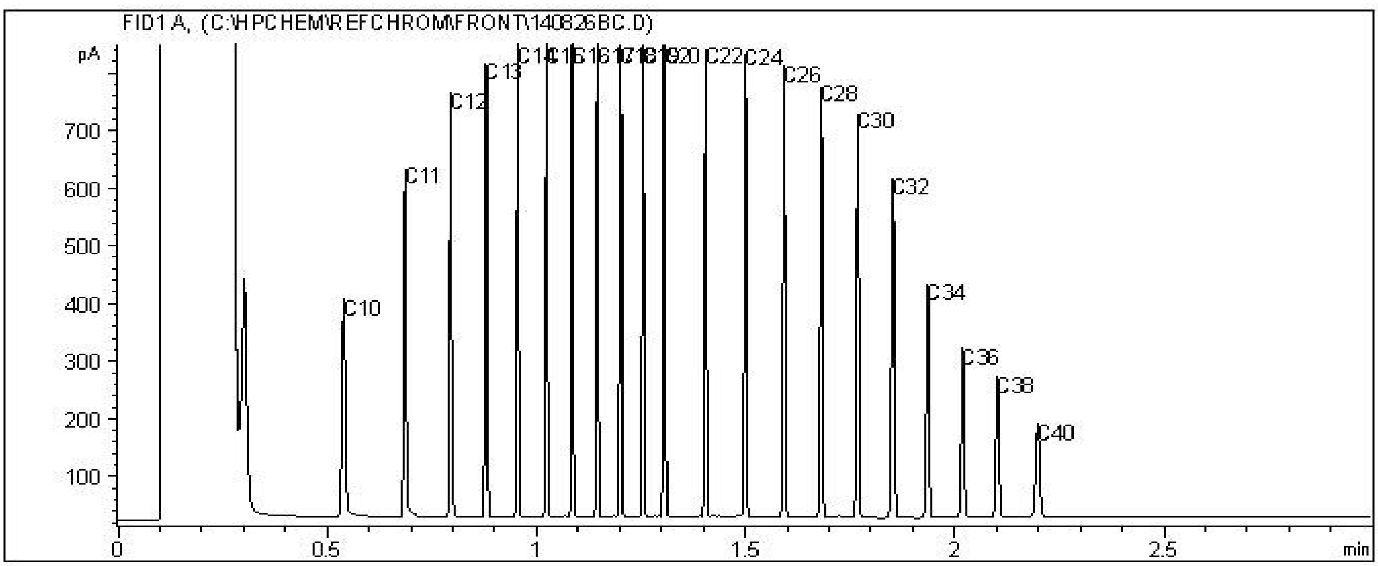
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7931

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH04-2

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



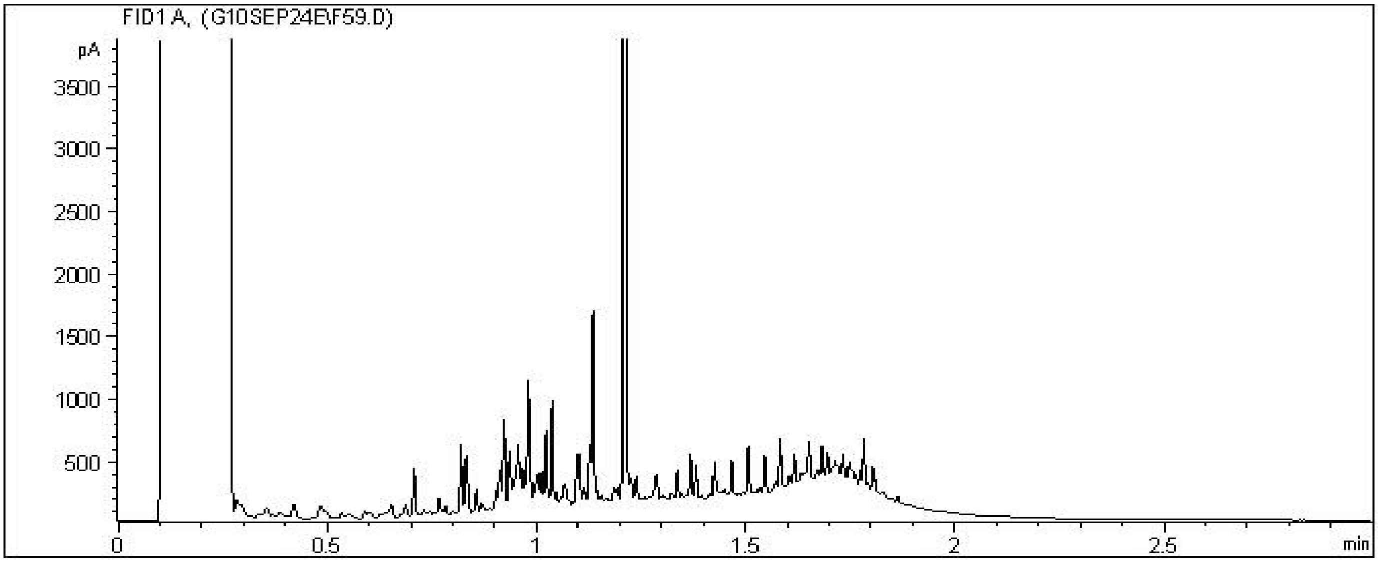
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12		Diesel:	C8 - C22	
Varsol:	C8 - C12		Lubricating Oils:	C20 - C40	

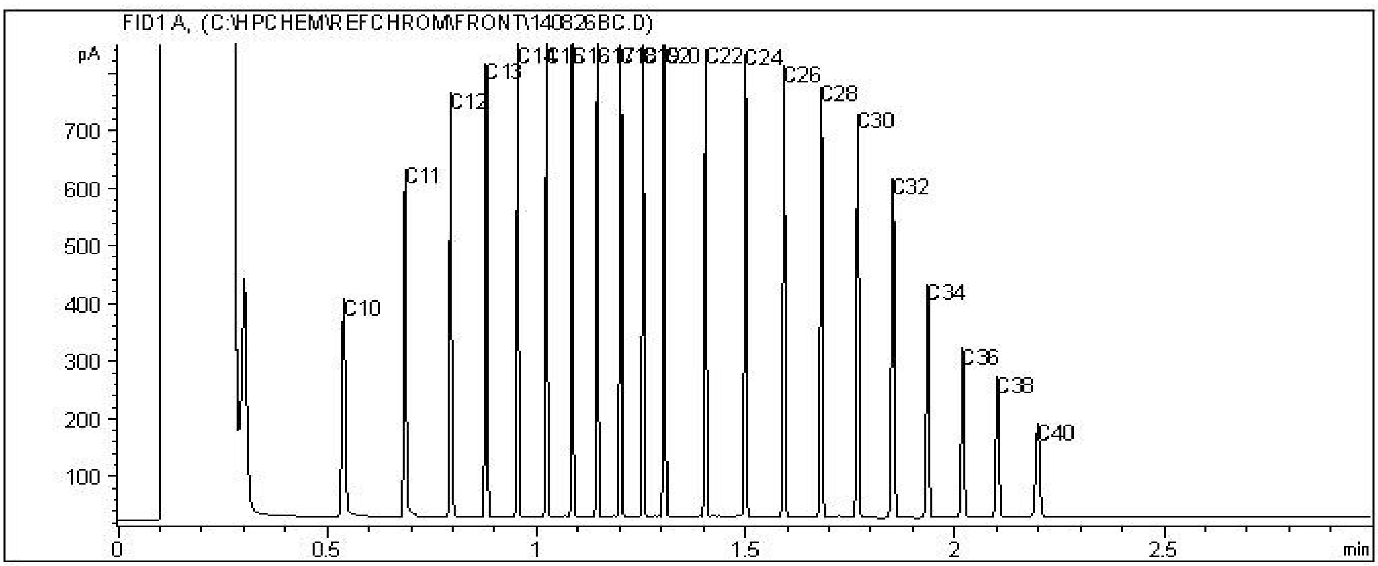
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Tetra Tech EBA
Report Date: 2014/11/10 Client Project #: ENVINO03511-01.003
Maxxam Job #: B482486 Site Reference: NANAIMO BC
Maxxam Sample: KP7936 Client ID: 14BH08-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
A Bureau Veritas Group Company

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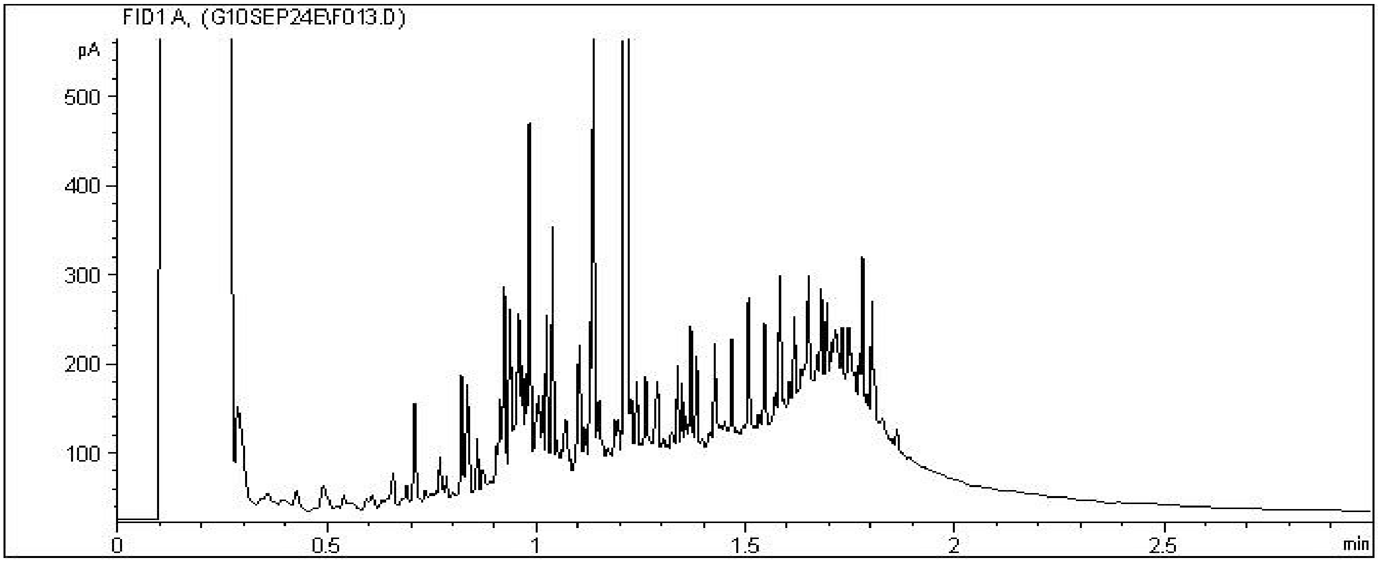
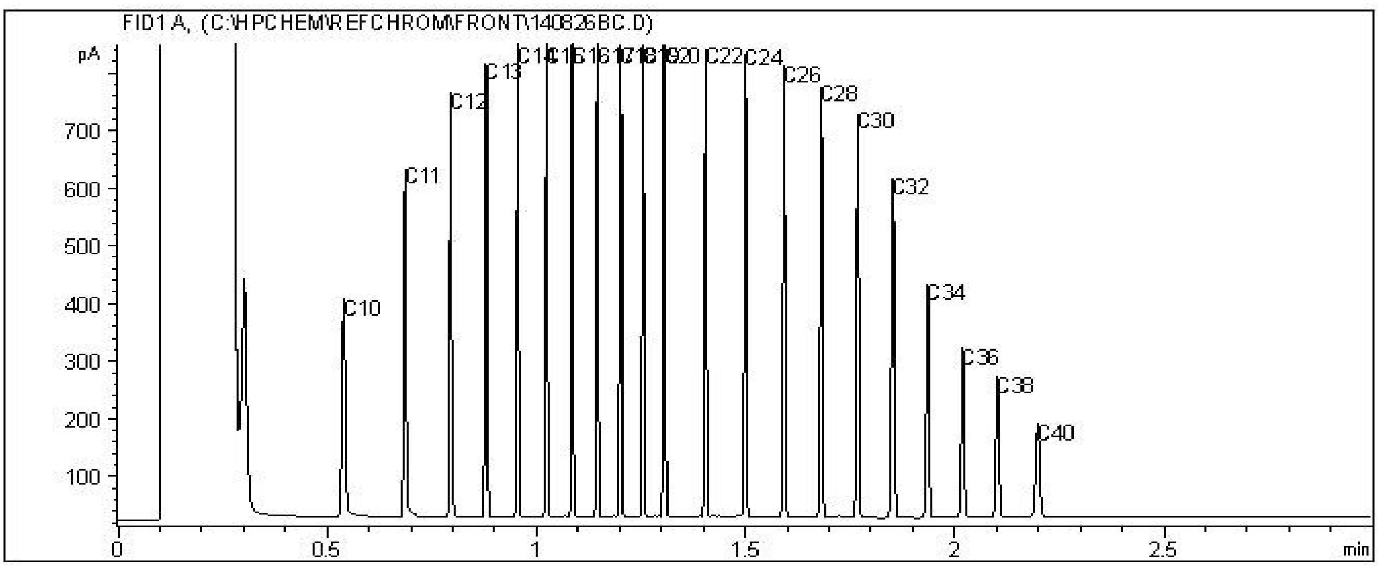
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7971

Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH08-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

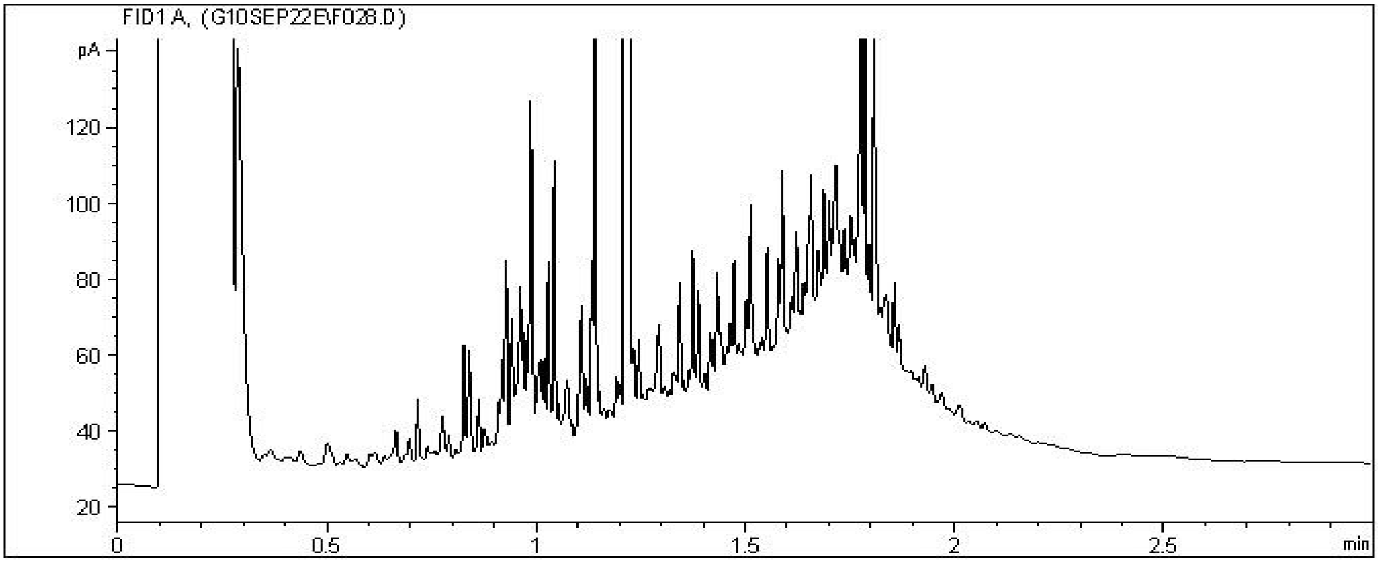
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

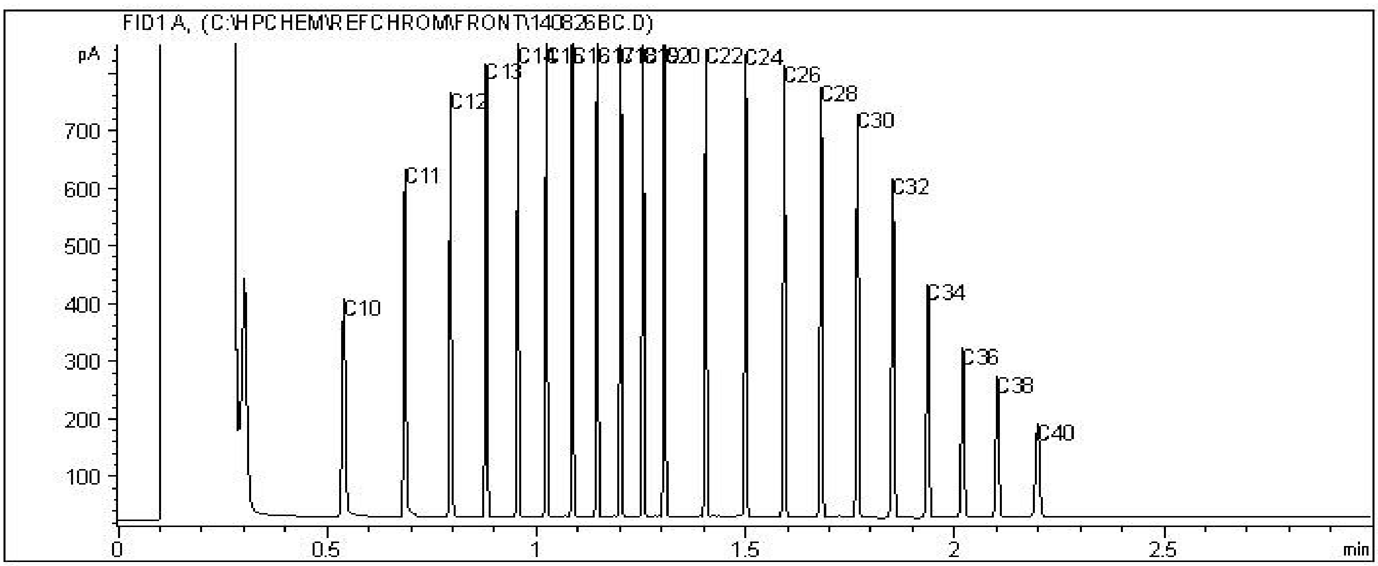
Tetra Tech EBA
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH08-5

Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7972

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

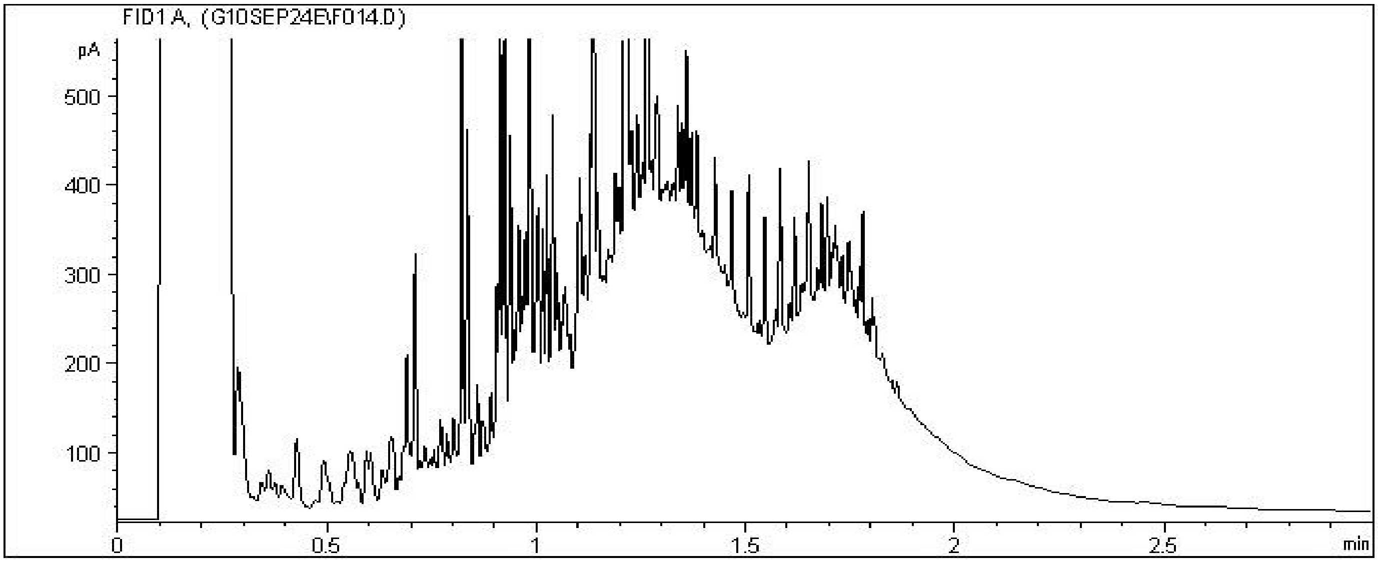
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Tetra Tech EBA

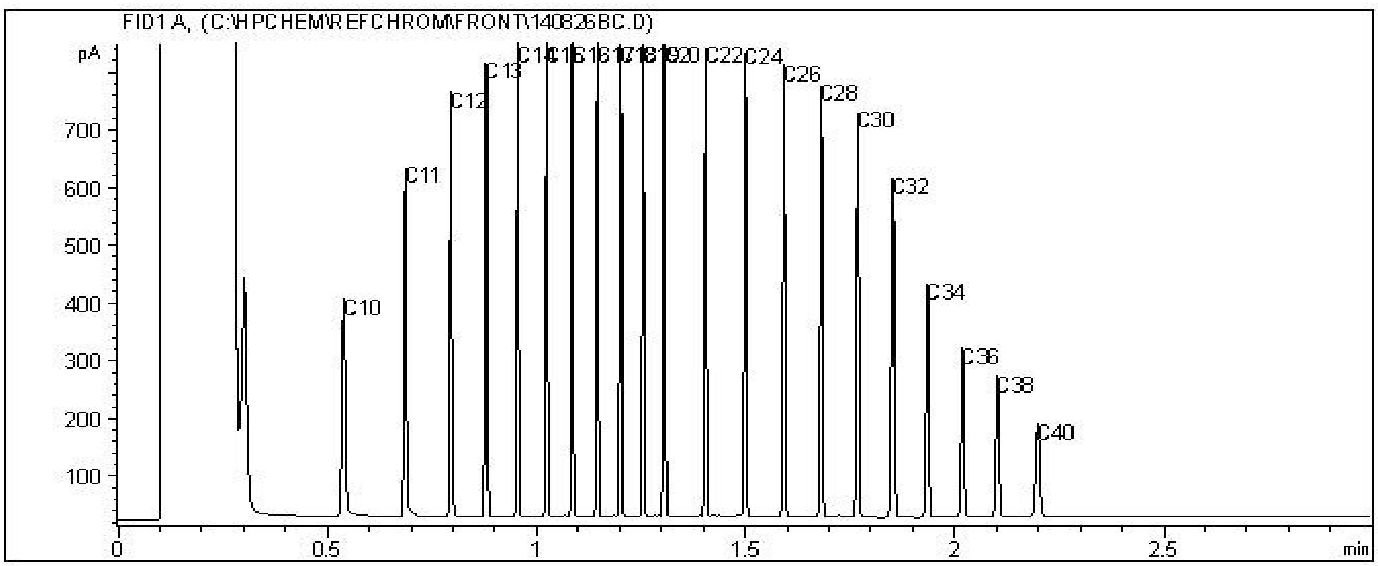
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7975

Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH09-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



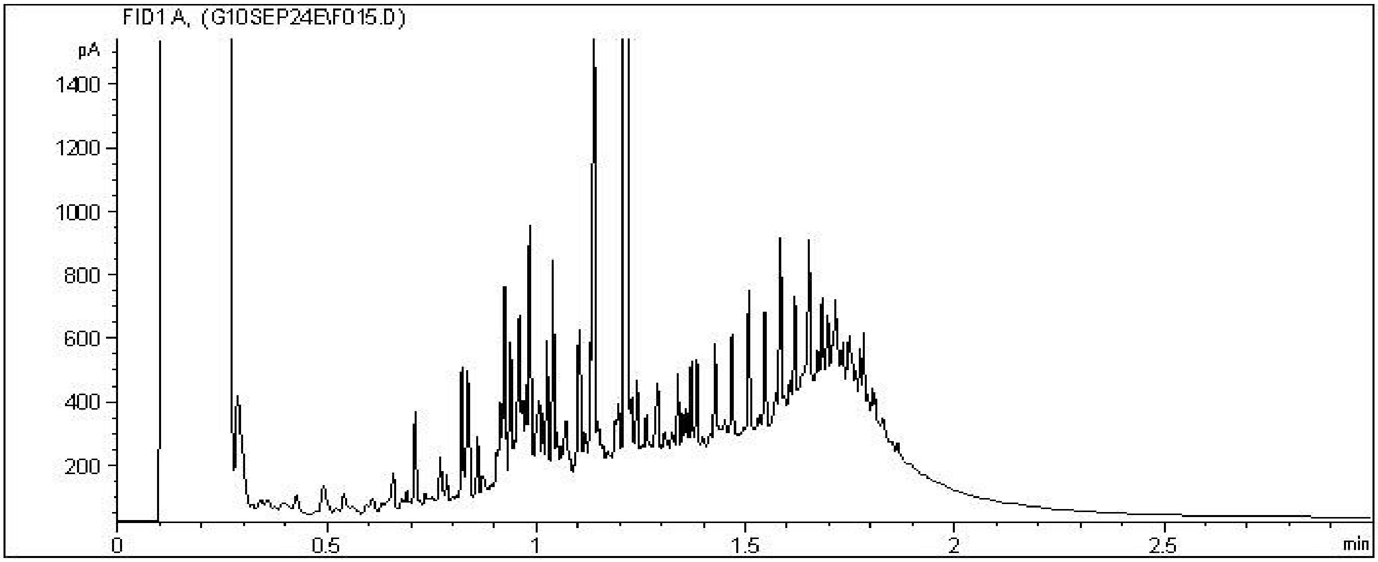
TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

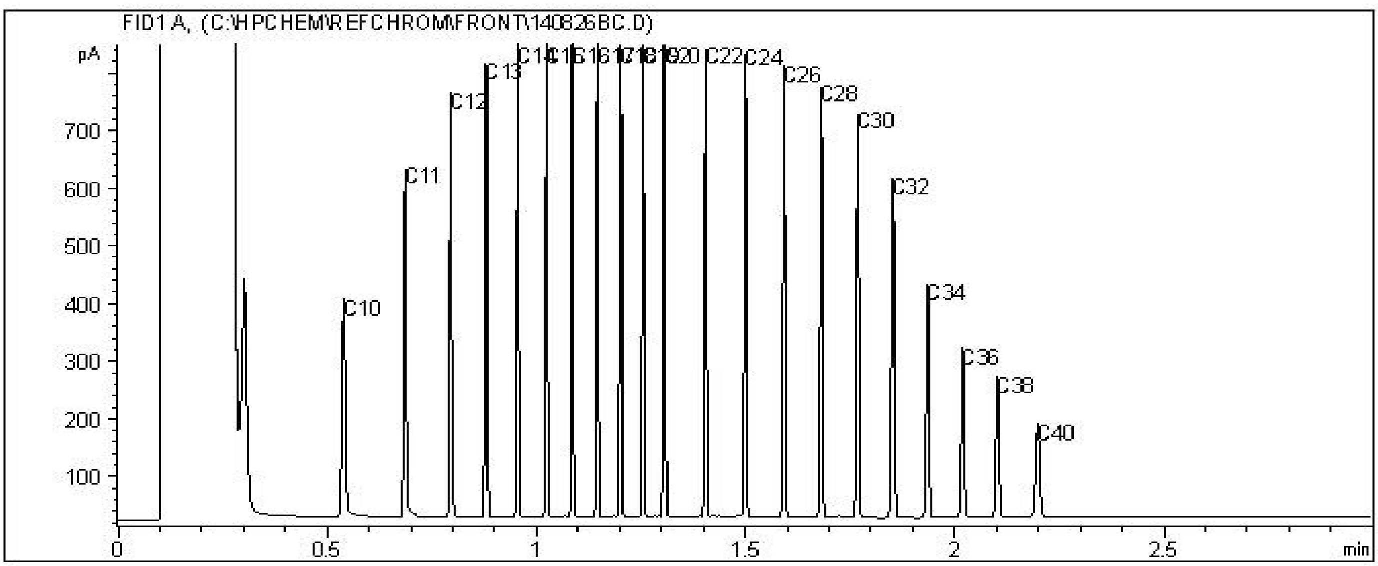
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Tetra Tech EBA
Report Date: 2014/11/10
Maxxam Job #: B482486
Maxxam Sample: KP7977
Client Project #: ENVINO03511-01.003
Site Reference: NANAIMO BC
Client ID: 14BH20-2

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: ENVIND03511-01.003 1
Site#: 1 PORT DRIVE DSI
Site Location: NANAIMO BC

Attention: Lora J Paul
Tetra Tech EBA
NANAIMO
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Your C.O.C. #: G087504, G087505, G087506, G077246, G077247, G077248

Report Date: 2014/11/12
Report #: R1682005
Version: 5R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B483621
Received: 2014/09/19, 08:10

Sample Matrix: Soil
Samples Received: 50

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Phenols - TCLP by GCMS	1	2014/10/06	2014/10/06	BBY8SOP-00025	EPA 8270D
Phenols - TCLP by GCMS	1	2014/10/06	2014/10/08	BBY8SOP-00025	EPA 8270D
Phenols in Soil by GCMS	11	2014/09/24	2014/09/26	BBY8SOP-00025	EPA 8270d R4
Phenols in Soil by GCMS	12	2014/09/25	2014/09/27	BBY8SOP-00025	EPA 8270d R4
Phenols in Soil by GCMS	2	2014/10/03	2014/10/05	BBY8SOP-00025	EPA 8270d R4
Phenols in Soil by GCMS	2	2014/10/03	2014/10/06	BBY8SOP-00025	EPA 8270d R4
Phenols in Soil by GCMS	1	2014/10/20	2014/10/22	BBY8SOP-00025	EPA 8270d R4
Chromium III (Calc'd)	2	2014/10/01	2014/10/07		
Chromium, Hexavalent (soil)	2	2014/10/07	2014/10/07	BBY6SOP-00015	SM 22 3500-Cr B m
Elements by ICPMS (total)	4	2014/09/21	2014/09/22	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	3	2014/09/23	2014/09/23	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	5	2014/09/24	2014/09/24	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	4	2014/09/26	2014/09/26	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	3	2014/10/03	2014/10/03	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	1	2014/10/04	2014/10/06	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	5	2014/10/30	2014/10/30	BBY7SOP-00001	EPA 6020a R1 m
Elements by ICPMS (total)	1	2014/11/07	2014/11/07	BBY7SOP-00001	EPA 6020a R1 m
Metals - SPLP	3	2014/10/04	2014/10/04	BBY7SOP-00002	EPA 6020A R1 m
Moisture	11	N/A	2014/09/22	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	1	N/A	2014/09/23	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	8	N/A	2014/09/24	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	6	N/A	2014/09/25	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	11	N/A	2014/09/26	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	5	N/A	2014/09/28	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	1	N/A	2014/10/01	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	3	N/A	2014/10/03	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	2	N/A	2014/10/04	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	1	N/A	2014/10/18	BBY8SOP-00017	OMOE E3139 3.1 m
PAH in Soil by GC/MS (SIM)	1	2014/09/21	2014/09/23	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/09/22	2014/09/25	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	6	2014/09/23	2014/09/24	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/09/23	2014/09/25	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/09/23	2014/09/26	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/09/25	2014/09/26	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	4	2014/09/26	2014/09/26	BBY8SOP-00022	EPA 8270d R4 m

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

Sample Matrix: Soil
Samples Received: 50

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total LMW, HMW, Total PAH Calc	4	N/A	2014/09/24	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	4	N/A	2014/09/25	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	2	N/A	2014/09/26	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	5	N/A	2014/09/29	BBY WI-00033	Auto Calc
Phenols (Totals) on Leachate by GCMS	1	N/A	2014/10/08	BBY8SOP-00025	EPA 8270d R4
Phenols (Totals) in Soil by GCMS	4	2014/10/01	2014/10/06	BBY8SOP-00025	EPA 8270d R4
pH (2:1 DI Water Extract)	4	2014/09/22	2014/09/22	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	3	2014/09/23	2014/09/23	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	5	2014/09/24	2014/09/24	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	4	2014/09/26	2014/09/26	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	6	2014/10/03	2014/10/03	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	2	2014/10/06	2014/10/06	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	1	2014/10/09	2014/10/09	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	5	2014/10/30	2014/10/30	BBY6SOP-00028	BCMOE BCLM Mar2005 m
pH (2:1 DI Water Extract)	1	2014/11/07	2014/11/07	BBY6SOP-00028	BCMOE BCLM Mar2005 m
Special Waste Oil and Grease	1	N/A	2014/10/06	BBY8SOP-00008	BCMOE BCLM Mar 2005
EPH less PAH in Soil By GC/FID	4	N/A	2014/09/24	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	2	N/A	2014/09/25	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	2	N/A	2014/09/26	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	1	N/A	2014/09/29	BBY WI-00033	Auto Calc
BC Hydrocarbons in Soil by GC/FID	1	2014/09/21	2014/09/23	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	1	2014/09/22	2014/09/26	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	6	2014/09/23	2014/09/24	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	6	2014/09/25	2014/09/25	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	2	2014/09/25	2014/09/26	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	1	2014/09/26	2014/09/28	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	1	2014/09/30	2014/10/01	BBY8SOP-00029	BCMOE EPH s 07/99 m
VOCs, VH, F1, LH in Soil by HS GC/MS	1	2014/09/21	2014/09/23	BBY8-SOP-00009	EPA 8260c R3 m
VOCs, VH, F1, LH in Soil by HS GC/MS	2	2014/09/21	2014/09/26	BBY8-SOP-00009	EPA 8260c R3 m
VOCs, VH, F1, LH in Soil by HS GC/MS	1	2014/09/22	2014/09/23	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	2	N/A	2014/09/24	BBY WI-00033	Auto Calc
Volatile HC-BTEX	2	N/A	2014/09/26	BBY WI-00033	Auto Calc

* Results relate only to the items tested.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604) 638-5016

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		KQ4248	KQ4249	KQ4274		
Sampling Date		2014/09/16	2014/09/16	2014/09/17		
	UNITS	**14BH09-5**	**14BH09-6**	**14BH10-1**	**RDL**	**QC Batch**
Calculated Parameters						
Chromium III	mg/kg		116		1.0	7662263
Metals						
Hex. Chromium (Cr 6+)	mg/kg		<1.0		1.0	7669648
OIL & GREASE						
Hazardous Waste Oil	%	<0.50			0.50	7665260
Physical Properties						
Soluble (2:1) pH	pH			7.82	N/A	7666151

Maxxam ID		KQ4277		KQ4278		KQ4310	KQ4338	KQ4407		
Sampling Date		2014/09/17		2014/09/17		2014/09/17	2014/09/17	2014/09/18		
	UNITS	**14BH10-4**	**QC Batch**	**14BH10-5**	**QC Batch**	**14BH11-6**	**14BH13-4**	**14BH25-4**	**RDL**	**QC Batch**
Calculated Parameters										
Chromium III	mg/kg							123	1.0	7662263
Metals										
Hex. Chromium (Cr 6+)	mg/kg							<1.0	1.0	7669648
Physical Properties										
Soluble (2:1) pH	pH	8.20	7664431	7.81	7672313	8.25	8.13		N/A	7664431

PHYSICAL TESTING (SOIL)

Maxxam ID		KQ4247		KQ4248		KQ4249		KQ4250	KQ4251		KQ4253		
Sampling Date		2014/09/16		2014/09/16		2014/09/16		2014/09/16	2014/09/16		2014/09/17		
	UNITS	**14BH09-4**	**QC Batch**	**14BH09-5**	**QC Batch**	**14BH09-6**	**QC Batch**	**14BH09-7**	**14BH09-8**	**QC Batch**	**14BH06-2**	**RDL**	**QC Batch**
Physical Properties													
Moisture	%	34	7646207	20	7646215	14	7648441	26	18	7651887	14	0.30	7648441

N/A = Not Applicable
RDL = Reportable Detection Limit

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Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

PHYSICAL TESTING (SOIL)

Maxxam ID		KQ4254		KQ4255	KQ4256		KQ4257		KQ4258		KQ4271		
Sampling Date		2014/09/17		2014/09/17	2014/09/17		2014/09/17		2014/09/17		2014/09/17		
	UNITS	**14BH06-3**	**QC Batch**	**14BH06-4**	**14BH06-5**	**QC Batch**	**14BH06-6**	**QC Batch**	**14BH07-1**	**QC Batch**	**14BH07-3**	**RDL**	**QC Batch**
Physical Properties													
Moisture	%	13	7651887	37	25	7648441	22	7651887	9.1	7648427	6.2	0.30	7648441

Maxxam ID		KQ4272		KQ4273		KQ4274		KQ4275	KQ4276		KQ4277		
Sampling Date		2014/09/17		2014/09/17		2014/09/17		2014/09/17	2014/09/17		2014/09/17		
	UNITS	**14BH07-4**	**QC Batch**	**14BH07-5**	**QC Batch**	**14BH10-1**	**QC Batch**	**14BH10-2**	**14BH10-3**	**QC Batch**	**14BH10-4**	**RDL**	**QC Batch**
Physical Properties													
Moisture	%	22	7648441	17	7651887	9.2	7664406	5.8	5.7	7646207	19	0.30	7647295

Maxxam ID		KQ4278		KQ4279		KQ4281	KQ4308		KQ4310		KQ4311		
Sampling Date		2014/09/17		2014/09/17		2014/09/17	2014/09/17		2014/09/17		2014/09/17		
	UNITS	**14BH10-5**	**QC Batch**	**14BH10-6**	**QC Batch**	**14BH11-2**	**14BH11-4**	**QC Batch**	**14BH11-6**	**QC Batch**	**14BH12-1**	**RDL**	**QC Batch**
Physical Properties													
Moisture	%	22	7662291	17	7681223	5.2	18	7647295	22	7662291	5.6	0.30	7647295

Maxxam ID		KQ4312	KQ4314	KQ4316		KQ4317		KQ4338		KQ4340		
Sampling Date		2014/09/17	2014/09/17	2014/09/17		2014/09/17		2014/09/17		2014/09/17		
	UNITS	**14BH12-2**	**14BH12-4**	**14BH13-1**	**QC Batch**	**14BH13-2**	**QC Batch**	**14BH13-4**	**QC Batch**	**DUP 6**	**RDL**	**QC Batch**
Physical Properties												
Moisture	%	10	22	8.7	7647295	5.7	7648427	18	7662291	14	0.30	7651887

Maxxam ID		KQ4342	KQ4342		KQ4344		KQ4345		KQ4346		KQ4347		
Sampling Date		2014/09/17	2014/09/17		2014/09/18		2014/09/18		2014/09/18		2014/09/18		
	UNITS	**DUP 8**	**DUP 8 Lab-Dup**	**QC Batch**	**DUP 10**	**QC Batch**	**DUP 11**	**QC Batch**	**14BH14-1**	**QC Batch**	**14BH14-2**	**RDL**	**QC Batch**
Physical Properties													
Moisture	%	14	14	7647295	11	7655803	24	7653676	10	7655803	4.3	0.30	7653676

RDL = Reportable Detection Limit

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Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

PHYSICAL TESTING (SOIL)

Maxxam ID		KQ4348		KQ4370		KQ4371		KQ4373		KQ4375		
Sampling Date		2014/09/18		2014/09/18		2014/09/18		2014/09/18		2014/09/18		
	UNITS	**14BH14-3**	**QC Batch**	**14BH15-1**	**QC Batch**	**14BH15-2**	**QC Batch**	**14BH15-4**	**QC Batch**	**14BH16-1**	**RDL**	**QC Batch**
Physical Properties												
Moisture	%	36	7655803	18	7653676	6.9	7655803	13	7653676	12	0.30	7655803

Maxxam ID		KQ4376	KQ4378		KQ4380		KQ4400		KQ4401		
Sampling Date		2014/09/18	2014/09/18		2014/09/18		2014/09/18		2014/09/18		
	UNITS	**14BH16-2**	**14BH16-4**	**QC Batch**	**14BH24-1**	**QC Batch**	**14BH24-2**	**QC Batch**	**14BH24-3**	**RDL**	**QC Batch**
Physical Properties											
Moisture	%	13	14	7653676	7.3	7660004	9.3	7652364	11	0.30	7653676

Maxxam ID		KQ4404	KQ4405		KQ4406		KQ4407		
Sampling Date		2014/09/18	2014/09/18		2014/09/18		2014/09/18		
	UNITS	**14BH25-1**	**14BH25-2**	**QC Batch**	**14BH25-3**	**QC Batch**	**14BH25-4**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	25	27	7653676	12	7652360	16	0.30	7664406

RDL = Reportable Detection Limit

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KQ4274			KQ4275		KQ4276		KQ4277			KQ4278		
Sampling Date		2014/09/17			2014/09/17		2014/09/17		2014/09/17			2014/09/17		
	UNITS	**14BH10-1**	**RDL**	**QC Batch**	**14BH10-2**	**RDL**	**14BH10-3**	**RDL**	**14BH10-4**	**RDL**	**QC Batch**	**14BH10-5**	**RDL**	**QC Batch**
Phenols														
Total Monochlorophenols	mg/kg	6.1	0.050	7661812								4.3	0.050	7661812
Total Dichlorophenols	mg/kg	1.8	0.050	7661812								12	0.050	7661812
Total Trichlorophenols	mg/kg	0.83	0.050	7661812								4.3	0.050	7661812
Total Tetrachlorophenols	mg/kg	0.25	0.050	7661812								7.5	0.050	7661812
Total Chlorophenols	mg/kg	9.4	0.050	7661812								29	0.050	7661812
SEMI-VOLATILE ORGANICS														
2-chlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.050(1)	0.050	<0.0050	0.0050	<0.0050	0.0050	7651682	<0.050(1)	0.050	7664907
3 & 4-chlorophenol	mg/kg	6.1(1)	0.050	7664907	<0.66(2)	0.66	<0.24(2)	0.24	<0.22(2)	0.22	7651682	4.3(1)	0.050	7664907
2,4 + 2,5-Dichlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.050(1)	0.050	<0.0050	0.0050	<0.16(2)	0.16	7651682	0.46(1)	0.050	7664907
2,3-Dichlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.050(1)	0.050	<0.0050	0.0050	<0.0050	0.0050	7651682	<0.050(1)	0.050	7664907
2,6-dichlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.050(1)	0.050	<0.13(2)	0.13	<0.21(2)	0.21	7651682	<0.050(1)	0.050	7664907
3,5-Dichlorophenol	mg/kg	0.79(1)	0.050	7664907	<0.050(1)	0.050	<0.0050	0.0050	<0.0050	0.0050	7651682	1.2(1)	0.050	7664907
3,4-Dichlorophenol	mg/kg	1.1(1)	0.050	7664907	0.34(1)	0.050	0.068	0.0050	4.0(3)	0.025	7651682	10(1)	0.050	7664907
2,4,5-trichlorophenol	mg/kg	0.19(1)	0.050	7664907	6.7(1)	0.050	2.8(3)	0.50	1.8(3)	0.025	7651682	2.5(1)	0.050	7664907
2,4,6-trichlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.092(2)	0.092	<0.036(2)	0.036	<0.0050	0.0050	7651682	<0.050(1)	0.050	7664907
2,3,5-trichlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.050(1)	0.050	<0.0050	0.0050	<0.0050	0.0050	7651682	0.11(1)	0.050	7664907
2,3,6-Trichlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.050(1)	0.050	<0.0061(2)	0.0061	<0.0050	0.0050	7651682	<0.050(1)	0.050	7664907
2,3,4-trichlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.050(1)	0.050	<0.0050	0.0050	<0.0050	0.0050	7651682	0.41(1)	0.050	7664907
3,4,5-Trichlorophenol	mg/kg	0.64(1)	0.050	7664907	0.073(1)	0.050	<0.036(2)	0.036	0.098	0.0050	7651682	1.3(1)	0.050	7664907
2,3,4,6-tetrachlorophenol	mg/kg	0.16(1)	0.050	7664907	170(3)	2.5	57(3)	0.50	1.5(3)	0.025	7651682	6.9(1)	0.050	7664907
2,3,4,5-tetrachlorophenol	mg/kg	0.094(1)	0.050	7664907	<0.050(1)	0.050	<0.0050	0.0050	<0.0050	0.0050	7651682	0.60(1)	0.050	7664907
2,3,5,6-tetrachlorophenol	mg/kg	<0.050(1)	0.050	7664907	<0.050(1)	0.050	<0.0050	0.0050	<0.0050	0.0050	7651682	<0.050(1)	0.050	7664907
2,6-Dimethylphenol	mg/kg				<0.50(1)	0.50	<0.050	0.050	<0.050	0.050	7651682			
Pentachlorophenol	mg/kg	0.40(1)	0.050	7664907	140(3)	2.5	25(3)	0.50	0.87(3)	0.025	7651682	1.4(1)	0.050	7664907
Surrogate Recovery (%)														
2,4,6-TRIBROMOPHENOL (sur.)	%	107		7664907	120		118		121		7651682	103		7664907
2-FLUOROPHENOL (sur.)	%	84		7664907	97		88		102		7651682	57		7664907

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution as a result of sample matrix inteference.
(2) - RDL raised due to sample matrix interference.
(3) - Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KQ4279		KQ4279			KQ4281	KQ4281		KQ4308		
Sampling Date		2014/09/17		2014/09/17			2014/09/17	2014/09/17		2014/09/17		
	UNITS	**14BH10-6**	**RDL**	**14BH10-6 Lab-Dup**	**RDL**	**QC Batch**	**14BH11-2**	**14BH11-2 Lab-Dup**	**RDL**	**14BH11-4**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS												
2-chlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	<0.0050	0.0050	7651682
3 & 4-chlorophenol	mg/kg	<0.12(2)	0.12	<0.16(2)	0.16	7685307	<0.0050	<0.0050	0.0050	<0.017(2)	0.017	7651682
2,4 + 2,5-Dichlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	<0.012(2)	0.012	7651682
2,3-Dichlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	<0.0050	0.0050	7651682
2,6-dichlorophenol	mg/kg	<0.050(3)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	<0.0050	0.0050	7651682
3,5-Dichlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	0.43	0.0050	7651682
3,4-Dichlorophenol	mg/kg	<0.10(4)	0.10	0.56(2)	0.050	7685307	<0.0050	<0.0050	0.0050	1.8(5)	0.025	7651682
2,4,5-trichlorophenol	mg/kg	<0.050(1)	0.050	0.15(1)	0.050	7685307	<0.0050	<0.0050	0.0050	0.44	0.0050	7651682
2,4,6-trichlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	<0.0050	0.0050	7651682
2,3,5-trichlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	0.54	0.0050	7651682
2,3,6-Trichlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	<0.0050	0.0050	7651682
2,3,4-trichlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	0.67	0.0050	7651682
3,4,5-Trichlorophenol	mg/kg	<0.050(1)	0.050	0.093(1)	0.050	7685307	<0.0050	<0.0050	0.0050	0.57	0.0050	7651682
2,3,4,6-tetrachlorophenol	mg/kg	0.14(1)	0.050	0.53(1)	0.050	7685307	0.0063	<0.0050	0.0050	2.5(5)	0.025	7651682
2,3,4,5-tetrachlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	0.010	0.011	0.0050	0.41	0.0050	7651682
2,3,5,6-tetrachlorophenol	mg/kg	<0.050(1)	0.050	<0.050(1)	0.050	7685307	<0.0050	<0.0050	0.0050	0.074	0.0050	7651682
2,6-Dimethylphenol	mg/kg	<0.50(1)	0.50	<0.50(1)	0.50	7685307	<0.050	<0.050	0.050	<0.050	0.050	7651682
Pentachlorophenol	mg/kg	0.083(1)	0.050	0.13(1)	0.050	7685307	0.035	0.025	0.0050	1.5(5)	0.025	7651682
Surrogate Recovery (%)												
2,4,6-TRIBROMOPHENOL (sur.)	%	85		80		7685307	115	119		115		7651682
2-FLUOROPHENOL (sur.)	%	72		71		7685307	70	80		80		7651682

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution as a result of sample matrix inteference.
(2) - RDL raised due to sample matrix interference.
(3) - Detection limits raised due to dilution as a result of sample matrix inteference.
Matrix spike recovery above control limit - Potential high bias.
(4) - RDL raised due to sample matrix interference.
Matrix spike recovery above control limit - Potential high bias.
(5) - Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B483621
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Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KQ4310			KQ4311	KQ4312	KQ4314		KQ4316		KQ4317		
Sampling Date		2014/09/17			2014/09/17	2014/09/17	2014/09/17		2014/09/17		2014/09/17		
	UNITS	**14BH11-6**	**RDL**	**QC Batch**	**14BH12-1**	**14BH12-2**	**14BH12-4**	**RDL**	**14BH13-1**	**RDL**	**14BH13-2**	**RDL**	**QC Batch**
Phenols													
Total Monochlorophenols	mg/kg	<0.050	0.050	7661812									
Total Dichlorophenols	mg/kg	<0.050	0.050	7661812									
Total Trichlorophenols	mg/kg	<0.050	0.050	7661812									
Total Tetrachlorophenols	mg/kg	0.098	0.050	7661812									
Total Chlorophenols	mg/kg	0.22	0.050	7661812									
SEMI-VOLATILE ORGANICS													
2-chlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
3 & 4-chlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	0.12 (1)	0.050	<0.0050	0.0050	7651682
2,4 + 2,5-Dichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,3-Dichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,6-dichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
3,5-Dichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
3,4-Dichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,4,5-trichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	0.015	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,4,6-trichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,3,5-trichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,3,6-Trichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,3,4-trichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
3,4,5-Trichlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.073 (2)	0.073	<0.0050	0.0050	7651682
2,3,4,6-tetrachlorophenol	mg/kg	0.098 (1)	0.050	7664907	<0.0050	0.55	<0.0050	0.0050	<0.050 (3)	0.050	<0.0050	0.0050	7651682
2,3,4,5-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,3,5,6-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	7664907	<0.0050	<0.0050	<0.0050	0.0050	<0.050 (1)	0.050	<0.0050	0.0050	7651682
2,6-Dimethylphenol	mg/kg				<0.050	<0.050	<0.050	0.050	<0.50 (1)	0.50	<0.050	0.050	7651682
Pentachlorophenol	mg/kg	0.12 (1)	0.050	7664907	0.0053	0.010	<0.0050	0.0050	0.061 (1)	0.050	<0.0050	0.0050	7651682
Surrogate Recovery (%)													
2,4,6-TRIBROMOPHENOL (sur.)	%	91		7664907	114	119	111		107		119		7651682
2-FLUOROPHENOL (sur.)	%	66		7664907	73	69	55		78		68		7651682

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution as a result of sample matrix inteference.
(2) - RDL raised due to sample matrix interference.
(3) - RDL raised due to sample matrix interference. Detection limits raised due to dilution as a result of sample matrix inteference.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KQ4338		KQ4338			KQ4342			KQ4344		
Sampling Date		2014/09/17		2014/09/17			2014/09/17			2014/09/18		
	UNITS	**14BH13-4**	**RDL**	**14BH13-4 Lab-Dup**	**RDL**	**QC Batch**	**DUP 8**	**RDL**	**QC Batch**	**DUP 10**	**RDL**	**QC Batch**
Phenols												
Total Monochlorophenols	mg/kg	<0.0086	0.0086			7661812						
Total Dichlorophenols	mg/kg	0.085	0.0050			7661812						
Total Trichlorophenols	mg/kg	0.051	0.0050			7661812						
Total Tetrachlorophenols	mg/kg	0.058	0.0050			7661812						
Total Chlorophenols	mg/kg	0.25	0.0086			7661812						
SEMI-VOLATILE ORGANICS												
Phenol	mg/kg									<0.50(1)	0.50	7653356
2-chlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
3 & 4-chlorophenol	mg/kg	<0.0086(2)	0.0086	<0.0080(2)	0.0080	7664907	<0.0050	0.0050	7651682	0.084(1)	0.050	7653356
2-methylphenol	mg/kg									<0.50(1)	0.50	7653356
3 & 4-methylphenol	mg/kg									<0.50(1)	0.50	7653356
2-nitrophenol	mg/kg									<0.50(1)	0.50	7653356
2,4-dimethylphenol	mg/kg									<0.50(1)	0.50	7653356
2,4 + 2,5-Dichlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
2,3-Dichlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
2,6-dichlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
3,5-Dichlorophenol	mg/kg	0.052	0.0050	0.038	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
3,4-Dichlorophenol	mg/kg	0.033	0.0050	0.025	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
2,4,5-trichlorophenol	mg/kg	0.011	0.0050	0.0083	0.0050	7664907	0.029	0.0050	7651682	<0.050(1)	0.050	7653356
2,4,6-trichlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
2,3,5-trichlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
2,3,6-Trichlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
2,3,4-trichlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
3,4,5-Trichlorophenol	mg/kg	0.039	0.0050	0.031	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
2,4-dinitrophenol	mg/kg									<0.80(1)	0.80	7653356
4,6-dinitro-2-methylphenol	mg/kg									<0.80(1)	0.80	7653356
2,3,4,6-tetrachlorophenol	mg/kg	0.012	0.0050	0.0088	0.0050	7664907	0.81(3)	0.025	7651682	<0.050(1)	0.050	7653356
2,3,4,5-tetrachlorophenol	mg/kg	0.046	0.0050	0.033	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
2,3,5,6-tetrachlorophenol	mg/kg	<0.0050	0.0050	<0.0050	0.0050	7664907	<0.0050	0.0050	7651682	<0.050(1)	0.050	7653356
4-nitrophenol	mg/kg									<0.50(1)	0.50	7653356
2,6-Dimethylphenol	mg/kg						<0.050	0.050	7651682	<0.50(1)	0.50	7653356
3,4-Dimethylphenol	mg/kg									<0.50(1)	0.50	7653356

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution as a result of sample matrix inteference.
(2) - Detection limits raised due to sample matrix inteference.
(3) - Detection limits raised due to dilution to bring analyte within the calibrated range.

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KQ4338		KQ4338			KQ4342			KQ4344		
Sampling Date		2014/09/17		2014/09/17			2014/09/17			2014/09/18		
	UNITS	**14BH13-4**	**RDL**	**14BH13-4 Lab-Dup**	**RDL**	**QC Batch**	**DUP 8**	**RDL**	**QC Batch**	**DUP 10**	**RDL**	**QC Batch**
Pentachlorophenol	mg/kg	0.052	0.0050	0.038	0.0050	7664907	0.012	0.0050	7651682	<0.050(1)	0.050	7653356
Surrogate Recovery (%)												
2,4,6-TRIBROMOPHENOL (sur.)	%	102		101		7664907	120		7651682	95		7653356
2-FLUOROPHENOL (sur.)	%	77		76		7664907	67		7651682	73		7653356

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution as a result of sample matrix inteference.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KQ4346	KQ4346			KQ4347		KQ4348	KQ4370		KQ4371		
Sampling Date		2014/09/18	2014/09/18			2014/09/18		2014/09/18	2014/09/18		2014/09/18		
	UNITS	**14BH14-1**	**14BH14-1 Lab-Dup**	**RDL**	**QC Batch**	**14BH14-2**	**RDL**	**14BH14-3**	**14BH15-1**	**RDL**	**14BH15-2**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS													
Phenol	mg/kg	<0.50(1)	<0.50(1)	0.50	7653356	<0.050	0.050	<0.50(1)	<0.50(1)	0.50	<0.50(1)	0.50	7653356
2-chlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
3 & 4-chlorophenol	mg/kg	0.072(1)	0.058(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	0.22(1)	0.050	7653356
2-methylphenol	mg/kg	<0.50(1)	<0.50(1)	0.50	7653356	<0.050	0.050	<0.50(1)	<0.50(1)	0.50	<0.50(1)	0.50	7653356
3 & 4-methylphenol	mg/kg	<0.50(1)	<0.50(1)	0.50	7653356	<0.050	0.050	<0.50(1)	<0.50(1)	0.50	<0.50(1)	0.50	7653356
2-nitrophenol	mg/kg	<0.50(1)	<0.50(1)	0.50	7653356	<0.050	0.050	<0.50(1)	<0.50(1)	0.50	<0.50(1)	0.50	7653356
2,4-dimethylphenol	mg/kg	<0.50(1)	<0.50(1)	0.50	7653356	<0.050	0.050	<0.50(1)	<0.50(1)	0.50	<0.50(1)	0.50	7653356
2,4 + 2,5-Dichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,3-Dichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,6-dichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.13(2)	0.13	7653356
3,5-Dichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.065(2)	0.065	7653356
3,4-Dichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,4,5-trichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,4,6-trichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,3,5-trichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,3,6-Trichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,3,4-trichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
3,4,5-Trichlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.21(2)	0.21	7653356
2,4-dinitrophenol	mg/kg	<0.80(1)	<0.80(1)	0.80	7653356	<0.080	0.080	<0.80(1)	<0.80(1)	0.80	<0.80(1)	0.80	7653356
4,6-dinitro-2-methylphenol	mg/kg	<0.80(1)	<0.80(1)	0.80	7653356	<0.080	0.080	<0.80(1)	<0.80(1)	0.80	<0.80(1)	0.80	7653356
2,3,4,6-tetrachlorophenol	mg/kg	0.17(1)	0.13(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,3,4,5-tetrachlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
2,3,5,6-tetrachlorophenol	mg/kg	<0.050(1)	<0.050(1)	0.050	7653356	<0.0050	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
4-nitrophenol	mg/kg	<0.50(1)	<0.50(1)	0.50	7653356	<0.050	0.050	<0.50(1)	<0.50(1)	0.50	<0.50(1)	0.50	7653356
2,6-Dimethylphenol	mg/kg	<0.50(1)	<0.50(1)	0.50	7653356	<0.050	0.050	<0.50(1)	<0.50(1)	0.50	<0.50(1)	0.50	7653356
3,4-Dimethylphenol	mg/kg	<0.50(1)	<0.50(1)	0.50	7653356	<0.050	0.050	<0.50(1)	<0.50(1)	0.50	<0.50(1)	0.50	7653356
Pentachlorophenol	mg/kg	<0.050(1)		0.050	7664907	0.0064	0.0050	<0.050(1)	<0.050(1)	0.050	<0.050(1)	0.050	7653356
Surrogate Recovery (%)													
2,4,6-TRIBROMOPHENOL (sur.)	%	90	93		7653356	105		82	84		107		7653356
2-FLUOROPHENOL (sur.)	%	76	71		7653356	63		70	63		72		7653356

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution as a result of sample matrix inteference.
(2) - RDL raised due to sample matrix interference.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		KQ4373		KQ4375		KQ4376		KQ4378		KQ4401		KQ4404		
Sampling Date		2014/09/18		2014/09/18		2014/09/18		2014/09/18		2014/09/18		2014/09/18		
	UNITS	**14BH15-4**	**RDL**	**14BH16-1**	**RDL**	**14BH16-2**	**RDL**	**14BH16-4**	**RDL**	**14BH24-3**	**RDL**	**14BH25-1**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS														
Phenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7653356
2-chlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
3 & 4-chlorophenol	mg/kg	0.30 (1)	0.050	0.073 (1)	0.050	0.26 (1)	0.050	0.22 (1)	0.050	0.20 (1)	0.050	0.39 (1)	0.050	7653356
2-methylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7653356
3 & 4-methylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	0.51 (1)	0.50	7653356
2-nitrophenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7653356
2,4-dimethylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	0.51 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7653356
2,4 + 2,5-Dichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.058 (1)	0.058	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
2,3-Dichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
2,6-dichlorophenol	mg/kg	<0.11 (2)	0.11	<0.050 (1)	0.050	<0.097 (2)	0.097	<0.082 (2)	0.082	<0.060 (2)	0.060	<0.13 (2)	0.13	7653356
3,5-Dichlorophenol	mg/kg	<0.059 (2)	0.059	<0.050 (1)	0.050	<0.063 (2)	0.063	<0.056 (1)	0.056	<0.050 (1)	0.050	<0.079 (2)	0.079	7653356
3,4-Dichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
2,4,5-trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
2,4,6-trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
2,3,5-trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
2,3,6-Trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
2,3,4-trichlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
3,4,5-Trichlorophenol	mg/kg	<0.17 (2)	0.17	<0.054 (2)	0.054	<0.13 (2)	0.13	<0.10 (2)	0.10	<0.062 (2)	0.062	<0.15 (2)	0.15	7653356
2,4-dinitrophenol	mg/kg	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	7653356
4,6-dinitro-2-methylphenol	mg/kg	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	<0.80 (1)	0.80	7653356
2,3,4,6-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.091 (2)	0.091	7653356
2,3,4,5-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
2,3,5,6-tetrachlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
4-nitrophenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7653356
2,6-Dimethylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7653356
3,4-Dimethylphenol	mg/kg	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	<0.50 (1)	0.50	7653356
Pentachlorophenol	mg/kg	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	<0.050 (1)	0.050	7653356
Surrogate Recovery (%)														
2,4,6-TRIBROMOPHENOL (sur.)	%	104		97		105		101		99		107		7653356
2-FLUOROPHENOL (sur.)	%	63		73		76		65		72		71		7653356

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution as a result of sample matrix inteference.
(2) - RDL raised due to sample matrix interference.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

TOTAL PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		KQ4250	KQ4251	KQ4254	KQ4257	KQ4273	KQ4273		
Sampling Date		2014/09/16	2014/09/16	2014/09/17	2014/09/17	2014/09/17	2014/09/17		
	UNITS	**14BH09-7**	**14BH09-8**	**14BH06-3**	**14BH06-6**	**14BH07-5**	**14BH07-5 Lab-Dup**	**RDL**	**QC Batch**
Hydrocarbons									
EPH (C10-C19)	mg/kg	2050	<100	1320	<100	<100	<100	100	7653312
EPH (C19-C32)	mg/kg	11700	202	950	<100	<100	<100	100	7653312
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	114	95	100	96	92	97		7653312

Maxxam ID		KQ4340		KQ4380		KQ4401		KQ4406		
Sampling Date		2014/09/17		2014/09/18		2014/09/18		2014/09/18		
	UNITS	**DUP 6**	**QC Batch**	**14BH24-1**	**QC Batch**	**14BH24-3**	**QC Batch**	**14BH25-3**	**RDL**	**QC Batch**
Hydrocarbons										
EPH (C10-C19)	mg/kg	1400	7653312	144	7660088	576	7656080	440	100	7653859
EPH (C19-C32)	mg/kg	1020	7653312	307	7660088	716	7656080	584	100	7653859
Surrogate Recovery (%)										
O-TERPHENYL (sur.)	%	99	7653312	120	7660088	104	7656080	102		7653859

RDL = Reportable Detection Limit

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

PHENOLS (SOIL)

Maxxam ID		KQ4275		KQ4308		
Sampling Date		2014/09/17		2014/09/17		
	UNITS	**14BH10-2**	**RDL**	**14BH11-4**	**RDL**	**QC Batch**
Phenols						
Leachate Total Monochlorophenols	ug/L	<50	50			7661810
Leachate Total Dichlorophenols	ug/L	<50	50			7661810
Leachate Total Trichlorophenols	ug/L	99	50			7661810
Leachate Total Tetrachlorophenols	ug/L	2400	50			7661810
Leachate Total Chlorophenols	ug/L	3500	50			7661810
SEMI-VOLATILE ORGANICS						
2-chlorophenol	ug/L	<0.50(1)	0.50			7667656
3 & 4-chlorophenol	ug/L	<1.4(2)	1.4			7667656
2,4 + 2,5-Dichlorophenol	ug/L	<0.50(1)	0.50			7667656
2,3-Dichlorophenol	ug/L	<0.50(1)	0.50			7667656
2,6-dichlorophenol	ug/L	<0.50(1)	0.50			7667656
3,5-Dichlorophenol	ug/L	<0.50(1)	0.50			7667656
3,4-Dichlorophenol	ug/L	7.9(1)	0.50			7667656
2,4,5-trichlorophenol	ug/L	97(3)	50			7667656
2,4,6-trichlorophenol	ug/L	2.2(1)	0.50			7667656
2,3,5-trichlorophenol	ug/L	<0.50(1)	0.50			7667656
2,3,6-Trichlorophenol	ug/L	<0.50(1)	0.50			7667656
2,3,4-trichlorophenol	ug/L	0.60(1)	0.50			7667656
3,4,5-Trichlorophenol	ug/L	<50(1)	50			7667656
2,3,4,6-tetrachlorophenol	ug/L	2400(3)	50			7667656
2,3,4,5-tetrachlorophenol	ug/L	<50(1)	50			7667656
2,3,5,6-tetrachlorophenol	ug/L	<50(1)	50			7667656
Pentachlorophenol	ug/L	1000(3)	50	5.3	0.10	7667656
Surrogate Recovery (%)						
2,4,6-TRIBROMOPHENOL (sur.)	%	111		102		7667656

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution as a result of sample matrix inteference.
(2) - RDL raised due to sample matrix interference.
(3) - Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KQ4247			KQ4248			KQ4249			KQ4253		
Sampling Date		2014/09/16			2014/09/16			2014/09/16			2014/09/17		
	UNITS	**14BH09-4**	**RDL**	**QC Batch**	**14BH09-5**	**RDL**	**QC Batch**	**14BH09-6**	**RDL**	**QC Batch**	**14BH06-2**	**RDL**	**QC Batch**
Polycyclic Aromatics													
Naphthalene	mg/kg	6.6	0.050	7648583	4.9	0.050	7649540	4.0	0.050	7650323	11	0.050	7651220
2-Methylnaphthalene	mg/kg	12	0.050	7648583	18(1)	0.50	7649540	5.7	0.050	7650323	17(1)	0.50	7651220
Acenaphthylene	mg/kg	<0.050	0.050	7648583	<1.5(2)	1.5	7649540	<0.050	0.050	7650323	<0.060(2)	0.060	7651220
Acenaphthene	mg/kg	0.77	0.050	7648583	3.6	0.050	7649540	<0.17(2)	0.17	7650323	<0.16(2)	0.16	7651220
Fluorene	mg/kg	1.2	0.050	7648583	8.1	0.050	7649540	0.12	0.050	7650323	<0.16(2)	0.16	7651220
Phenanthrene	mg/kg	2.4	0.050	7648583	5.0	0.050	7649540	0.84	0.050	7650323	2.0	0.050	7651220
Anthracene	mg/kg	0.21	0.050	7648583	<0.23(2)	0.23	7649540	0.18	0.050	7650323	0.52	0.050	7651220
Fluoranthene	mg/kg	0.14	0.050	7648583	0.40	0.050	7649540	0.089	0.050	7650323	0.26	0.050	7651220
Pyrene	mg/kg	0.22	0.050	7648583	0.69	0.050	7649540	0.15	0.050	7650323	0.37	0.050	7651220
Benzo(a)anthracene	mg/kg	0.083	0.050	7648583	0.19	0.050	7649540	0.11	0.050	7650323	0.28	0.050	7651220
Chrysene	mg/kg	0.10	0.050	7648583	0.22	0.050	7649540	0.10	0.050	7650323	0.21	0.050	7651220
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	7648583	0.099	0.050	7649540	0.050	0.050	7650323	0.096	0.050	7651220
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	7648583	0.066	0.050	7649540	<0.050	0.050	7650323	0.062	0.050	7651220
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	7648583	<0.050	0.050	7649540	<0.050	0.050	7650323	<0.050	0.050	7651220
Benzo(a)pyrene	mg/kg	<0.050	0.050	7648583	0.054	0.050	7649540	<0.050	0.050	7650323	0.11	0.050	7651220
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	7648583	<0.050	0.050	7649540	<0.050	0.050	7650323	<0.050	0.050	7651220
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	7648583	<0.050	0.050	7649540	<0.050	0.050	7650323	<0.050	0.050	7651220
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	7648583	<0.17(2)	0.17	7649540	<0.066(2)	0.066	7650323	<0.050	0.050	7651220
Low Molecular Weight PAH`s	mg/kg	24	0.050	7645415	41	1.5	7645415	11	0.17	7645415	31	0.50	7645415
High Molecular Weight PAH`s	mg/kg	0.54	0.050	7645415	1.6	0.17	7645415	0.51	0.066	7645415	1.3	0.050	7645415
Total PAH	mg/kg	24	0.050	7645415	43	1.5	7645415	11	0.17	7645415	32	0.50	7645415
Surrogate Recovery (%)													
D10-ANTHRACENE (sur.)	%	66		7648583	79		7649540	95		7650323	73		7651220
D8-ACENAPHTHYLENE (sur.)	%	77		7648583	65		7649540	97		7650323	70		7651220
D8-NAPHTHALENE (sur.)	%	89		7648583	87		7649540	100		7650323	78		7651220
TERPHENYL-D14 (sur.)	%	83		7648583	86		7649540	101		7650323	83		7651220
Calculated Parameters													
LEPH (C10-C19 less PAH)	mg/kg	1390	100	7645733	10100	100	7645733	245	100	7645733	868	100	7645733
HEPH (C19-C32 less PAH)	mg/kg	1420	100	7645733	3090	100	7645733	294	100	7645733	1110	100	7645733
Hydrocarbons													
EPH (C10-C19)	mg/kg	1400	100	7648571	10100	100	7649548	250	100	7650315	881	100	7651230
EPH (C19-C32)	mg/kg	1420	100	7648571	3090	100	7649548	294	100	7650315	1110	100	7651230
Surrogate Recovery (%)													
O-TERPHENYL (sur.)	%	82		7648571	93		7649548	89		7650315	96		7651230

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution to bring analyte within the calibrated range.
(2) - RDL raised due to sample matrix interference.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		KQ4255		KQ4256			KQ4271		KQ4272			KQ4400		
Sampling Date		2014/09/17		2014/09/17			2014/09/17		2014/09/17			2014/09/18		
	UNITS	**14BH06-4**	**RDL**	**14BH06-5**	**RDL**	**QC Batch**	**14BH07-3**	**RDL**	**14BH07-4**	**RDL**	**QC Batch**	**14BH24-2**	**RDL**	**QC Batch**
Polycyclic Aromatics														
Naphthalene	mg/kg	1.0	0.050	1.4	0.050	7651220	1.0	0.050	2.1	0.050	7650323	5.9	0.050	7654875
2-Methylnaphthalene	mg/kg	1.9	0.050	1.9	0.050	7651220	1.7	0.050	3.0	0.050	7650323	8.6	0.050	7654875
Acenaphthylene	mg/kg	<0.12(1)	0.12	<0.050	0.050	7651220	<0.050	0.050	<0.050	0.050	7650323	<0.050	0.050	7654875
Acenaphthene	mg/kg	<0.16(1)	0.16	<0.070(1)	0.070	7651220	<0.080(1)	0.080	<0.20(1)	0.20	7650323	<0.79(1)	0.79	7654875
Fluorene	mg/kg	<0.89(1)	0.89	<0.11(1)	0.11	7651220	<0.050	0.050	<0.13(1)	0.13	7650323	<0.10(1)	0.10	7654875
Phenanthrene	mg/kg	0.29	0.050	0.32	0.050	7651220	0.78	0.050	0.68	0.050	7650323	1.7	0.050	7654875
Anthracene	mg/kg	<0.10(1)	0.10	0.12	0.050	7651220	0.12	0.050	0.15	0.050	7650323	0.32	0.050	7654875
Fluoranthene	mg/kg	0.081	0.050	0.098	0.050	7651220	0.10	0.050	0.10	0.050	7650323	0.23	0.050	7654875
Pyrene	mg/kg	0.093	0.050	0.11	0.050	7651220	0.15	0.050	0.15	0.050	7650323	0.33	0.050	7654875
Benzo(a)anthracene	mg/kg	<0.050	0.050	0.069	0.050	7651220	0.13	0.050	0.093	0.050	7650323	0.21	0.050	7654875
Chrysene	mg/kg	<0.050	0.050	0.061	0.050	7651220	0.13	0.050	0.082	0.050	7650323	0.17	0.050	7654875
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7651220	0.075	0.050	0.056	0.050	7650323	0.082	0.050	7654875
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7651220	<0.050	0.050	<0.050	0.050	7650323	<0.050	0.050	7654875
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7651220	<0.050	0.050	<0.050	0.050	7650323	<0.050	0.050	7654875
Benzo(a)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7651220	<0.050	0.050	<0.050	0.050	7650323	0.063	0.050	7654875
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7651220	<0.050	0.050	<0.050	0.050	7650323	<0.050	0.050	7654875
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	<0.050	0.050	7651220	<0.050	0.050	<0.050	0.050	7650323	<0.050	0.050	7654875
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	<0.050	0.050	7651220	<0.12(1)	0.12	<0.10(1)	0.10	7650323	<0.050	0.050	7654875
Low Molecular Weight PAH`s	mg/kg	3.5	0.89	3.6	0.11	7645415	3.7	0.080	5.9	0.20	7645415	16	0.79	7647762
High Molecular Weight PAH`s	mg/kg	0.17	0.050	0.34	0.050	7645415	0.58	0.12	0.48	0.10	7645415	1.1	0.050	7647762
Total PAH	mg/kg	3.7	0.89	4.0	0.11	7645415	4.3	0.12	6.4	0.20	7645415	17	0.79	7647762
Surrogate Recovery (%)														
D10-ANTHRACENE (sur.)	%	64		95		7651220	89		83		7650323	82		7654875
D8-ACENAPHTHYLENE (sur.)	%	94		95		7651220	91		89		7650323	86		7654875
D8-NAPHTHALENE (sur.)	%	91		96		7651220	96		93		7650323	95		7654875
TERPHENYL-D14 (sur.)	%	72		100		7651220	96		97		7650323	94		7654875
Calculated Parameters														
LEPH (C10-C19 less PAH)	mg/kg	2340	100	180	100	7645733	259	100	400	100	7645733	677	100	7647763
HEPH (C19-C32 less PAH)	mg/kg	781	100	196	100	7645733	340	100	389	100	7645733	853	100	7647763
Hydrocarbons														
EPH (C10-C19)	mg/kg	2340	100	182	100	7651230	261	100	403	100	7650315	685	100	7654789
EPH (C19-C32)	mg/kg	782	100	196	100	7651230	340	100	390	100	7650315	853	100	7654789
Surrogate Recovery (%)														
O-TERPHENYL (sur.)	%	96		100		7651230	90		87		7650315	92		7654789

RDL = Reportable Detection Limit
(1) - RDL raised due to sample matrix interference.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KQ4248		KQ4249		KQ4250		KQ4253		KQ4257		
Sampling Date		2014/09/16		2014/09/16		2014/09/16		2014/09/17		2014/09/17		
	UNITS	**14BH09-5**	**QC Batch**	**14BH09-6**	**QC Batch**	**14BH09-7**	**QC Batch**	**14BH06-2**	**QC Batch**	**14BH06-6**	**RDL**	**QC Batch**
Physical Properties												
Soluble (2:1) pH	pH	6.54	7664431	7.77	7647060	7.12	7666151	7.95	7647060	6.65	N/A	7699377
Total Metals by ICPMS												
Total Aluminum (Al)	mg/kg			24900	7647044			15700	7647044		100	
Total Antimony (Sb)	mg/kg			0.40	7647044			1.12	7647044		0.10	
Total Arsenic (As)	mg/kg			6.93	7647044			5.39	7647044		0.50	
Total Barium (Ba)	mg/kg			94.1	7647044			148	7647044		0.10	
Total Beryllium (Be)	mg/kg			0.49	7647044			0.57	7647044		0.40	
Total Bismuth (Bi)	mg/kg			0.14	7647044			0.13	7647044		0.10	
Total Cadmium (Cd)	mg/kg			0.303	7647044			0.282	7647044		0.050	
Total Calcium (Ca)	mg/kg			10400	7647044			15200	7647044		100	
Total Chromium (Cr)	mg/kg	43.9	7664418	116	7647044	24.1	7666149	69.2	7647044	14.3	1.0	7699365
Total Cobalt (Co)	mg/kg			21.4	7647044			21.4	7647044		0.30	
Total Copper (Cu)	mg/kg			68.6	7647044			81.7	7647044		0.50	
Total Iron (Fe)	mg/kg			45500	7647044			26200	7647044		100	
Total Lead (Pb)	mg/kg			11.2	7647044			25.3	7647044		0.10	
Total Lithium (Li)	mg/kg			32.3	7647044			22.4	7647044		5.0	
Total Magnesium (Mg)	mg/kg			14300	7647044			6290	7647044		100	
Total Manganese (Mn)	mg/kg			484	7647044			374	7647044		0.20	
Total Mercury (Hg)	mg/kg			0.232	7647044			0.362	7647044		0.050	
Total Molybdenum (Mo)	mg/kg			2.11	7647044			2.47	7647044		0.10	
Total Nickel (Ni)	mg/kg			162	7647044			112	7647044		0.80	
Total Phosphorus (P)	mg/kg			431	7647044			336	7647044		10	
Total Potassium (K)	mg/kg			1480	7647044			1080	7647044		100	
Total Selenium (Se)	mg/kg			0.85	7647044			0.84	7647044		0.50	
Total Silver (Ag)	mg/kg			0.144	7647044			0.115	7647044		0.050	
Total Sodium (Na)	mg/kg			240	7647044			318	7647044		100	
Total Strontium (Sr)	mg/kg			97.1	7647044			167	7647044		0.10	
Total Thallium (Tl)	mg/kg			0.144	7647044			0.092	7647044		0.050	
Total Tin (Sn)	mg/kg			0.76	7647044			2.76	7647044		0.10	
Total Titanium (Ti)	mg/kg			86.1	7647044			390	7647044		1.0	
Total Uranium (U)	mg/kg			0.419	7647044			0.579	7647044		0.050	
Total Vanadium (V)	mg/kg			76.5	7647044			64.2	7647044		2.0	
Total Zinc (Zn)	mg/kg			86.8	7647044			61.5	7647044		1.0	
Total Zirconium (Zr)	mg/kg			5.83	7647044			7.16	7647044		0.50	

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KQ4258		KQ4271	KQ4275		KQ4308		KQ4311		KQ4317		
Sampling Date		2014/09/17		2014/09/17	2014/09/17		2014/09/17		2014/09/17		2014/09/17		
	UNITS	**14BH07-1**	**QC Batch**	**14BH07-3**	**14BH10-2**	**QC Batch**	**14BH11-4**	**QC Batch**	**14BH12-1**	**QC Batch**	**14BH13-2**	**RDL**	**QC Batch**
Physical Properties													
Soluble (2:1) pH	pH	7.28	7649067	8.06	8.18	7647060	7.18	7650832	8.60	7649333	8.67	N/A	7649173
Total Metals by ICPMS													
Total Aluminum (Al)	mg/kg	9680	7649063	9900	14000	7647044	10100	7650801	11800	7649332	10200	100	7649165
Total Antimony (Sb)	mg/kg	0.33	7649063	0.30	0.56	7647044	<0.10	7650801	0.10	7649332	0.12	0.10	7649165
Total Arsenic (As)	mg/kg	8.95	7649063	2.67	3.55	7647044	3.19	7650801	3.01	7649332	3.05	0.50	7649165
Total Barium (Ba)	mg/kg	131	7649063	109	40.1	7647044	26.4	7650801	37.6	7649332	44.8	0.10	7649165
Total Beryllium (Be)	mg/kg	<0.40	7649063	<0.40	<0.40	7647044	<0.40	7650801	<0.40	7649332	<0.40	0.40	7649165
Total Bismuth (Bi)	mg/kg	0.12	7649063	0.20	<0.10	7647044	<0.10	7650801	<0.10	7649332	<0.10	0.10	7649165
Total Cadmium (Cd)	mg/kg	0.311	7649063	0.232	0.209	7647044	0.230	7650801	0.202	7649332	0.255	0.050	7649165
Total Calcium (Ca)	mg/kg	3590	7649063	26600	8580	7647044	6610	7650801	24700	7649332	86600	100	7649165
Total Chromium (Cr)	mg/kg	42.6	7649063	29.3	19.9	7647044	14.2	7650801	17.3	7649332	15.7	1.0	7649165
Total Cobalt (Co)	mg/kg	9.99	7649063	9.26	8.09	7647044	5.53	7650801	6.69	7649332	5.90	0.30	7649165
Total Copper (Cu)	mg/kg	76.1	7649063	57.4	32.9	7647044	17.2	7650801	21.2	7649332	20.4	0.50	7649165
Total Iron (Fe)	mg/kg	23900	7649063	13500	19700	7647044	13100	7650801	17700	7649332	14900	100	7649165
Total Lead (Pb)	mg/kg	16.9	7649063	8.57	4.25	7647044	1.04	7650801	1.35	7649332	1.08	0.10	7649165
Total Lithium (Li)	mg/kg	16.4	7649063	20.0	16.2	7647044	13.9	7650801	14.1	7649332	12.4	5.0	7649165
Total Magnesium (Mg)	mg/kg	3330	7649063	3010	5940	7647044	4560	7650801	5710	7649332	4780	100	7649165
Total Manganese (Mn)	mg/kg	382	7649063	308	252	7647044	189	7650801	227	7649332	200	0.20	7649165
Total Mercury (Hg)	mg/kg	0.552	7649063	0.156	0.187	7647044	<0.050	7650801	<0.050	7649332	<0.050	0.050	7649165
Total Molybdenum (Mo)	mg/kg	2.38	7649063	1.55	1.42	7647044	0.70	7650801	0.60	7649332	0.63	0.10	7649165
Total Nickel (Ni)	mg/kg	74.6	7649063	41.3	16.2	7647044	12.5	7650801	13.2	7649332	13.4	0.80	7649165
Total Phosphorus (P)	mg/kg	324	7649063	151	701	7647044	337	7650801	453	7649332	554	10	7649165
Total Potassium (K)	mg/kg	884	7649063	1240	639	7647044	428	7650801	464	7649332	428	100	7649165
Total Selenium (Se)	mg/kg	0.71	7649063	0.69	<0.50	7647044	<0.50	7650801	<0.50	7649332	<0.50	0.50	7649165
Total Silver (Ag)	mg/kg	0.096	7649063	0.116	<0.050	7647044	<0.050	7650801	<0.050	7649332	<0.050	0.050	7649165
Total Sodium (Na)	mg/kg	313	7649063	124	789	7647044	484	7650801	659	7649332	1040	100	7649165
Total Strontium (Sr)	mg/kg	157	7649063	102	37.4	7647044	28.1	7650801	118	7649332	539	0.10	7649165
Total Thallium (Tl)	mg/kg	0.164	7649063	0.108	0.122	7647044	0.191	7650801	0.098	7649332	0.099	0.050	7649165
Total Tin (Sn)	mg/kg	0.99	7649063	0.48	0.22	7647044	0.19	7650801	0.36	7649332	0.15	0.10	7649165
Total Titanium (Ti)	mg/kg	306	7649063	66.7	734	7647044	1170	7650801	1360	7649332	1030	1.0	7649165
Total Uranium (U)	mg/kg	0.503	7649063	0.323	0.521	7647044	0.685	7650801	0.355	7649332	0.743	0.050	7649165
Total Vanadium (V)	mg/kg	44.1	7649063	38.9	52.8	7647044	39.2	7650801	52.5	7649332	44.6	2.0	7649165
Total Zinc (Zn)	mg/kg	52.6	7649063	47.6	47.1	7647044	24.5	7650801	27.8	7649332	25.5	1.0	7649165
Total Zirconium (Zr)	mg/kg	5.65	7649063	3.44	3.17	7647044	3.91	7650801	3.85	7649332	3.72	0.50	7649165

N/A = Not Applicable
RDL = Reportable Detection Limit

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KQ4344		KQ4345		KQ4346		KQ4347	KQ4370		KQ4371		
Sampling Date		2014/09/18		2014/09/18		2014/09/18		2014/09/18	2014/09/18		2014/09/18		
	UNITS	**DUP 10**	**QC Batch**	**DUP 11**	**QC Batch**	**14BH14-1**	**QC Batch**	**14BH14-2**	**14BH15-1**	**QC Batch**	**14BH15-2**	**RDL**	**QC Batch**
Physical Properties													
Soluble (2:1) pH	pH	6.79	7654375	6.86	7650915	7.39	7654375	8.62	7.00	7699377	8.05	N/A	7654375
Total Metals by ICPMS													
Total Aluminum (Al)	mg/kg	20800	7654354	16400	7650867	12700	7654354				6710	100	7654354
Total Antimony (Sb)	mg/kg	0.64	7654354	8.97	7650867	0.63	7654354				0.38	0.10	7654354
Total Arsenic (As)	mg/kg	20.3	7654354	3.70	7650867	22.6	7654354	2.83	15.9	7699365	1.68	0.50	7654354
Total Barium (Ba)	mg/kg	227	7654354	343	7650867	123	7654354				108	0.10	7654354
Total Beryllium (Be)	mg/kg	0.47	7654354	0.47	7650867	<0.40	7654354				0.57	0.40	7654354
Total Bismuth (Bi)	mg/kg	<0.10	7654354	<0.10	7650867	<0.10	7654354				0.20	0.10	7654354
Total Cadmium (Cd)	mg/kg	0.449	7654354	4.11	7650867	0.300	7654354				0.260	0.050	7654354
Total Calcium (Ca)	mg/kg	8720	7654354	14900	7650867	9240	7654354				12400	100	7654354
Total Chromium (Cr)	mg/kg	39.4	7654354	49.3	7650867	26.4	7654354				20.1	1.0	7654354
Total Cobalt (Co)	mg/kg	12.3	7654354	9.10	7650867	7.42	7654354				5.72	0.30	7654354
Total Copper (Cu)	mg/kg	55.1	7654354	83.7	7650867	30.5	7654354				53.1	0.50	7654354
Total Iron (Fe)	mg/kg	21700	7654354	17500	7650867	20800	7654354				5410	100	7654354
Total Lead (Pb)	mg/kg	13.6	7654354	40.8	7650867	11.3	7654354				9.63	0.10	7654354
Total Lithium (Li)	mg/kg	25.5	7654354	22.8	7650867	15.9	7654354				16.1	5.0	7654354
Total Magnesium (Mg)	mg/kg	4160	7654354	3920	7650867	4820	7654354				1230	100	7654354
Total Manganese (Mn)	mg/kg	378	7654354	281	7650867	323	7654354				131	0.20	7654354
Total Mercury (Hg)	mg/kg	0.205	7654354	0.191	7650867	0.253	7654354				0.156	0.050	7654354
Total Molybdenum (Mo)	mg/kg	2.13	7654354	2.26	7650867	1.88	7654354				0.86	0.10	7654354
Total Nickel (Ni)	mg/kg	57.1	7654354	113	7650867	27.3	7654354				21.8	0.80	7654354
Total Phosphorus (P)	mg/kg	441	7654354	524	7650867	479	7654354				65	10	7654354
Total Potassium (K)	mg/kg	1220	7654354	1060	7650867	718	7654354				887	100	7654354
Total Selenium (Se)	mg/kg	<0.50	7654354	<0.50	7650867	<0.50	7654354				<0.50	0.50	7654354
Total Silver (Ag)	mg/kg	0.083	7654354	0.151	7650867	0.063	7654354				0.118	0.050	7654354
Total Sodium (Na)	mg/kg	572	7654354	597	7650867	484	7654354				<100	100	7654354
Total Strontium (Sr)	mg/kg	191	7654354	310	7650867	85.2	7654354				39.0	0.10	7654354
Total Thallium (Tl)	mg/kg	0.138	7654354	0.063	7650867	0.227	7654354				0.076	0.050	7654354
Total Tin (Sn)	mg/kg	0.98	7654354	5.03	7650867	0.87	7654354				0.46	0.10	7654354
Total Titanium (Ti)	mg/kg	768	7654354	1040	7650867	1160	7654354				71.9	1.0	7654354
Total Uranium (U)	mg/kg	0.580	7654354	0.517	7650867	0.457	7654354				0.361	0.050	7654354
Total Vanadium (V)	mg/kg	78.8	7654354	63.3	7650867	59.9	7654354				42.3	2.0	7654354
Total Zinc (Zn)	mg/kg	51.5	7654354	1750	7650867	49.9	7654354				41.0	1.0	7654354
Total Zirconium (Zr)	mg/kg	9.54	7654354	13.7	7650867	5.42	7654354				4.47	0.50	7654354

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam A Bureau Veritas Group Company

Success Through Science®

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KQ4375		KQ4380		KQ4400	KQ4401		KQ4404		
Sampling Date		2014/09/18		2014/09/18		2014/09/18	2014/09/18		2014/09/18		
	UNITS	**14BH16-1**	**QC Batch**	**14BH24-1**	**QC Batch**	**14BH24-2**	**14BH24-3**	**QC Batch**	**14BH25-1**	**RDL**	**QC Batch**
Physical Properties											
Soluble (2:1) pH	pH	6.83	7654375	7.91	7651113	7.99	7.25	7699377	7.01	N/A	7664431
Total Metals by ICPMS											
Total Aluminum (Al)	mg/kg	20400	7654354	17000	7651107					100	
Total Antimony (Sb)	mg/kg	0.62	7654354	1.07	7651107					0.10	
Total Arsenic (As)	mg/kg	20.5	7654354	6.46	7651107					0.50	
Total Barium (Ba)	mg/kg	215	7654354	106	7651107					0.10	
Total Beryllium (Be)	mg/kg	0.45	7654354	<0.40	7651107					0.40	
Total Bismuth (Bi)	mg/kg	<0.10	7654354	<0.10	7651107					0.10	
Total Cadmium (Cd)	mg/kg	0.468	7654354	0.349	7651107	0.307	0.238	7699365	4.23	0.050	7664418
Total Calcium (Ca)	mg/kg	8270	7654354	10900	7651107					100	
Total Chromium (Cr)	mg/kg	38.9	7654354	54.8	7651107					1.0	
Total Cobalt (Co)	mg/kg	11.9	7654354	13.9	7651107					0.30	
Total Copper (Cu)	mg/kg	52.0	7654354	54.6	7651107					0.50	
Total Iron (Fe)	mg/kg	21300	7654354	25500	7651107					100	
Total Lead (Pb)	mg/kg	12.1	7654354	25.8	7651107					0.10	
Total Lithium (Li)	mg/kg	25.8	7654354	17.5	7651107					5.0	
Total Magnesium (Mg)	mg/kg	4220	7654354	7320	7651107					100	
Total Manganese (Mn)	mg/kg	340	7654354	391	7651107					0.20	
Total Mercury (Hg)	mg/kg	0.265	7654354	0.216	7651107					0.050	
Total Molybdenum (Mo)	mg/kg	2.25	7654354	1.54	7651107					0.10	
Total Nickel (Ni)	mg/kg	57.0	7654354	77.9	7651107					0.80	
Total Phosphorus (P)	mg/kg	445	7654354	450	7651107					10	
Total Potassium (K)	mg/kg	1150	7654354	870	7651107					100	
Total Selenium (Se)	mg/kg	<0.50	7654354	<0.50	7651107					0.50	
Total Silver (Ag)	mg/kg	0.100	7654354	0.146	7651107					0.050	
Total Sodium (Na)	mg/kg	536	7654354	509	7651107					100	
Total Strontium (Sr)	mg/kg	178	7654354	106	7651107					0.10	
Total Thallium (Tl)	mg/kg	0.143	7654354	0.138	7651107					0.050	
Total Tin (Sn)	mg/kg	0.95	7654354	2.27	7651107					0.10	
Total Titanium (Ti)	mg/kg	811	7654354	1270	7651107					1.0	
Total Uranium (U)	mg/kg	0.597	7654354	0.401	7651107					0.050	
Total Vanadium (V)	mg/kg	76.8	7654354	71.3	7651107					2.0	
Total Zinc (Zn)	mg/kg	50.2	7654354	69.0	7651107	48.0	85.6	7699365	1460	1.0	7664418
Total Zirconium (Zr)	mg/kg	9.70	7654354	8.19	7651107					0.50	

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		KQ4405		KQ4406		KQ4407		KQ4408		
Sampling Date		2014/09/18		2014/09/18		2014/09/18		2014/09/18		
	UNITS	**14BH25-2**	**QC Batch**	**14BH25-3**	**QC Batch**	**14BH25-4**	**QC Batch**	**14BH25-5**	**RDL**	**QC Batch**
Physical Properties										
Soluble (2:1) pH	pH	6.84	7650915	6.84	7664431	7.38	7650915	7.31	N/A	7710722
Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	16600	7650867			21900	7650867		100	
Total Antimony (Sb)	mg/kg	9.24	7650867			2.26	7650867		0.10	
Total Arsenic (As)	mg/kg	3.72	7650867			8.93	7650867		0.50	
Total Barium (Ba)	mg/kg	337	7650867			132	7650867		0.10	
Total Beryllium (Be)	mg/kg	0.42	7650867			0.43	7650867		0.40	
Total Bismuth (Bi)	mg/kg	<0.10	7650867			0.12	7650867		0.10	
Total Cadmium (Cd)	mg/kg	4.77	7650867	0.207	7664418	0.462	7650867		0.050	
Total Calcium (Ca)	mg/kg	15200	7650867			3610	7650867		100	
Total Chromium (Cr)	mg/kg	46.7	7650867			123	7650867	99.7	1.0	7710708
Total Cobalt (Co)	mg/kg	9.30	7650867			25.3	7650867		0.30	
Total Copper (Cu)	mg/kg	92.6	7650867			81.3	7650867		0.50	
Total Iron (Fe)	mg/kg	17400	7650867			39100	7650867		100	
Total Lead (Pb)	mg/kg	43.2	7650867			36.3	7650867		0.10	
Total Lithium (Li)	mg/kg	22.1	7650867			26.7	7650867		5.0	
Total Magnesium (Mg)	mg/kg	3580	7650867			11900	7650867		100	
Total Manganese (Mn)	mg/kg	294	7650867			853	7650867		0.20	
Total Mercury (Hg)	mg/kg	0.164	7650867			0.305	7650867		0.050	
Total Molybdenum (Mo)	mg/kg	2.10	7650867			4.02	7650867		0.10	
Total Nickel (Ni)	mg/kg	115	7650867			179	7650867		0.80	
Total Phosphorus (P)	mg/kg	556	7650867			297	7650867		10	
Total Potassium (K)	mg/kg	1080	7650867			1410	7650867		100	
Total Selenium (Se)	mg/kg	<0.50	7650867			0.80	7650867		0.50	
Total Silver (Ag)	mg/kg	0.140	7650867			0.078	7650867		0.050	
Total Sodium (Na)	mg/kg	619	7650867			2620	7650867		100	
Total Strontium (Sr)	mg/kg	288	7650867			54.7	7650867		0.10	
Total Thallium (Tl)	mg/kg	0.060	7650867			0.122	7650867		0.050	
Total Tin (Sn)	mg/kg	4.33	7650867			3.75	7650867		0.10	
Total Titanium (Ti)	mg/kg	1070	7650867			166	7650867		1.0	
Total Uranium (U)	mg/kg	0.508	7650867			0.454	7650867		0.050	
Total Vanadium (V)	mg/kg	65.2	7650867			85.1	7650867		2.0	
Total Zinc (Zn)	mg/kg	1950	7650867	140	7664418	146	7650867		1.0	
Total Zirconium (Zr)	mg/kg	13.1	7650867			5.68	7650867		0.50	

N/A = Not Applicable
RDL = Reportable Detection Limit

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

SPLP METALS (SOIL)

Maxxam ID		KQ4249	KQ4405	KQ4407	KQ4407		
Sampling Date		2014/09/16	2014/09/18	2014/09/18	2014/09/18		
	UNITS	**14BH09-6**	**14BH25-2**	**14BH25-4**	**14BH25-4 Lab-Dup**	**RDL**	**QC Batch**
Metals							
SPLP Cadmium (Cd)	mg/L		0.000141			0.000020	7666232
SPLP Chromium (Cr)	mg/L	0.0021		0.0411	0.0407	0.0010	7666232
SPLP Zinc (Zn)	mg/L		0.074			0.010	7666232

RDL = Reportable Detection Limit

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

CSR PAH IN SOIL BY GC-MS (SOIL)

Maxxam ID		KQ4258		KQ4317		
Sampling Date		2014/09/17		2014/09/17		
	UNITS	**14BH07-1**	**RDL**	**14BH13-2**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Naphthalene	mg/kg	9.5	0.050	<0.050	0.050	7651208
2-Methylnaphthalene	mg/kg	14(1)	0.50	0.058	0.050	7651208
Acenaphthylene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Acenaphthene	mg/kg	1.2	0.050	<0.050	0.050	7651208
Fluorene	mg/kg	0.13	0.050	<0.050	0.050	7651208
Phenanthrene	mg/kg	2.0	0.050	<0.050	0.050	7651208
Anthracene	mg/kg	0.39	0.050	<0.050	0.050	7651208
Fluoranthene	mg/kg	0.26	0.050	<0.050	0.050	7651208
Pyrene	mg/kg	0.37	0.050	<0.050	0.050	7651208
Benzo(a)anthracene	mg/kg	0.22	0.050	<0.050	0.050	7651208
Chrysene	mg/kg	0.17	0.050	<0.050	0.050	7651208
Benzo(b&j)fluoranthene	mg/kg	<0.080(2)	0.080	<0.050	0.050	7651208
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Benzo(a)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	<0.050	0.050	7651208
Low Molecular Weight PAH`s	mg/kg	28	0.50	0.058	0.050	7645415
High Molecular Weight PAH`s	mg/kg	1.0	0.080	<0.050	0.050	7645415
Total PAH	mg/kg	29	0.50	0.058	0.050	7645415
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	58(3)		105		7651208
D8-ACENAPHTHYLENE (sur.)	%	62		103		7651208
D8-NAPHTHALENE (sur.)	%	77		101		7651208
TERPHENYL-D14 (sur.)	%	72		113		7651208

RDL = Reportable Detection Limit
(1) - Detection limits raised due to dilution to bring analyte within the calibrated range.
(2) - RDL raised due to sample matrix interference.
(3) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

CSR PAH IN SOIL BY GC-MS (SOIL)

Maxxam ID		KQ4345		KQ4371		KQ4375		KQ4405		
Sampling Date		2014/09/18		2014/09/18		2014/09/18		2014/09/18		
	UNITS	**DUP 11**	**RDL**	**14BH15-2**	**RDL**	**14BH16-1**	**RDL**	**14BH25-2**	**RDL**	**QC Batch**
Polycyclic Aromatics										
Naphthalene	mg/kg	0.91	0.050	0.38	0.050	1.0	0.050	0.83	0.050	7654875
2-Methylnaphthalene	mg/kg	1.4	0.050	1.4	0.050	1.6	0.050	1.3	0.050	7654875
Acenaphthylene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7654875
Acenaphthene	mg/kg	<0.13(1)	0.13	<0.70(1)	0.70	<0.17(1)	0.17	<0.14(1)	0.14	7654875
Fluorene	mg/kg	<0.050	0.050	<0.090(1)	0.090	<0.050	0.050	<0.050	0.050	7654875
Phenanthrene	mg/kg	0.31	0.050	2.4	0.050	0.50	0.050	0.30	0.050	7654875
Anthracene	mg/kg	0.056	0.050	0.21	0.050	0.069	0.050	0.052	0.050	7654875
Fluoranthene	mg/kg	0.057	0.050	0.29	0.050	0.16	0.050	0.054	0.050	7654875
Pyrene	mg/kg	0.079	0.050	0.37	0.050	0.17	0.050	0.076	0.050	7654875
Benzo(a)anthracene	mg/kg	<0.050	0.050	0.25	0.050	0.092	0.050	<0.050	0.050	7654875
Chrysene	mg/kg	<0.050	0.050	0.28	0.050	0.097	0.050	<0.050	0.050	7654875
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	0.14	0.050	0.069	0.050	<0.050	0.050	7654875
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	0.093	0.050	<0.050	0.050	<0.050	0.050	7654875
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7654875
Benzo(a)pyrene	mg/kg	<0.050	0.050	<0.060(1)	0.060	<0.050	0.050	<0.050	0.050	7654875
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7654875
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7654875
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7654875
Low Molecular Weight PAH`s	mg/kg	2.7	0.13	4.4	0.70	3.2	0.17	2.5	0.14	7647762
High Molecular Weight PAH`s	mg/kg	0.14	0.050	1.3	0.060	0.59	0.050	0.13	0.050	7647762
Total PAH	mg/kg	2.8	0.13	5.7	0.70	3.7	0.17	2.6	0.14	7647762
Surrogate Recovery (%)										
D10-ANTHRACENE (sur.)	%	83		69		86		83		7654875
D8-ACENAPHTHYLENE (sur.)	%	89		77		93		91		7654875
D8-NAPHTHALENE (sur.)	%	94		82		95		93		7654875
TERPHENYL-D14 (sur.)	%	94		79		96		95		7654875

RDL = Reportable Detection Limit
(1) - RDL raised due to sample matrix interference.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

CSR VOC + VPH IN SOIL (SOIL)

Maxxam ID		KQ4247		KQ4248		KQ4275		KQ4276		
Sampling Date		2014/09/16		2014/09/16		2014/09/17		2014/09/17		
	UNITS	**14BH09-4**	**RDL**	**14BH09-5**	**RDL**	**14BH10-2**	**RDL**	**14BH10-3**	**RDL**	**QC Batch**
Volatiles										
VPH (VH6 to 10 - BTEX)	mg/kg	<10	10	110	10	320	10	570	100	7645734
Vinyl chloride	mg/kg	<0.060	0.060	<0.060	0.060	<0.060	0.060	<0.060	0.060	7649890
Bromomethane	mg/kg	<0.30	0.30	<0.30	0.30	<0.30	0.30	<0.30	0.30	7649890
Chloroethane	mg/kg	<0.10	0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	7649890
Trichlorofluoromethane	mg/kg	<0.20	0.20	<0.20	0.20	<0.20	0.20	<0.20	0.20	7649890
1,1-dichloroethene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Dichloromethane	mg/kg	<0.10	0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	7649890
trans-1,2-dichloroethene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
1,1-dichloroethane	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
cis-1,2-dichloroethene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Chloroform	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7649890
1,1,1-trichloroethane	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
1,2-dichloroethane	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Carbon tetrachloride	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Benzene	mg/kg	0.087	0.0050	0.080	0.0050	0.014	0.0050	<0.0050	0.0050	7649890
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	7649890
1,2-dichloropropane	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Trichloroethene	mg/kg	<0.0090	0.0090	<0.0090	0.0090	<0.0090	0.0090	<0.0090	0.0090	7649890
Bromodichloromethane	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7649890
cis-1,3-dichloropropene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7649890
trans-1,3-dichloropropene	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7649890
1,3-Butadiene	mg/kg	<0.10	0.10	<0.10	0.10	<0.10	0.10	<0.10	0.10	7649890
1,1,2-trichloroethane	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Toluene	mg/kg	0.30	0.020	0.22	0.020	0.071	0.020	0.051	0.020	7649890
Chlorodibromomethane	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7649890
1,2-dibromoethane	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Tetrachloroethene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Chlorobenzene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
1,1,1,2-tetrachloroethane	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Ethylbenzene	mg/kg	0.34	0.010	0.17	0.010	2.3	0.010	2.3	0.010	7649890
m & p-Xylene	mg/kg	0.85	0.040	0.49	0.040	14	0.040	15	0.040	7649890
Bromoform	mg/kg	<0.050	0.050	<0.050	0.050	<0.050	0.050	<0.050	0.050	7649890
Styrene	mg/kg	<0.030	0.030	<0.030	0.030	<0.030	0.030	<0.030	0.030	7649890
o-Xylene	mg/kg	0.35	0.040	0.23	0.040	8.5	0.040	9.5	0.040	7649890
Xylenes (Total)	mg/kg	1.2	0.040	0.72	0.040	23	0.040	24	0.040	7649890
1,1,2,2-tetrachloroethane	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890

RDL = Reportable Detection Limit

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

CSR VOC + VPH IN SOIL (SOIL)

Maxxam ID		KQ4247		KQ4248		KQ4275		KQ4276		
Sampling Date		2014/09/16		2014/09/16		2014/09/17		2014/09/17		
	UNITS	**14BH09-4**	**RDL**	**14BH09-5**	**RDL**	**14BH10-2**	**RDL**	**14BH10-3**	**RDL**	**QC Batch**
1,2-dichlorobenzene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
1,3-dichlorobenzene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
1,4-dichlorobenzene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Hexane	mg/kg	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	7649890
n-Decane	mg/kg	<2.0	2.0	<3.5(1)	3.5	160(2)	20	150(2)	20	7649890
Isopropylbenzene	mg/kg	<0.20	0.20	0.38	0.20	1.9	0.20	2.4	0.20	7649890
Methylcyclohexane	mg/kg	0.45	0.20	0.28	0.20	<0.20	0.20	<0.20	0.20	7649890
1,3,5-trimethylbenzene	mg/kg	0.40	0.20	0.32	0.20	33(3)	2.0	26(3)	2.0	7649890
1,2,4-trimethylbenzene	mg/kg	1.6	0.20	2.3	0.20	160(3)	2.0	130(3)	2.0	7649890
1,2,3-trichlorobenzene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
Hexachlorobutadiene	mg/kg	<0.20	0.20	<0.20	0.20	<0.20	0.20	<0.20	0.20	7649890
1,2,4-trichlorobenzene	mg/kg	<0.025	0.025	<0.025	0.025	<0.025	0.025	<0.025	0.025	7649890
VH C6-C10	mg/kg	<10	10	110	10	350	10	600(3)	100	7649890
Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	102		98		100		98		7649890
4-Bromofluorobenzene (sur.)	%	109		115		95		105		7649890
D10-ETHYLBENZENE (sur.)	%	122		99		87		114		7649890
D4-1,2-Dichloroethane (sur.)	%	116		98		99		95		7649890

RDL = Reportable Detection Limit
(1) - RDL raised due to sample matrix interference.
(2) - Estimated result due to sample matrix interference - Pot. High bias.
RDL raised due to sample dilution.
(3) - Detection limits raised due to dilution to bring analyte within the calibrated range.

Package 1	5.3°C
Package 2	4.3°C
Package 3	7.7°C

Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments

[Revision V2R 2014/10/08 SF] Revised Total Phenols and 2,4-dimethylphenol results for samples KQ4344 thru KQ4404 (including PCP of sample 14BH14-1.)
[Revision V3R 2014/10/17 CI1] Included Chlorinated Phenols for 14BH10-6
[Revision V4R 2014/10/28 SF] Analyzed for select metals parameters of samples:
- 14BH06-6
- 14BH14-2
- 14BH15-1
- 14BH24-2
- 14BH24-3

[Revision V5R 2014/11/10 SF] Added additional analysis of sample 14BH25-5 for chromium

Sample KQ4248-01: Sample extracted past 48 hours from receipt of sample but within the 7 day extraction holdtime for Volatiles.

Sample KQ4346, Phenols in Soil by GCMS: Test repeated.

SEMIVOLATILE ORGANICS BY GC-MS (SOIL) Comments

Sample KQ4274-02 Phenols in Soil by GCMS: Sample extracted past method-specified hold time.

Sample KQ4278-02 Phenols in Soil by GCMS: Sample extracted past method-specified hold time.

Sample KQ4279-02 Phenols in Soil by GCMS: Sample extracted past method-specified hold time.

Sample KQ4310-02 Phenols in Soil by GCMS: Sample extracted past method-specified hold time.

Sample KQ4338-02 Phenols in Soil by GCMS: Sample extracted past method-specified hold time.

Sample KQ4346-02 Phenols in Soil by GCMS: Sample extracted past method-specified hold time.

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7646207	Moisture	2014/09/22							2.5	20		
7646215	Moisture	2014/09/23							10.9	20		
7647044	Total Antimony (Sb)	2014/09/22	90	75 - 125	104	75 - 125	<0.10	mg/kg	30.0	30	111	70 - 130
7647044	Total Arsenic (As)	2014/09/22	79	75 - 125	94	75 - 125	<0.50	mg/kg	NC	30	98	70 - 130
7647044	Total Barium (Ba)	2014/09/22	77	75 - 125	102	75 - 125	<0.10	mg/kg	0.8	35	105	70 - 130
7647044	Total Beryllium (Be)	2014/09/22	90	75 - 125	102	75 - 125	<0.40	mg/kg	NC	30		
7647044	Total Cadmium (Cd)	2014/09/22	86	75 - 125	101	75 - 125	<0.050	mg/kg	5.9	30	107	70 - 130
7647044	Total Chromium (Cr)	2014/09/22	NC	75 - 125	100	75 - 125	<1.0	mg/kg	7.2	30	121	70 - 130
7647044	Total Cobalt (Co)	2014/09/22	81	75 - 125	101	75 - 125	<0.30	mg/kg	4.8	30	99	70 - 130
7647044	Total Copper (Cu)	2014/09/22	NC	75 - 125	100	75 - 125	<0.50	mg/kg	0.6	30	96	70 - 130
7647044	Total Lead (Pb)	2014/09/22	90	75 - 125	104	75 - 125	<0.10	mg/kg	2.1	35	108	70 - 130
7647044	Total Lithium (Li)	2014/09/22	86	75 - 125	101	75 - 125	<5.0	mg/kg				
7647044	Total Manganese (Mn)	2014/09/22	NC	75 - 125	104	75 - 125	<0.20	mg/kg	5.2	30	106	70 - 130
7647044	Total Mercury (Hg)	2014/09/22	88	75 - 125	101	75 - 125	<0.050	mg/kg	NC	35	94	70 - 130
7647044	Total Molybdenum (Mo)	2014/09/22	NC	75 - 125	102	75 - 125	<0.10	mg/kg	1.1	35	118	70 - 130
7647044	Total Nickel (Ni)	2014/09/22	NC	75 - 125	98	75 - 125	<0.80	mg/kg	3.5	30	99	70 - 130
7647044	Total Selenium (Se)	2014/09/22	85	75 - 125	99	75 - 125	<0.50	mg/kg	NC	30		
7647044	Total Silver (Ag)	2014/09/22	88	75 - 125	98	75 - 125	<0.050	mg/kg	NC	35		
7647044	Total Strontium (Sr)	2014/09/22	92	75 - 125	99	75 - 125	<0.10	mg/kg	5.5	35	109	70 - 130
7647044	Total Thallium (Tl)	2014/09/22	92	75 - 125	105	75 - 125	<0.050	mg/kg	NC	30	104	70 - 130
7647044	Total Tin (Sn)	2014/09/22	87	75 - 125	98	75 - 125	<0.10	mg/kg	1.2	35		
7647044	Total Titanium (Ti)	2014/09/22	NC	75 - 125	97	75 - 125	<1.0	mg/kg	0.7	35	115	70 - 130
7647044	Total Uranium (U)	2014/09/22	95	75 - 125	101	75 - 125	<0.050	mg/kg			110	70 - 130
7647044	Total Vanadium (V)	2014/09/22	NC	75 - 125	100	75 - 125	<2.0	mg/kg	29.2	30	114	70 - 130
7647044	Total Zinc (Zn)	2014/09/22	NC	75 - 125	102	75 - 125	<1.0	mg/kg	2.1	30	96	70 - 130
7647044	Total Aluminum (Al)	2014/09/22					<100	mg/kg	1	35	124	70 - 130
7647044	Total Calcium (Ca)	2014/09/22					<100	mg/kg	7.7	30	104	70 - 130
7647044	Total Iron (Fe)	2014/09/22					<100	mg/kg	6.0	30	104	70 - 130
7647044	Total Magnesium (Mg)	2014/09/22					<100	mg/kg	4.9	30	104	70 - 130
7647044	Total Phosphorus (P)	2014/09/22					<10	mg/kg	6.1	30	95	70 - 130
7647044	Total Bismuth (Bi)	2014/09/22					<0.10	mg/kg	NC	30		
7647044	Total Potassium (K)	2014/09/22					<100	mg/kg	NC	35		
7647044	Total Sodium (Na)	2014/09/22					<100	mg/kg	NC	35		
7647044	Total Zirconium (Zr)	2014/09/22					<0.50	mg/kg	8.4	30		
7647060	Soluble (2:1) pH	2014/09/22			100	97 - 103			0.3	N/A		
7647295	Moisture	2014/09/22							2.2	20		
7648427	Moisture	2014/09/24					<0.30	%				
7648441	Moisture	2014/09/24					<0.30	%	8.5	20		
7648571	O-TERPHENYL (sur.)	2014/09/23	91	50 - 130	92	50 - 130	91	%				
7648571	EPH (C10-C19)	2014/09/23	83	50 - 130	82	50 - 130	<100	mg/kg	NC	40		

Maxxam Job #: B483621
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Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
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QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7648571	EPH (C19-C32)	2014/09/23	92	50 - 130	91	50 - 130	<100	mg/kg	NC	40		
7648583	D10-ANTHRACENE (sur.)	2014/09/23	109	60 - 130	103	60 - 130	104	%				
7648583	D8-ACENAPHTHYLENE (sur.)	2014/09/23	106	50 - 130	99	50 - 130	100	%				
7648583	D8-NAPHTHALENE (sur.)	2014/09/23	108	50 - 130	103	50 - 130	103	%				
7648583	TERPHENYL-D14 (sur.)	2014/09/23	118	60 - 130	111	60 - 130	111	%				
7648583	Naphthalene	2014/09/23	98	50 - 130	97	50 - 130	<0.050	mg/kg	NC	50		
7648583	2-Methylnaphthalene	2014/09/23	100	50 - 130	98	50 - 130	<0.050	mg/kg	NC	50		
7648583	Acenaphthylene	2014/09/23	99	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7648583	Acenaphthene	2014/09/23	102	50 - 130	99	50 - 130	<0.050	mg/kg	NC	50		
7648583	Fluorene	2014/09/23	98	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7648583	Phenanthrene	2014/09/23	99	60 - 130	99	60 - 130	<0.050	mg/kg	NC	50		
7648583	Anthracene	2014/09/23	104	60 - 130	103	60 - 130	<0.050	mg/kg	NC	50		
7648583	Fluoranthene	2014/09/23	107	60 - 130	106	60 - 130	<0.050	mg/kg	NC	50		
7648583	Pyrene	2014/09/23	107	60 - 130	107	60 - 130	<0.050	mg/kg	NC	50		
7648583	Benzo(a)anthracene	2014/09/23	104	60 - 130	105	60 - 130	<0.050	mg/kg	NC	50		
7648583	Chrysene	2014/09/23	107	60 - 130	108	60 - 130	<0.050	mg/kg	NC	50		
7648583	Benzo(b&j)fluoranthene	2014/09/23	102	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7648583	Benzo(k)fluoranthene	2014/09/23	106	60 - 130	105	60 - 130	<0.050	mg/kg	NC	50		
7648583	Benzo(a)pyrene	2014/09/23	101	60 - 130	98	60 - 130	<0.050	mg/kg	NC	50		
7648583	Indeno(1,2,3-cd)pyrene	2014/09/23	94	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
7648583	Dibenz(a,h)anthracene	2014/09/23	89	60 - 130	77	60 - 130	<0.050	mg/kg	NC	50		
7648583	Benzo(g,h,i)perylene	2014/09/23	92	60 - 130	81	60 - 130	<0.050	mg/kg	NC	50		
7648583	Benzo(b)fluoranthene	2014/09/23					<0.050	mg/kg	NC	50		
7649063	Total Antimony (Sb)	2014/09/23	92	75 - 125	99	75 - 125	<0.10	mg/kg	NC	30	111	70 - 130
7649063	Total Arsenic (As)	2014/09/23	98	75 - 125	95	75 - 125	<0.50	mg/kg	NC	30	103	70 - 130
7649063	Total Barium (Ba)	2014/09/23	91	75 - 125	100	75 - 125	<0.10	mg/kg	13.5	35	107	70 - 130
7649063	Total Beryllium (Be)	2014/09/23	97	75 - 125	96	75 - 125	<0.40	mg/kg	NC	30		
7649063	Total Cadmium (Cd)	2014/09/23	103	75 - 125	100	75 - 125	<0.050	mg/kg	NC	30	105	70 - 130
7649063	Total Chromium (Cr)	2014/09/23	97	75 - 125	98	75 - 125	<1.0	mg/kg	4.9	30	117	70 - 130
7649063	Total Cobalt (Co)	2014/09/23	98	75 - 125	102	75 - 125	<0.30	mg/kg	1.8	30	103	70 - 130
7649063	Total Copper (Cu)	2014/09/23	103	75 - 125	103	75 - 125	<0.50	mg/kg	1.3	30	100	70 - 130
7649063	Total Lead (Pb)	2014/09/23	95	75 - 125	102	75 - 125	<0.10	mg/kg	34.9	35	106	70 - 130
7649063	Total Lithium (Li)	2014/09/23	91	75 - 125	95	75 - 125	<5.0	mg/kg				
7649063	Total Manganese (Mn)	2014/09/23	NC	75 - 125	103	75 - 125	<0.20	mg/kg	0.3	30	106	70 - 130
7649063	Total Mercury (Hg)	2014/09/23	102	75 - 125	99	75 - 125	<0.050	mg/kg	NC	35	111	70 - 130
7649063	Total Molybdenum (Mo)	2014/09/23	107	75 - 125	100	75 - 125	<0.10	mg/kg	3.5	35	116	70 - 130
7649063	Total Nickel (Ni)	2014/09/23	100	75 - 125	101	75 - 125	<0.80	mg/kg	6.0	30	103	70 - 130
7649063	Total Selenium (Se)	2014/09/23	102	75 - 125	98	75 - 125	<0.50	mg/kg	NC	30		
7649063	Total Silver (Ag)	2014/09/23	99	75 - 125	96	75 - 125	<0.050	mg/kg	NC	35		
7649063	Total Strontium (Sr)	2014/09/23	103	75 - 125	95	75 - 125	<0.10	mg/kg	2.6	35	111	70 - 130

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7649063	Total Thallium (Tl)	2014/09/23	73(1)	75 - 125	104	75 - 125	<0.050	mg/kg			99	70 - 130
7649063	Total Tin (Sn)	2014/09/23	97	75 - 125	95	75 - 125	<0.10	mg/kg	NC	35		
7649063	Total Titanium (Ti)	2014/09/23	NC	75 - 125	95	75 - 125	<1.0	mg/kg	1.3	35	116	70 - 130
7649063	Total Uranium (U)	2014/09/23	102	75 - 125	101	75 - 125	<0.050	mg/kg			112	70 - 130
7649063	Total Vanadium (V)	2014/09/23	NC	75 - 125	97	75 - 125	<2.0	mg/kg	1.4	30	118	70 - 130
7649063	Total Zinc (Zn)	2014/09/23	NC	75 - 125	105	75 - 125	<1.0	mg/kg	2.1	30	98	70 - 130
7649063	Total Aluminum (Al)	2014/09/23					<100	mg/kg	0.8	35	118	70 - 130
7649063	Total Calcium (Ca)	2014/09/23					<100	mg/kg			105	70 - 130
7649063	Total Iron (Fe)	2014/09/23					<100	mg/kg			104	70 - 130
7649063	Total Magnesium (Mg)	2014/09/23					<100	mg/kg			101	70 - 130
7649063	Total Phosphorus (P)	2014/09/23					<10	mg/kg			102	70 - 130
7649063	Total Bismuth (Bi)	2014/09/23					<0.10	mg/kg				
7649063	Total Potassium (K)	2014/09/23					<100	mg/kg				
7649063	Total Sodium (Na)	2014/09/23					<100	mg/kg				
7649063	Total Zirconium (Zr)	2014/09/23					<0.50	mg/kg				
7649067	Soluble (2:1) pH	2014/09/23			101	97 - 103			0.3	N/A		
7649165	Total Antimony (Sb)	2014/09/23	89	75 - 125	98	75 - 125	<0.10	mg/kg			107	70 - 130
7649165	Total Arsenic (As)	2014/09/23	99	75 - 125	99	75 - 125	<0.50	mg/kg	2.5	30	98	70 - 130
7649165	Total Barium (Ba)	2014/09/23	NC	75 - 125	102	75 - 125	<0.10	mg/kg	1.9	35	101	70 - 130
7649165	Total Beryllium (Be)	2014/09/23	102	75 - 125	97	75 - 125	<0.40	mg/kg				
7649165	Total Cadmium (Cd)	2014/09/23	103	75 - 125	106	75 - 125	<0.050	mg/kg			109	70 - 130
7649165	Total Chromium (Cr)	2014/09/23	93	75 - 125	101	75 - 125	<1.0	mg/kg	8.5	30	107	70 - 130
7649165	Total Cobalt (Co)	2014/09/23	94	75 - 125	103	75 - 125	<0.30	mg/kg			93	70 - 130
7649165	Total Copper (Cu)	2014/09/23	99	75 - 125	109	75 - 125	<0.50	mg/kg	3.6	30	96	70 - 130
7649165	Total Lead (Pb)	2014/09/23	103	75 - 125	105	75 - 125	<0.10	mg/kg	3.6	35	101	70 - 130
7649165	Total Lithium (Li)	2014/09/23	98	75 - 125	94	75 - 125	<5.0	mg/kg				
7649165	Total Manganese (Mn)	2014/09/23	NC	75 - 125	104	75 - 125	<0.20	mg/kg			99	70 - 130
7649165	Total Mercury (Hg)	2014/09/23	90	75 - 125	100	75 - 125	<0.050	mg/kg			102	70 - 130
7649165	Total Molybdenum (Mo)	2014/09/23	93	75 - 125	103	75 - 125	<0.10	mg/kg			116	70 - 130
7649165	Total Nickel (Ni)	2014/09/23	105	75 - 125	107	75 - 125	<0.80	mg/kg			100	70 - 130
7649165	Total Selenium (Se)	2014/09/23	103	75 - 125	103	75 - 125	<0.50	mg/kg				
7649165	Total Silver (Ag)	2014/09/23	95	75 - 125	99	75 - 125	<0.050	mg/kg				
7649165	Total Strontium (Sr)	2014/09/23	NC	75 - 125	98	75 - 125	<0.10	mg/kg			102	70 - 130
7649165	Total Thallium (Tl)	2014/09/23	96	75 - 125	105	75 - 125	<0.050	mg/kg			101	70 - 130
7649165	Total Tin (Sn)	2014/09/23	87	75 - 125	97	75 - 125	<0.10	mg/kg				
7649165	Total Titanium (Ti)	2014/09/23	NC	75 - 125	96	75 - 125	<1.0	mg/kg			111	70 - 130
7649165	Total Uranium (U)	2014/09/23	100	75 - 125	102	75 - 125	<0.050	mg/kg			102	70 - 130
7649165	Total Vanadium (V)	2014/09/23	NC	75 - 125	103	75 - 125	<2.0	mg/kg			110	70 - 130
7649165	Total Zinc (Zn)	2014/09/23	NC	75 - 125	111	75 - 125	<1.0	mg/kg	0.5	30	94	70 - 130
7649165	Total Aluminum (Al)	2014/09/23					<100	mg/kg			111	70 - 130

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7649165	Total Calcium (Ca)	2014/09/23					<100	mg/kg			100	70 - 130
7649165	Total Iron (Fe)	2014/09/23					<100	mg/kg			96	70 - 130
7649165	Total Magnesium (Mg)	2014/09/23					<100	mg/kg			95	70 - 130
7649165	Total Phosphorus (P)	2014/09/23					<10	mg/kg			99	70 - 130
7649165	Total Bismuth (Bi)	2014/09/23					<0.10	mg/kg				
7649165	Total Potassium (K)	2014/09/23					<100	mg/kg				
7649165	Total Sodium (Na)	2014/09/23					<100	mg/kg				
7649165	Total Zirconium (Zr)	2014/09/23					<0.50	mg/kg				
7649173	Soluble (2:1) pH	2014/09/23			99	97 - 103			0.6	N/A		
7649332	Total Antimony (Sb)	2014/09/23	97	75 - 125	86	75 - 125	<0.10	mg/kg	NC	30	98	70 - 130
7649332	Total Arsenic (As)	2014/09/23	85	75 - 125	97	75 - 125	<0.50	mg/kg	NC	30	97	70 - 130
7649332	Total Barium (Ba)	2014/09/23	91	75 - 125	97	75 - 125	<0.10	mg/kg	5.0	35	95	70 - 130
7649332	Total Beryllium (Be)	2014/09/23	88	75 - 125	97	75 - 125	<0.40	mg/kg	NC	30		
7649332	Total Cadmium (Cd)	2014/09/23	96	75 - 125	104	75 - 125	<0.050	mg/kg	NC	30	102	70 - 130
7649332	Total Chromium (Cr)	2014/09/23	98	75 - 125	100	75 - 125	<1.0	mg/kg	NC	30	109	70 - 130
7649332	Total Cobalt (Co)	2014/09/23	89	75 - 125	100	75 - 125	<0.30	mg/kg	NC	30	96	70 - 130
7649332	Total Copper (Cu)	2014/09/23	82	75 - 125	104	75 - 125	<0.50	mg/kg	NC	30	92	70 - 130
7649332	Total Lead (Pb)	2014/09/23	94	75 - 125	101	75 - 125	<0.10	mg/kg	3.7	35	99	70 - 130
7649332	Total Lithium (Li)	2014/09/23	100	75 - 125	99	75 - 125	<5.0	mg/kg	NC	30		
7649332	Total Manganese (Mn)	2014/09/23	NC	75 - 125	101	75 - 125	<0.20	mg/kg	4.7	30	98	70 - 130
7649332	Total Mercury (Hg)	2014/09/23	95	75 - 125	91	75 - 125	<0.050	mg/kg	NC	35	120	70 - 130
7649332	Total Molybdenum (Mo)	2014/09/23	103	75 - 125	87	75 - 125	<0.10	mg/kg	NC	35	109	70 - 130
7649332	Total Nickel (Ni)	2014/09/23	86	75 - 125	103	75 - 125	<0.80	mg/kg	NC	30	94	70 - 130
7649332	Total Selenium (Se)	2014/09/23	85	75 - 125	101	75 - 125	<0.50	mg/kg	NC	30		
7649332	Total Silver (Ag)	2014/09/23	94	75 - 125	97	75 - 125	<0.050	mg/kg	NC	35		
7649332	Total Strontium (Sr)	2014/09/23	NC	75 - 125	93	75 - 125	<0.10	mg/kg	5.5	35	96	70 - 130
7649332	Total Thallium (Tl)	2014/09/23	97	75 - 125	95	75 - 125	<0.050	mg/kg	NC	30	93	70 - 130
7649332	Total Tin (Sn)	2014/09/23	94	75 - 125	84(2)	75 - 125	<0.10	mg/kg	NC	35		
7649332	Total Titanium (Ti)	2014/09/23	88	75 - 125	85	75 - 125	<1.0	mg/kg	11.3	35	107	70 - 130
7649332	Total Uranium (U)	2014/09/23	102	75 - 125	99	75 - 125	<0.050	mg/kg	5.5	30	98	70 - 130
7649332	Total Vanadium (V)	2014/09/23	98	75 - 125	102	75 - 125	<2.0	mg/kg	NC	30	108	70 - 130
7649332	Total Zinc (Zn)	2014/09/23	80	75 - 125	108	75 - 125	<1.0	mg/kg	NC	30	91	70 - 130
7649332	Total Aluminum (Al)	2014/09/23					<100	mg/kg	9.8	35	101	70 - 130
7649332	Total Calcium (Ca)	2014/09/23					<100	mg/kg	6.3	30	92	70 - 130
7649332	Total Iron (Fe)	2014/09/23					<100	mg/kg	4.5	30	97	70 - 130
7649332	Total Magnesium (Mg)	2014/09/23					<100	mg/kg	6.5	30	95	70 - 130
7649332	Total Phosphorus (P)	2014/09/23					<10	mg/kg	NC	30	93	70 - 130
7649332	Total Bismuth (Bi)	2014/09/23					<0.10	mg/kg	NC	30		
7649332	Total Potassium (K)	2014/09/23					<100	mg/kg	NC	35		
7649332	Total Sodium (Na)	2014/09/23					<100	mg/kg	NC	35		

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7649332	Total Zirconium (Zr)	2014/09/23					<0.50	mg/kg	NC	30		
7649333	Soluble (2:1) pH	2014/09/23			100	97 - 103			0.2	N/A		
7649540	D10-ANTHRACENE (sur.)	2014/09/23	104	60 - 130	104	60 - 130	112	%				
7649540	D8-ACENAPHTHYLENE (sur.)	2014/09/23	101	50 - 130	104	50 - 130	109	%				
7649540	D8-NAPHTHALENE (sur.)	2014/09/23	106	50 - 130	105	50 - 130	112	%				
7649540	TERPHENYL-D14 (sur.)	2014/09/23	108	60 - 130	109	60 - 130	115	%				
7649540	Naphthalene	2014/09/23	99	50 - 130	98	50 - 130	<0.050	mg/kg	NC	50		
7649540	2-Methylnaphthalene	2014/09/23	96	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7649540	Acenaphthylene	2014/09/23	93	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7649540	Acenaphthene	2014/09/23	96	50 - 130	97	50 - 130	<0.050	mg/kg	NC	50		
7649540	Fluorene	2014/09/23	91	50 - 130	91	50 - 130	<0.050	mg/kg	NC	50		
7649540	Phenanthrene	2014/09/23	92	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
7649540	Anthracene	2014/09/23	94	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7649540	Fluoranthene	2014/09/23	93	60 - 130	93	60 - 130	<0.050	mg/kg	NC	50		
7649540	Pyrene	2014/09/23	98	60 - 130	99	60 - 130	<0.050	mg/kg	NC	50		
7649540	Benzo(a)anthracene	2014/09/23	91	60 - 130	96	60 - 130	<0.050	mg/kg	NC	50		
7649540	Chrysene	2014/09/23	93	60 - 130	98	60 - 130	<0.050	mg/kg	NC	50		
7649540	Benzo(b&j)fluoranthene	2014/09/23	91	60 - 130	100	60 - 130	<0.050	mg/kg	NC	50		
7649540	Benzo(k)fluoranthene	2014/09/23	99	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7649540	Benzo(a)pyrene	2014/09/23	88	60 - 130	94	60 - 130	<0.050	mg/kg	NC	50		
7649540	Indeno(1,2,3-cd)pyrene	2014/09/23	94	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7649540	Dibenz(a,h)anthracene	2014/09/23	92	60 - 130	94	60 - 130	<0.050	mg/kg	NC	50		
7649540	Benzo(g,h,i)perylene	2014/09/23	88	60 - 130	95	60 - 130	<0.050	mg/kg	NC	50		
7649540	Benzo(b)fluoranthene	2014/09/23					<0.050	mg/kg				
7649548	O-TERPHENYL (sur.)	2014/09/25	88	50 - 130	87	50 - 130	90	%				
7649548	EPH (C10-C19)	2014/09/25	84	50 - 130	84	50 - 130	<100	mg/kg	NC	40		
7649548	EPH (C19-C32)	2014/09/25	92	50 - 130	92	50 - 130	<100	mg/kg	NC	40		
7649890	1,4-Difluorobenzene (sur.)	2014/09/23	102	70 - 130	103	70 - 130	102	%				
7649890	4-Bromofluorobenzene (sur.)	2014/09/23	143 (1, 3)	70 - 130	108	70 - 130	105	%				
7649890	D10-ETHYLBENZENE (sur.)	2014/09/23	103	50 - 130	108	50 - 130	117	%				
7649890	D4-1,2-Dichloroethane (sur.)	2014/09/23	101	70 - 130	120	70 - 130	105	%				
7649890	Vinyl chloride	2014/09/26	91	40 - 150	116	40 - 150	<0.060	mg/kg	NC	40		
7649890	Bromomethane	2014/09/26	73	40 - 150	88	40 - 150	<0.30	mg/kg	NC	40		
7649890	Chloroethane	2014/09/26	85	40 - 150	95	40 - 150	<0.10	mg/kg	NC	40		
7649890	Trichlorofluoromethane	2014/09/26	104	40 - 150	125	40 - 150	<0.20	mg/kg	NC	40		
7649890	1,1-dichloroethene	2014/09/26	89	60 - 140	113	60 - 140	<0.025	mg/kg	NC	40		
7649890	Dichloromethane	2014/09/26	98	60 - 140	130	60 - 140	<0.10	mg/kg	NC	40		
7649890	trans-1,2-dichloroethene	2014/09/26	85	60 - 140	113	60 - 140	<0.025	mg/kg	NC	40		
7649890	1,1-dichloroethane	2014/09/26	83	60 - 140	112	60 - 140	<0.025	mg/kg	NC	40		
7649890	cis-1,2-dichloroethene	2014/09/26	86	60 - 140	117	60 - 140	<0.025	mg/kg	NC	40		

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7649890	Chloroform	2014/09/26	90	60 - 140	114	60 - 140	<0.050	mg/kg	NC	40		
7649890	1,1,1-trichloroethane	2014/09/26	94	60 - 140	116	60 - 140	<0.025	mg/kg	NC	40		
7649890	1,2-dichloroethane	2014/09/26	84	60 - 140	110	60 - 140	<0.025	mg/kg	NC	40		
7649890	Carbon tetrachloride	2014/09/26	111	60 - 140	117	60 - 140	<0.025	mg/kg	NC	40		
7649890	Benzene	2014/09/26	82	60 - 140	116	60 - 140	<0.0050	mg/kg	20.3	40		
7649890	1,2-dichloropropane	2014/09/26	96	60 - 140	114	60 - 140	<0.025	mg/kg	NC	40		
7649890	Trichloroethene	2014/09/26	88	60 - 140	114	60 - 140	<0.0090	mg/kg	NC	40		
7649890	Bromodichloromethane	2014/09/26	94	60 - 140	114	60 - 140	<0.050	mg/kg	NC	40		
7649890	cis-1,3-dichloropropene	2014/09/26	86	60 - 140	117	60 - 140	<0.050	mg/kg	NC	40		
7649890	trans-1,3-dichloropropene	2014/09/26	83	60 - 140	116	60 - 140	<0.050	mg/kg	NC	40		
7649890	1,1,2-trichloroethane	2014/09/26	97	60 - 140	121	60 - 140	<0.025	mg/kg	NC	40		
7649890	Toluene	2014/09/26	88	60 - 140	114	60 - 140	<0.020	mg/kg	2.9	40		
7649890	Chlorodibromomethane	2014/09/26	98	60 - 140	113	60 - 140	<0.050	mg/kg	NC	40		
7649890	1,2-dibromoethane	2014/09/23	105	60 - 140	122	60 - 140	<0.025	mg/kg				
7649890	Tetrachloroethene	2014/09/26	93	60 - 140	114	60 - 140	<0.025	mg/kg	NC	40		
7649890	Chlorobenzene	2014/09/26	96	60 - 140	112	60 - 140	<0.025	mg/kg	NC	40		
7649890	1,1,1,2-tetrachloroethane	2014/09/26	112	60 - 140	117	60 - 140	<0.025	mg/kg	NC	40		
7649890	Ethylbenzene	2014/09/26	111	60 - 140	119	60 - 140	<0.010	mg/kg	2.0	40		
7649890	m & p-Xylene	2014/09/26	111	60 - 140	116	60 - 140	<0.040	mg/kg	8.6	40		
7649890	Bromoform	2014/09/26	107	60 - 140	108	60 - 140	<0.050	mg/kg	NC	40		
7649890	Styrene	2014/09/26	97	60 - 140	105	60 - 140	<0.030	mg/kg	NC	40		
7649890	o-Xylene	2014/09/26	116	60 - 140	111	60 - 140	<0.040	mg/kg	4.7	40		
7649890	1,1,2,2-tetrachloroethane	2014/09/26	155(1)	60 - 140	102	60 - 140	<0.025	mg/kg	NC	40		
7649890	1,2-dichlorobenzene	2014/09/26	162(1)	60 - 140	106	60 - 140	<0.025	mg/kg	NC	40		
7649890	1,3-dichlorobenzene	2014/09/26	145(1)	60 - 140	113	60 - 140	<0.025	mg/kg	NC	40		
7649890	1,4-dichlorobenzene	2014/09/26	145(1)	60 - 140	109	60 - 140	<0.025	mg/kg	NC	40		
7649890	Isopropylbenzene	2014/09/23	101	60 - 140	105	60 - 140	<0.20	mg/kg				
7649890	1,3,5-trimethylbenzene	2014/09/23	139	60 - 140	114	60 - 140	<0.20	mg/kg				
7649890	1,2,4-trimethylbenzene	2014/09/23	NC	60 - 140	110	60 - 140	<0.20	mg/kg				
7649890	1,2,3-trichlorobenzene	2014/09/23			108	60 - 140	<0.025	mg/kg				
7649890	Hexachlorobutadiene	2014/09/23			99	40 - 150	<0.20	mg/kg				
7649890	1,2,4-trichlorobenzene	2014/09/23			105	60 - 140	<0.025	mg/kg				
7649890	VH C6-C10	2014/09/26			79	60 - 140	<10	mg/kg	46.3(1)	40		
7649890	Methyl-tert-butylether(MTBE)	2014/09/26					<0.10	mg/kg	NC	40		
7649890	1,3-Butadiene	2014/09/26					<0.10	mg/kg	NC	40		
7649890	Xylenes (Total)	2014/09/26					<0.040	mg/kg	7.3	40		
7649890	Hexane	2014/09/23					<0.50	mg/kg				
7649890	n-Decane	2014/09/23					<2.0	mg/kg				
7649890	Methylcyclohexane	2014/09/23					<0.20	mg/kg				
7650315	O-TERPHENYL (sur.)	2014/09/24	88	50 - 130	94	50 - 130	100	%				

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Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7650315	EPH (C10-C19)	2014/09/24	83	50 - 130	83	50 - 130	<100	mg/kg	NC	40		
7650315	EPH (C19-C32)	2014/09/24	92	50 - 130	91	50 - 130	<100	mg/kg	NC	40		
7650323	D10-ANTHRACENE (sur.)	2014/09/23	93	60 - 130	101	60 - 130	103	%				
7650323	D8-ACENAPHTHYLENE (sur.)	2014/09/23	95	50 - 130	100	50 - 130	103	%				
7650323	D8-NAPHTHALENE (sur.)	2014/09/23	98	50 - 130	102	50 - 130	105	%				
7650323	TERPHENYL-D14 (sur.)	2014/09/23	101	60 - 130	108	60 - 130	108	%				
7650323	Naphthalene	2014/09/23	91	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7650323	2-Methylnaphthalene	2014/09/23	89	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7650323	Acenaphthylene	2014/09/23	86	50 - 130	93	50 - 130	<0.050	mg/kg	NC	50		
7650323	Acenaphthene	2014/09/23	88	50 - 130	96	50 - 130	<0.050	mg/kg	NC	50		
7650323	Fluorene	2014/09/23	84	50 - 130	91	50 - 130	<0.050	mg/kg	NC	50		
7650323	Phenanthrene	2014/09/23	86	60 - 130	93	60 - 130	<0.050	mg/kg	NC	50		
7650323	Anthracene	2014/09/23	84	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7650323	Fluoranthene	2014/09/23	86	60 - 130	94	60 - 130	<0.050	mg/kg	NC	50		
7650323	Pyrene	2014/09/23	91	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(a)anthracene	2014/09/23	84	60 - 130	94	60 - 130	<0.050	mg/kg	NC	50		
7650323	Chrysene	2014/09/23	87	60 - 130	96	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(b&j)fluoranthene	2014/09/23	83	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(k)fluoranthene	2014/09/23	90	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(a)pyrene	2014/09/23	77	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
7650323	Indeno(1,2,3-cd)pyrene	2014/09/23	78	60 - 130	92	60 - 130	<0.050	mg/kg	NC	50		
7650323	Dibenz(a,h)anthracene	2014/09/23	77	60 - 130	86	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(g,h,i)perylene	2014/09/23	74	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
7650323	Benzo(b)fluoranthene	2014/09/23					<0.050	mg/kg				
7650801	Total Antimony (Sb)	2014/09/24	96	75 - 125	100	75 - 125	<0.10	mg/kg	11.4	30	102	70 - 130
7650801	Total Arsenic (As)	2014/09/24	102	75 - 125	98	75 - 125	<0.50	mg/kg	2.2	30	103	70 - 130
7650801	Total Barium (Ba)	2014/09/24	NC	75 - 125	104	75 - 125	<0.10	mg/kg	2.8	35	106	70 - 130
7650801	Total Beryllium (Be)	2014/09/24	109	75 - 125	100	75 - 125	<0.40	mg/kg	NC	30		
7650801	Total Cadmium (Cd)	2014/09/24	104	75 - 125	104	75 - 125	<0.050	mg/kg	26.4	30	112	70 - 130
7650801	Total Chromium (Cr)	2014/09/24	101	75 - 125	103	75 - 125	<1.0	mg/kg	3.5	30	115	70 - 130
7650801	Total Cobalt (Co)	2014/09/24	99	75 - 125	104	75 - 125	<0.30	mg/kg	1.8	30	97	70 - 130
7650801	Total Copper (Cu)	2014/09/24	98	75 - 125	108	75 - 125	<0.50	mg/kg	2.9	30	101	70 - 130
7650801	Total Lead (Pb)	2014/09/24	NC	75 - 125	108	75 - 125	<0.10	mg/kg	1.9	35	104	70 - 130
7650801	Total Lithium (Li)	2014/09/24	105	75 - 125	101	75 - 125	<5.0	mg/kg	NC	30		
7650801	Total Manganese (Mn)	2014/09/24	NC	75 - 125	105	75 - 125	<0.20	mg/kg	4.5	30	105	70 - 130
7650801	Total Mercury (Hg)	2014/09/24	104	75 - 125	100	75 - 125	<0.050	mg/kg	NC	35	90	70 - 130
7650801	Total Molybdenum (Mo)	2014/09/24	115	75 - 125	107	75 - 125	<0.10	mg/kg	5.9	35	116	70 - 130
7650801	Total Nickel (Ni)	2014/09/24	NC	75 - 125	106	75 - 125	<0.80	mg/kg	1.4	30	103	70 - 130
7650801	Total Selenium (Se)	2014/09/24	105	75 - 125	98	75 - 125	<0.50	mg/kg	NC	30		
7650801	Total Silver (Ag)	2014/09/24	100	75 - 125	104	75 - 125	<0.050	mg/kg	NC	35		

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7650801	Total Strontium (Sr)	2014/09/24	NC	75 - 125	103	75 - 125	<0.10	mg/kg	7.4	35	111	70 - 130
7650801	Total Thallium (Tl)	2014/09/24	96	75 - 125	105	75 - 125	<0.050	mg/kg	4.0	30	96	70 - 130
7650801	Total Tin (Sn)	2014/09/24	103	75 - 125	100	75 - 125	<0.10	mg/kg	1.4	35		
7650801	Total Titanium (Ti)	2014/09/24	NC	75 - 125	100	75 - 125	<1.0	mg/kg	18.8	35	124	70 - 130
7650801	Total Uranium (U)	2014/09/24	103	75 - 125	103	75 - 125	<0.050	mg/kg	8.6	30	110	70 - 130
7650801	Total Vanadium (V)	2014/09/24	NC	75 - 125	100	75 - 125	<2.0	mg/kg	4.8	30	116	70 - 130
7650801	Total Zinc (Zn)	2014/09/24	NC	75 - 125	102	75 - 125	<1.0	mg/kg	1.5	30	93	70 - 130
7650801	Total Aluminum (Al)	2014/09/24					<100	mg/kg	3.5	35	118	70 - 130
7650801	Total Calcium (Ca)	2014/09/24					<100	mg/kg	6.0	30	102	70 - 130
7650801	Total Iron (Fe)	2014/09/24					<100	mg/kg	4.9	30	100	70 - 130
7650801	Total Magnesium (Mg)	2014/09/24					<100	mg/kg	2.6	30	98	70 - 130
7650801	Total Phosphorus (P)	2014/09/24					<10	mg/kg	1.8	30	96	70 - 130
7650801	Total Bismuth (Bi)	2014/09/24					<0.10	mg/kg	NC	30		
7650801	Total Potassium (K)	2014/09/24					<100	mg/kg	6.7	35		
7650801	Total Sodium (Na)	2014/09/24					<100	mg/kg	NC	35		
7650801	Total Zirconium (Zr)	2014/09/24					<0.50	mg/kg	1.2	30		
7650832	Soluble (2:1) pH	2014/09/24			101	97 - 103			0.3	N/A		
7650867	Total Antimony (Sb)	2014/09/24	93	75 - 125	102	75 - 125	<0.10	mg/kg	NC	30	109	70 - 130
7650867	Total Arsenic (As)	2014/09/24	102	75 - 125	97	75 - 125	0.51, RDL=0.50	mg/kg	1.3	30	102	70 - 130
7650867	Total Barium (Ba)	2014/09/24	NC	75 - 125	102	75 - 125	<0.10	mg/kg	0.8	35	107	70 - 130
7650867	Total Beryllium (Be)	2014/09/24	101	75 - 125	108	75 - 125	<0.40	mg/kg	NC	30		
7650867	Total Cadmium (Cd)	2014/09/24	104	75 - 125	104	75 - 125	<0.050	mg/kg	3.5	30	104	70 - 130
7650867	Total Chromium (Cr)	2014/09/24	105	75 - 125	99	75 - 125	<1.0	mg/kg	2.0	30	108	70 - 130
7650867	Total Cobalt (Co)	2014/09/24	102	75 - 125	100	75 - 125	<0.30	mg/kg	4.5	30	90	70 - 130
7650867	Total Copper (Cu)	2014/09/24	102	75 - 125	104	75 - 125	<0.50	mg/kg	1.2	30	95	70 - 130
7650867	Total Lead (Pb)	2014/09/24	106	75 - 125	106	75 - 125	<0.10	mg/kg	0.1	35	101	70 - 130
7650867	Total Lithium (Li)	2014/09/24	100	75 - 125	105	75 - 125	<5.0	mg/kg	NC	30		
7650867	Total Manganese (Mn)	2014/09/24	NC	75 - 125	103	75 - 125	<0.20	mg/kg	2.2	30	100	70 - 130
7650867	Total Mercury (Hg)	2014/09/24	105	75 - 125	99	75 - 125	<0.050	mg/kg	NC	35	84	70 - 130
7650867	Total Molybdenum (Mo)	2014/09/24	109	75 - 125	109	75 - 125	<0.10	mg/kg	3.2	35	116	70 - 130
7650867	Total Nickel (Ni)	2014/09/24	NC	75 - 125	101	75 - 125	<0.80	mg/kg	0.5	30	99	70 - 130
7650867	Total Selenium (Se)	2014/09/24	103	75 - 125	100	75 - 125	<0.50	mg/kg	NC	30		
7650867	Total Silver (Ag)	2014/09/24	99	75 - 125	100	75 - 125	<0.050	mg/kg	NC	35		
7650867	Total Strontium (Sr)	2014/09/24	NC	75 - 125	103	75 - 125	<0.10	mg/kg	1.2	35	107	70 - 130
7650867	Total Thallium (Tl)	2014/09/24	91	75 - 125	102	75 - 125	<0.050	mg/kg	NC	30	99	70 - 130
7650867	Total Tin (Sn)	2014/09/24	99	75 - 125	98	75 - 125	<0.10	mg/kg	5.7	35		
7650867	Total Titanium (Ti)	2014/09/24	NC	75 - 125	97	75 - 125	<1.0	mg/kg	8.6	35	114	70 - 130
7650867	Total Uranium (U)	2014/09/24	105	75 - 125	101	75 - 125	<0.050	mg/kg	4.1	30	103	70 - 130
7650867	Total Vanadium (V)	2014/09/24	NC	75 - 125	97	75 - 125	<2.0	mg/kg	1.9	30	108	70 - 130
7650867	Total Zinc (Zn)	2014/09/24	NC	75 - 125	105	75 - 125	<1.0	mg/kg	2.0	30	96	70 - 130

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7650867	Total Aluminum (Al)	2014/09/24					<100	mg/kg	1.3	35	103	70 - 130
7650867	Total Calcium (Ca)	2014/09/24					<100	mg/kg	6.1	30	96	70 - 130
7650867	Total Iron (Fe)	2014/09/24					<100	mg/kg	2.2	30	95	70 - 130
7650867	Total Magnesium (Mg)	2014/09/24					<100	mg/kg	2.3	30	95	70 - 130
7650867	Total Phosphorus (P)	2014/09/24					<10	mg/kg	3.0	30	91	70 - 130
7650867	Total Bismuth (Bi)	2014/09/24					<0.10	mg/kg	NC	30		
7650867	Total Potassium (K)	2014/09/24					<100	mg/kg	0.2	35		
7650867	Total Sodium (Na)	2014/09/24					<100	mg/kg	NC	35		
7650867	Total Zirconium (Zr)	2014/09/24					<0.50	mg/kg	3.2	30		
7650915	Soluble (2:1) pH	2014/09/24			100	97 - 103			0.4	N/A		
7651107	Total Antimony (Sb)	2014/09/24	95	75 - 125	106	75 - 125	<0.10	mg/kg	NC	30	103	70 - 130
7651107	Total Arsenic (As)	2014/09/24	104	75 - 125	99	75 - 125	<0.50	mg/kg	2.0	30	101	70 - 130
7651107	Total Barium (Ba)	2014/09/24	NC	75 - 125	105	75 - 125	<0.10	mg/kg	0.2	35	105	70 - 130
7651107	Total Beryllium (Be)	2014/09/24	98	75 - 125	99	75 - 125	<0.40	mg/kg	NC	30		
7651107	Total Cadmium (Cd)	2014/09/24	104	75 - 125	103	75 - 125	<0.050	mg/kg	10.4	30	105	70 - 130
7651107	Total Chromium (Cr)	2014/09/24	103	75 - 125	106	75 - 125	<1.0	mg/kg	4.9	30	120	70 - 130
7651107	Total Cobalt (Co)	2014/09/24	102	75 - 125	108	75 - 125	<0.30	mg/kg	3.3	30	99	70 - 130
7651107	Total Copper (Cu)	2014/09/24	NC	75 - 125	107	75 - 125	<0.50	mg/kg	6.9	30	98	70 - 130
7651107	Total Lead (Pb)	2014/09/24	104	75 - 125	109	75 - 125	<0.10	mg/kg	2.9	35	106	70 - 130
7651107	Total Lithium (Li)	2014/09/24	98	75 - 125	100	75 - 125	<5.0	mg/kg	NC	30		
7651107	Total Manganese (Mn)	2014/09/24	NC	75 - 125	107	75 - 125	<0.20	mg/kg	2.4	30	104	70 - 130
7651107	Total Mercury (Hg)	2014/09/24	102	75 - 125	110	75 - 125	<0.050	mg/kg	NC	35	86	70 - 130
7651107	Total Molybdenum (Mo)	2014/09/24	116	75 - 125	103	75 - 125	<0.10	mg/kg	2.4	35	116	70 - 130
7651107	Total Nickel (Ni)	2014/09/24	NC	75 - 125	106	75 - 125	<0.80	mg/kg	7.1	30	99	70 - 130
7651107	Total Selenium (Se)	2014/09/24	103	75 - 125	104	75 - 125	<0.50	mg/kg	NC	30		
7651107	Total Silver (Ag)	2014/09/24	105	75 - 125	99	75 - 125	<0.050	mg/kg	NC	35		
7651107	Total Strontium (Sr)	2014/09/24	NC	75 - 125	101	75 - 125	<0.10	mg/kg	0.3	35	108	70 - 130
7651107	Total Thallium (Tl)	2014/09/24	85	75 - 125	108	75 - 125	<0.050	mg/kg	NC	30	106	70 - 130
7651107	Total Tin (Sn)	2014/09/24	100	75 - 125	101	75 - 125	<0.10	mg/kg	2.4	35		
7651107	Total Titanium (Ti)	2014/09/24	NC	75 - 125	101	75 - 125	<1.0	mg/kg	1.8	35	124	70 - 130
7651107	Total Uranium (U)	2014/09/24	104	75 - 125	105	75 - 125	<0.050	mg/kg	8.2	30	108	70 - 130
7651107	Total Vanadium (V)	2014/09/24	NC	75 - 125	105	75 - 125	<2.0	mg/kg	7.7	30	118	70 - 130
7651107	Total Zinc (Zn)	2014/09/24	NC	75 - 125	105	75 - 125	<1.0	mg/kg	3.7	30	94	70 - 130
7651107	Total Aluminum (Al)	2014/09/24					<100	mg/kg	6.7	35	126	70 - 130
7651107	Total Calcium (Ca)	2014/09/24					<100	mg/kg	1.5	30	105	70 - 130
7651107	Total Iron (Fe)	2014/09/24					<100	mg/kg	2.2	30	105	70 - 130
7651107	Total Magnesium (Mg)	2014/09/24					<100	mg/kg	0.9	30	104	70 - 130
7651107	Total Phosphorus (P)	2014/09/24					<10	mg/kg	2.9	30	97	70 - 130
7651107	Total Bismuth (Bi)	2014/09/24					<0.10	mg/kg	NC	30		
7651107	Total Potassium (K)	2014/09/24					<100	mg/kg	5.0	35		

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Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7651107	Total Sodium (Na)	2014/09/24					<100	mg/kg	NC	35		
7651107	Total Zirconium (Zr)	2014/09/24					<0.50	mg/kg	0.8	30		
7651113	Soluble (2:1) pH	2014/09/24			99	97 - 103			0.7	N/A		
7651208	D10-ANTHRACENE (sur.)	2014/09/24	101	60 - 130	104	60 - 130	107	%				
7651208	D8-ACENAPHTHYLENE (sur.)	2014/09/24	102	50 - 130	101	50 - 130	105	%				
7651208	D8-NAPHTHALENE (sur.)	2014/09/24	101	50 - 130	101	50 - 130	105	%				
7651208	TERPHENYL-D14 (sur.)	2014/09/24	112	60 - 130	112	60 - 130	115	%				
7651208	Naphthalene	2014/09/24	94	50 - 130	92	50 - 130	<0.050	mg/kg	NC	50		
7651208	2-Methylnaphthalene	2014/09/24	96	50 - 130	95	50 - 130	<0.050	mg/kg	NC	50		
7651208	Acenaphthylene	2014/09/24	96	50 - 130	94	50 - 130	<0.050	mg/kg	NC	50		
7651208	Acenaphthene	2014/09/24	98	50 - 130	99	50 - 130	<0.050	mg/kg	NC	50		
7651208	Fluorene	2014/09/24	96	50 - 130	95	50 - 130	<0.050	mg/kg	NC	50		
7651208	Phenanthrene	2014/09/24	96	60 - 130	96	60 - 130	<0.050	mg/kg	NC	50		
7651208	Anthracene	2014/09/24	100	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7651208	Fluoranthene	2014/09/24	107	60 - 130	104	60 - 130	<0.050	mg/kg	NC	50		
7651208	Pyrene	2014/09/24	105	60 - 130	104	60 - 130	<0.050	mg/kg	NC	50		
7651208	Benzo(a)anthracene	2014/09/24	100	60 - 130	100	60 - 130	<0.050	mg/kg	NC	50		
7651208	Chrysene	2014/09/24	102	60 - 130	103	60 - 130	<0.050	mg/kg	NC	50		
7651208	Benzo(b&j)fluoranthene	2014/09/24	105	60 - 130	99	60 - 130	<0.050	mg/kg	NC	50		
7651208	Benzo(k)fluoranthene	2014/09/24	98	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7651208	Benzo(a)pyrene	2014/09/24	99	60 - 130	98	60 - 130	<0.050	mg/kg	NC	50		
7651208	Indeno(1,2,3-cd)pyrene	2014/09/24	99	60 - 130	92	60 - 130	<0.050	mg/kg	NC	50		
7651208	Dibenz(a,h)anthracene	2014/09/24	94	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
7651208	Benzo(g,h,i)perylene	2014/09/24	96	60 - 130	91	60 - 130	<0.050	mg/kg	NC	50		
7651208	Benzo(b)fluoranthene	2014/09/24					<0.050	mg/kg	NC	50		
7651220	D10-ANTHRACENE (sur.)	2014/09/24	106	60 - 130	111	60 - 130	105	%				
7651220	D8-ACENAPHTHYLENE (sur.)	2014/09/24	104	50 - 130	106	50 - 130	107	%				
7651220	D8-NAPHTHALENE (sur.)	2014/09/24	100	50 - 130	108	50 - 130	107	%				
7651220	TERPHENYL-D14 (sur.)	2014/09/24	106	60 - 130	110	60 - 130	109	%				
7651220	Naphthalene	2014/09/24	93	50 - 130	100	50 - 130	<0.050	mg/kg	3.5	50		
7651220	2-Methylnaphthalene	2014/09/24	96	50 - 130	100	50 - 130	<0.050	mg/kg	2.8	50		
7651220	Acenaphthylene	2014/09/24	97	50 - 130	100	50 - 130	<0.050	mg/kg	NC	50		
7651220	Acenaphthene	2014/09/24	98	50 - 130	102	50 - 130	<0.050	mg/kg	NC	50		
7651220	Fluorene	2014/09/24	100	50 - 130	101	50 - 130	<0.050	mg/kg	NC	50		
7651220	Phenanthrene	2014/09/24	96	60 - 130	100	60 - 130	<0.050	mg/kg	NC	50		
7651220	Anthracene	2014/09/24	99	60 - 130	104	60 - 130	<0.050	mg/kg	NC	50		
7651220	Fluoranthene	2014/09/24	100	60 - 130	103	60 - 130	<0.050	mg/kg	NC	50		
7651220	Pyrene	2014/09/24	102	60 - 130	106	60 - 130	<0.050	mg/kg	NC	50		
7651220	Benzo(a)anthracene	2014/09/24	98	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7651220	Chrysene	2014/09/24	100	60 - 130	106	60 - 130	<0.050	mg/kg	NC	50		

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Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7651220	Benzo(b&j)fluoranthene	2014/09/24	98	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7651220	Benzo(k)fluoranthene	2014/09/24	104	60 - 130	108	60 - 130	<0.050	mg/kg	NC	50		
7651220	Benzo(a)pyrene	2014/09/24	101	60 - 130	102	60 - 130	<0.050	mg/kg	NC	50		
7651220	Indeno(1,2,3-cd)pyrene	2014/09/24	109	60 - 130	107	60 - 130	<0.050	mg/kg	NC	50		
7651220	Dibenz(a,h)anthracene	2014/09/24	107	60 - 130	104	60 - 130	<0.050	mg/kg	NC	50		
7651220	Benzo(g,h,i)perylene	2014/09/24	103	60 - 130	101	60 - 130	<0.050	mg/kg	NC	50		
7651220	Benzo(b)fluoranthene	2014/09/24					<0.050	mg/kg	NC	50		
7651230	O-TERPHENYL (sur.)	2014/09/24	88	50 - 130	104	50 - 130	105	%				
7651230	EPH (C10-C19)	2014/09/24	84	50 - 130	83	50 - 130	<100	mg/kg	NC	40		
7651230	EPH (C19-C32)	2014/09/24	91	50 - 130	90	50 - 130	<100	mg/kg	NC	40		
7651682	2,4,6-TRIBROMOPHENOL (sur.)	2014/09/26	108	19 - 122	109	19 - 122	108	%				
7651682	2-FLUOROPHENOL (sur.)	2014/09/26	75	25 - 121	70	25 - 121	64	%				
7651682	2-chlorophenol	2014/09/26	82	27 - 123	78	27 - 123	<0.0050	mg/kg	NC	50		
7651682	3 & 4-chlorophenol	2014/09/26	94	27 - 123	84	27 - 123	<0.0050	mg/kg	NC	50		
7651682	2,4 + 2,5-Dichlorophenol	2014/09/26	90	39 - 135	84	39 - 135	<0.0050	mg/kg	NC	50		
7651682	2,3-Dichlorophenol	2014/09/26	86	39 - 135	78	39 - 135	<0.0050	mg/kg	NC	50		
7651682	2,6-dichlorophenol	2014/09/26	91	39 - 135	85	39 - 135	<0.0050	mg/kg	NC	50		
7651682	3,5-Dichlorophenol	2014/09/26	92	39 - 135	92	39 - 135	<0.0050	mg/kg	NC	50		
7651682	3,4-Dichlorophenol	2014/09/26	96	39 - 135	98	39 - 135	<0.0050	mg/kg	NC	50		
7651682	2,4,5-trichlorophenol	2014/09/26	101	37 - 144	96	37 - 144	<0.0050	mg/kg	NC	50		
7651682	2,4,6-trichlorophenol	2014/09/26	99	37 - 144	93	37 - 144	<0.0050	mg/kg	NC	50		
7651682	2,3,5-trichlorophenol	2014/09/26	96	37 - 144	91	37 - 144	<0.0050	mg/kg	NC	50		
7651682	2,3,6-Trichlorophenol	2014/09/26	101	37 - 144	96	37 - 144	<0.0050	mg/kg	NC	50		
7651682	2,3,4-trichlorophenol	2014/09/26	102	37 - 144	95	37 - 144	<0.0050	mg/kg	NC	50		
7651682	3,4,5-Trichlorophenol	2014/09/26	109	37 - 144	118	37 - 144	<0.0050	mg/kg	NC	50		
7651682	2,3,4,6-tetrachlorophenol	2014/09/26	103	14 - 176	105	14 - 176	<0.0050	mg/kg	NC	50		
7651682	2,3,4,5-tetrachlorophenol	2014/09/26	103	14 - 176	109	14 - 176	<0.0050	mg/kg	NC	50		
7651682	2,3,5,6-tetrachlorophenol	2014/09/26	97	14 - 176	101	14 - 176	<0.0050	mg/kg	NC	50		
7651682	2,6-Dimethylphenol	2014/09/26	80	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50		
7651682	Pentachlorophenol	2014/09/26	102	14 - 176	122	14 - 176	<0.0050	mg/kg	NC	50		
7651887	Moisture	2014/09/25					<0.30	%	2.3	20		
7652360	Moisture	2014/09/26					<0.30	%	2.9	20		
7652364	Moisture	2014/09/26					<0.30	%	3.3	20		
7653312	O-TERPHENYL (sur.)	2014/09/25	99	50 - 130	95	50 - 130	91	%				
7653312	EPH (C10-C19)	2014/09/25	84	50 - 130	82	50 - 130	<100	mg/kg	NC	40		
7653312	EPH (C19-C32)	2014/09/25	91	50 - 130	90	50 - 130	<100	mg/kg	NC	40		
7653356	2,4,6-TRIBROMOPHENOL (sur.)	2014/09/27	107	19 - 122	97	19 - 122	99	%				
7653356	2-FLUOROPHENOL (sur.)	2014/09/27	72	25 - 121	60	25 - 121	58	%				
7653356	Phenol	2014/09/27	106	60 - 130	109	60 - 130	<0.050	mg/kg	NC (4)	50		
7653356	2-chlorophenol	2014/09/27	94	27 - 123	78	27 - 123	<0.0050	mg/kg	NC (4)	50		

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7653356	3 & 4-chlorophenol	2014/09/27	102	27 - 123	91	27 - 123	<0.0050	mg/kg	NC (4)	50		
7653356	2-methylphenol	2014/09/27	93	25 - 120	80	25 - 120	<0.050	mg/kg	NC (4)	50		
7653356	3 & 4-methylphenol	2014/09/27	95	25 - 120	83	25 - 120	<0.050	mg/kg	NC (4)	50		
7653356	2-nitrophenol	2014/09/27	91	29 - 182	78	29 - 182	<0.050	mg/kg	NC (4)	50		
7653356	2,4-dimethylphenol	2014/09/27	92	60 - 130	101	60 - 130	<0.050	mg/kg	NC (4)	50		
7653356	2,4 + 2,5-Dichlorophenol	2014/09/27	102	39 - 135	87	39 - 135	<0.0050	mg/kg	NC (4)	50		
7653356	2,3-Dichlorophenol	2014/09/27	95	39 - 135	85	39 - 135	<0.0050	mg/kg	NC (4)	50		
7653356	2,6-dichlorophenol	2014/09/27	102	39 - 135	89	39 - 135	<0.0050	mg/kg	NC (4)	50		
7653356	3,5-Dichlorophenol	2014/09/27	105	39 - 135	92	39 - 135	<0.0050	mg/kg	NC (4)	50		
7653356	3,4-Dichlorophenol	2014/09/27	110	39 - 135	99	39 - 135	<0.0050	mg/kg	NC (4)	50		
7653356	2,4,5-trichlorophenol	2014/09/27	117	37 - 144	102	37 - 144	<0.0050	mg/kg	NC (4)	50		
7653356	2,4,6-trichlorophenol	2014/09/27	112	37 - 144	97	37 - 144	<0.0050	mg/kg	NC (4)	50		
7653356	2,3,5-trichlorophenol	2014/09/27	113	37 - 144	96	37 - 144	<0.0050	mg/kg	NC (4)	50		
7653356	2,3,6-Trichlorophenol	2014/09/27	115	37 - 144	100	37 - 144	<0.0050	mg/kg	NC (4)	50		
7653356	2,3,4-trichlorophenol	2014/09/27	114	37 - 144	101	37 - 144	<0.0050	mg/kg	NC (4)	50		
7653356	3,4,5-Trichlorophenol	2014/09/27	136	37 - 144	121	37 - 144	<0.0050	mg/kg	NC (4)	50		
7653356	2,4-dinitrophenol	2014/09/27	170	1 - 191	121	1 - 191	<0.080	mg/kg	NC (4)	50		
7653356	4,6-dinitro-2-methylphenol	2014/09/27	127	1 - 181	99	1 - 181	<0.080	mg/kg	NC (4)	50		
7653356	2,3,4,6-tetrachlorophenol	2014/09/27	137	14 - 176	117	14 - 176	<0.0050	mg/kg	NC (4)	50		
7653356	2,3,4,5-tetrachlorophenol	2014/09/27	115	14 - 176	102	14 - 176	<0.0050	mg/kg	NC (4)	50		
7653356	2,3,5,6-tetrachlorophenol	2014/09/27	123	14 - 176	108	14 - 176	<0.0050	mg/kg	NC (4)	50		
7653356	4-nitrophenol	2014/09/27	129	1 - 132	110	1 - 132	<0.050	mg/kg	NC (4)	50		
7653356	2,6-Dimethylphenol	2014/09/27	114	60 - 130	76	60 - 130	<0.050	mg/kg	NC (4)	50		
7653356	3,4-Dimethylphenol	2014/09/27	83	60 - 130	81	60 - 130	<0.050	mg/kg	NC (4)	50		
7653356	Pentachlorophenol	2014/09/27	160	14 - 176	130	14 - 176	<0.0050	mg/kg				
7653676	Moisture	2014/09/26					<0.30	%	5.2	20		
7653859	O-TERPHENYL (sur.)	2014/09/26	95	50 - 130	91	50 - 130	92	%				
7653859	EPH (C10-C19)	2014/09/26	78	50 - 130	79	50 - 130	<100	mg/kg	NC	40		
7653859	EPH (C19-C32)	2014/09/26	86	50 - 130	88	50 - 130	<100	mg/kg	NC	40		
7654354	Total Antimony (Sb)	2014/09/26	97	75 - 125	88	75 - 125	<0.10	mg/kg			101	70 - 130
7654354	Total Arsenic (As)	2014/09/26	96	75 - 125	97	75 - 125	<0.50	mg/kg	0.1	30	99	70 - 130
7654354	Total Barium (Ba)	2014/09/26	NC	75 - 125	98	75 - 125	<0.10	mg/kg	6.9	35	100	70 - 130
7654354	Total Beryllium (Be)	2014/09/26	102	75 - 125	99	75 - 125	<0.40	mg/kg				
7654354	Total Cadmium (Cd)	2014/09/26	99	75 - 125	100	75 - 125	<0.050	mg/kg			100	70 - 130
7654354	Total Chromium (Cr)	2014/09/26	98	75 - 125	99	75 - 125	<1.0	mg/kg	2.5	30	103	70 - 130
7654354	Total Cobalt (Co)	2014/09/26	99	75 - 125	99	75 - 125	<0.30	mg/kg			92	70 - 130
7654354	Total Copper (Cu)	2014/09/26	100	75 - 125	103	75 - 125	<0.50	mg/kg	3.1	30	94	70 - 130
7654354	Total Lead (Pb)	2014/09/26	97	75 - 125	98	75 - 125	<0.10	mg/kg	13.4	35	99	70 - 130
7654354	Total Lithium (Li)	2014/09/26	102	75 - 125	99	75 - 125	<5.0	mg/kg				
7654354	Total Manganese (Mn)	2014/09/26	NC	75 - 125	102	75 - 125	<0.20	mg/kg			99	70 - 130

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Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7654354	Total Mercury (Hg)	2014/09/26	96	75 - 125	89	75 - 125	<0.050	mg/kg			107	70 - 130
7654354	Total Molybdenum (Mo)	2014/09/26	109	75 - 125	89	75 - 125	<0.10	mg/kg			112	70 - 130
7654354	Total Nickel (Ni)	2014/09/26	102	75 - 125	101	75 - 125	<0.80	mg/kg			99	70 - 130
7654354	Total Selenium (Se)	2014/09/26	102	75 - 125	104	75 - 125	<0.50	mg/kg				
7654354	Total Silver (Ag)	2014/09/26	99	75 - 125	96	75 - 125	<0.050	mg/kg				
7654354	Total Strontium (Sr)	2014/09/26	NC	75 - 125	94	75 - 125	<0.10	mg/kg			106	70 - 130
7654354	Total Thallium (Tl)	2014/09/26	99	75 - 125	96	75 - 125	<0.050	mg/kg			97	70 - 130
7654354	Total Tin (Sn)	2014/09/26	96	75 - 125	85	75 - 125	<0.10	mg/kg				
7654354	Total Titanium (Ti)	2014/09/26	NC	75 - 125	83	75 - 125	<1.0	mg/kg			105	70 - 130
7654354	Total Uranium (U)	2014/09/26	97	75 - 125	93	75 - 125	<0.050	mg/kg			97	70 - 130
7654354	Total Vanadium (V)	2014/09/26	NC	75 - 125	97	75 - 125	<2.0	mg/kg			105	70 - 130
7654354	Total Zinc (Zn)	2014/09/26	NC	75 - 125	107	75 - 125	<1.0	mg/kg	4.8	30	90	70 - 130
7654354	Total Aluminum (Al)	2014/09/26					<100	mg/kg			103	70 - 130
7654354	Total Calcium (Ca)	2014/09/26					<100	mg/kg			91	70 - 130
7654354	Total Iron (Fe)	2014/09/26					<100	mg/kg			90	70 - 130
7654354	Total Magnesium (Mg)	2014/09/26					<100	mg/kg			88	70 - 130
7654354	Total Phosphorus (P)	2014/09/26					<10	mg/kg			86	70 - 130
7654354	Total Bismuth (Bi)	2014/09/26					<0.10	mg/kg				
7654354	Total Potassium (K)	2014/09/26					<100	mg/kg				
7654354	Total Sodium (Na)	2014/09/26					<100	mg/kg				
7654354	Total Zirconium (Zr)	2014/09/26					<0.50	mg/kg				
7654375	Soluble (2:1) pH	2014/09/26			100	97 - 103			0.5	N/A		
7654789	O-TERPHENYL (sur.)	2014/09/26	105	50 - 130	110	50 - 130	107	%				
7654789	EPH (C10-C19)	2014/09/26	NC	50 - 130	83	50 - 130	<100	mg/kg	7.4	40		
7654789	EPH (C19-C32)	2014/09/26	93	50 - 130	92	50 - 130	<100	mg/kg	NC	40		
7654875	D10-ANTHRACENE (sur.)	2014/09/26	111	60 - 130	121	60 - 130	119	%				
7654875	D8-ACENAPHTHYLENE (sur.)	2014/09/26	112	50 - 130	118	50 - 130	117	%				
7654875	D8-NAPHTHALENE (sur.)	2014/09/26	112	50 - 130	118	50 - 130	115	%				
7654875	TERPHENYL-D14 (sur.)	2014/09/26	114	60 - 130	125	60 - 130	119	%				
7654875	Naphthalene	2014/09/26	107	50 - 130	107	50 - 130	<0.050	mg/kg	NC	50		
7654875	2-Methylnaphthalene	2014/09/26	109	50 - 130	110	50 - 130	<0.050	mg/kg	NC	50		
7654875	Acenaphthylene	2014/09/26	108	50 - 130	109	50 - 130	<0.050	mg/kg	NC	50		
7654875	Acenaphthene	2014/09/26	111	50 - 130	113	50 - 130	<0.050	mg/kg	NC	50		
7654875	Fluorene	2014/09/26	108	50 - 130	109	50 - 130	<0.050	mg/kg	NC	50		
7654875	Phenanthrene	2014/09/26	NC	60 - 130	111	60 - 130	<0.050	mg/kg	2.7	50		
7654875	Anthracene	2014/09/26	108	60 - 130	115	60 - 130	<0.050	mg/kg				
7654875	Fluoranthene	2014/09/26	NC	60 - 130	118	60 - 130	<0.050	mg/kg	31.6	50		
7654875	Pyrene	2014/09/26	NC	60 - 130	119	60 - 130	<0.050	mg/kg	16.6	50		
7654875	Benzo(a)anthracene	2014/09/26	NC	60 - 130	115	60 - 130	<0.050	mg/kg	33.5	50		
7654875	Chrysene	2014/09/26	NC	60 - 130	119	60 - 130	<0.050	mg/kg	21.7	50		

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7654875	Benzo(b&j)fluoranthene	2014/09/26	NC	60 - 130	109	60 - 130	<0.050	mg/kg	12.8	50		
7654875	Benzo(k)fluoranthene	2014/09/26	98	60 - 130	118	60 - 130	<0.050	mg/kg	5.6	50		
7654875	Benzo(a)pyrene	2014/09/26	105	60 - 130	110	60 - 130	<0.050	mg/kg	27.4	50		
7654875	Indeno(1,2,3-cd)pyrene	2014/09/26	108	60 - 130	105	60 - 130	<0.050	mg/kg	20.1	50		
7654875	Dibenz(a,h)anthracene	2014/09/26	106	60 - 130	99	60 - 130	<0.050	mg/kg	NC	50		
7654875	Benzo(g,h,i)perylene	2014/09/26	107	60 - 130	105	60 - 130	<0.050	mg/kg	18.7	50		
7654875	Benzo(b)fluoranthene	2014/09/26					<0.050	mg/kg	13.0	50		
7655803	Moisture	2014/09/28					<0.30	%	12.1	20		
7656080	O-TERPHENYL (sur.)	2014/09/28	109	50 - 130	103	50 - 130	104	%				
7656080	EPH (C10-C19)	2014/09/28	NC	50 - 130	82	50 - 130	<100	mg/kg	2.3	40		
7656080	EPH (C19-C32)	2014/09/28	92	50 - 130	92	50 - 130	<100	mg/kg	NC	40		
7660004	Moisture	2014/10/01					<0.30	%				
7660088	O-TERPHENYL (sur.)	2014/10/01	125	50 - 130	118	50 - 130	119	%				
7660088	EPH (C10-C19)	2014/10/01	99	50 - 130	90	50 - 130	<100	mg/kg	NC	40		
7660088	EPH (C19-C32)	2014/10/01	108	50 - 130	98	50 - 130	<100	mg/kg	NC	40		
7662291	Moisture	2014/10/03					<0.30	%	0.5	20		
7664406	Moisture	2014/10/04					<0.30	%	15.6	20		
7664418	Total Cadmium (Cd)	2014/10/03	100	75 - 125	99	75 - 125	<0.050	mg/kg	3.3	30	107	70 - 130
7664418	Total Chromium (Cr)	2014/10/03	NC	75 - 125	97	75 - 125	<1.0	mg/kg	1.8	30	110	70 - 130
7664418	Total Zinc (Zn)	2014/10/03	NC	75 - 125	96	75 - 125	<1.0	mg/kg	0.7	30	94	70 - 130
7664431	Soluble (2:1) pH	2014/10/03			100	97 - 103			0.2	N/A		
7664907	2,4,6-TRIBROMOPHENOL (sur.)	2014/10/05	98	19 - 122	100	19 - 122	83	%				
7664907	2-FLUOROPHENOL (sur.)	2014/10/05	73	25 - 121	73	25 - 121	59	%				
7664907	2-chlorophenol	2014/10/05	76	27 - 123	82	27 - 123	<0.0050	mg/kg	NC	50		
7664907	3 & 4-chlorophenol	2014/10/05	83	27 - 123	91	27 - 123	<0.0050	mg/kg	NC(5)	50		
7664907	2,4 + 2,5-Dichlorophenol	2014/10/05	85	39 - 135	92	39 - 135	<0.0050	mg/kg	NC	50		
7664907	2,3-Dichlorophenol	2014/10/05	74	39 - 135	82	39 - 135	<0.0050	mg/kg	NC	50		
7664907	2,6-dichlorophenol	2014/10/05	83	39 - 135	90	39 - 135	<0.0050	mg/kg	NC	50		
7664907	3,5-Dichlorophenol	2014/10/05	84	39 - 135	94	39 - 135	<0.0050	mg/kg	32.2	50		
7664907	3,4-Dichlorophenol	2014/10/05	89	39 - 135	101	39 - 135	<0.0050	mg/kg	24.8	50		
7664907	2,4,5-trichlorophenol	2014/10/05	93	37 - 144	102	37 - 144	<0.0050	mg/kg	NC	50		
7664907	2,4,6-trichlorophenol	2014/10/05	90	37 - 144	98	37 - 144	<0.0050	mg/kg	NC	50		
7664907	2,3,5-trichlorophenol	2014/10/05	91	37 - 144	98	37 - 144	<0.0050	mg/kg	NC	50		
7664907	2,3,6-Trichlorophenol	2014/10/05	91	37 - 144	101	37 - 144	<0.0050	mg/kg	NC	50		
7664907	2,3,4-trichlorophenol	2014/10/05	91	37 - 144	101	37 - 144	<0.0050	mg/kg	NC	50		
7664907	3,4,5-Trichlorophenol	2014/10/05	108	37 - 144	119	37 - 144	<0.0050	mg/kg	23.2	50		
7664907	2,3,4,6-tetrachlorophenol	2014/10/05	100	14 - 176	108	14 - 176	<0.0050	mg/kg	NC	50		
7664907	2,3,4,5-tetrachlorophenol	2014/10/05	96	14 - 176	110	14 - 176	<0.0050	mg/kg	32.6	50		
7664907	2,3,5,6-tetrachlorophenol	2014/10/05	96	14 - 176	106	14 - 176	<0.0050	mg/kg	NC	50		
7664907	Pentachlorophenol	2014/10/05	120	14 - 176	120	14 - 176	<0.0050	mg/kg	30.0	50		

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7665260	Hazardous Waste Oil	2014/10/06	93	65 - 135	90	65 - 135	<0.50	%	NC	35		
7666149	Total Chromium (Cr)	2014/10/06	NC	75 - 125	99	75 - 125	<1.0	mg/kg	2.2	30	102	70 - 130
7666151	Soluble (2:1) pH	2014/10/06			100	97 - 103			0.4	N/A		
7666232	SPLP Cadmium (Cd)	2014/10/04	100	75 - 125	103	75 - 125	<0.000020	mg/L				
7666232	SPLP Chromium (Cr)	2014/10/04	NC	75 - 125	104	75 - 125	<0.0010	mg/L	0.9	35		
7667656	2,4,6-TRIBROMOPHENOL (sur.)	2014/10/06			94	10 - 123	103	%				
7667656	2-chlorophenol	2014/10/06			71	27 - 123	<0.10	ug/L				
7667656	3 & 4-chlorophenol	2014/10/06			89	27 - 123	<0.10	ug/L				
7667656	2,4 + 2,5-Dichlorophenol	2014/10/06			89	39 - 135	<0.10	ug/L				
7667656	2,3-Dichlorophenol	2014/10/06			79	39 - 135	<0.10	ug/L				
7667656	2,6-dichlorophenol	2014/10/06			85	39 - 135	<0.10	ug/L				
7667656	3,5-Dichlorophenol	2014/10/06			89	39 - 135	<0.10	ug/L				
7667656	3,4-Dichlorophenol	2014/10/06			92	39 - 135	<0.10	ug/L				
7667656	2,4,5-trichlorophenol	2014/10/06			98	37 - 144	<0.10	ug/L				
7667656	2,4,6-trichlorophenol	2014/10/06			92	37 - 144	<0.10	ug/L				
7667656	2,3,5-trichlorophenol	2014/10/06			94	37 - 144	<0.10	ug/L				
7667656	2,3,6-Trichlorophenol	2014/10/06			96	37 - 144	<0.10	ug/L				
7667656	2,3,4-trichlorophenol	2014/10/06			95	37 - 144	<0.10	ug/L				
7667656	3,4,5-Trichlorophenol	2014/10/06			108	37 - 144	<0.10	ug/L				
7667656	2,3,4,6-tetrachlorophenol	2014/10/06			108	14 - 176	<0.10	ug/L				
7667656	2,3,4,5-tetrachlorophenol	2014/10/06			102	14 - 176	<0.10	ug/L				
7667656	2,3,5,6-tetrachlorophenol	2014/10/06			100	14 - 176	<0.10	ug/L				
7667656	Pentachlorophenol	2014/10/06			112	14 - 176	<0.10	ug/L				
7669648	Hex. Chromium (Cr 6+)	2014/10/07	59(1)	75 - 125	109	75 - 125	<1.0	mg/kg	NC	30		
7672313	Soluble (2:1) pH	2014/10/09			100	97 - 103			0.5	N/A		
7681223	Moisture	2014/10/18					<0.30	%	0.3	20		
7685307	2,4,6-TRIBROMOPHENOL (sur.)	2014/10/22	90	19 - 122	94	19 - 122	79	%				
7685307	2-FLUOROPHENOL (sur.)	2014/10/22	86	25 - 121	73	25 - 121	53	%				
7685307	2-chlorophenol	2014/10/22	121	27 - 123	94	27 - 123	<0.0050	mg/kg	NC(4)	50		
7685307	3 & 4-chlorophenol	2014/10/22	112	27 - 123	96	27 - 123	<0.0050	mg/kg	NC(6)	50		
7685307	2,4 + 2,5-Dichlorophenol	2014/10/22	117	39 - 135	99	39 - 135	<0.0050	mg/kg	NC(4)	50		
7685307	2,3-Dichlorophenol	2014/10/22	109	39 - 135	91	39 - 135	<0.0050	mg/kg	NC(4)	50		
7685307	2,6-dichlorophenol	2014/10/22	142(1)	39 - 135	100	39 - 135	<0.0050	mg/kg	NC(4)	50		
7685307	3,5-Dichlorophenol	2014/10/22	112	39 - 135	95	39 - 135	<0.0050	mg/kg	NC(4)	50		
7685307	3,4-Dichlorophenol	2014/10/22	148(1)	39 - 135	102	39 - 135	<0.0050	mg/kg	NC(6)	50		
7685307	2,4,5-trichlorophenol	2014/10/22	130	37 - 144	107	37 - 144	<0.0050	mg/kg	NC(4)	50		
7685307	2,4,6-trichlorophenol	2014/10/22	121	37 - 144	101	37 - 144	<0.0050	mg/kg	NC(4)	50		
7685307	2,3,5-trichlorophenol	2014/10/22	118	37 - 144	100	37 - 144	<0.0050	mg/kg	NC(4)	50		
7685307	2,3,6-Trichlorophenol	2014/10/22	125	37 - 144	105	37 - 144	<0.0050	mg/kg	NC(4)	50		
7685307	2,3,4-trichlorophenol	2014/10/22	123	37 - 144	103	37 - 144	<0.0050	mg/kg	NC(4)	50		

Success Through Science®

Maxxam Job #: B483621
Report Date: 2014/11/12

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Location: NANAIMO BC
Sampler Initials: MG

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
7685307	3,4,5-Trichlorophenol	2014/10/22	140	37 - 144	113	37 - 144	<0.0050	mg/kg	NC (4)	50		
7685307	2,3,4,6-tetrachlorophenol	2014/10/22	143	14 - 176	105	14 - 176	<0.0050	mg/kg	NC (4)	50		
7685307	2,3,4,5-tetrachlorophenol	2014/10/22	112	14 - 176	106	14 - 176	<0.0050	mg/kg	NC (4)	50		
7685307	2,3,5,6-tetrachlorophenol	2014/10/22	105	14 - 176	107	14 - 176	<0.0050	mg/kg	NC (4)	50		
7685307	2,6-Dimethylphenol	2014/10/22	123	60 - 130	89	60 - 130	<0.050	mg/kg	NC (4)	50		
7685307	Pentachlorophenol	2014/10/22	118	14 - 176	109	14 - 176	<0.0050	mg/kg	NC (4)	50		
7699365	Total Arsenic (As)	2014/10/30	90	75 - 125	98	75 - 125	<0.50	mg/kg	NC	30	91	70 - 130
7699365	Total Cadmium (Cd)	2014/10/30	94	75 - 125	97	75 - 125	<0.050	mg/kg	NC	30	98	70 - 130
7699365	Total Chromium (Cr)	2014/10/30	95	75 - 125	98	75 - 125	<1.0	mg/kg	6.8	30	100	70 - 130
7699365	Total Zinc (Zn)	2014/10/30	90	75 - 125	97	75 - 125	<1.0	mg/kg	0.4	30	86	70 - 130
7699377	Soluble (2:1) pH	2014/10/30			100	97 - 103			0.4	N/A		
7710708	Total Chromium (Cr)	2014/11/07	101	75 - 125	99	75 - 125	<1.0	mg/kg	4.5	30	106	70 - 130
7710722	Soluble (2:1) pH	2014/11/07			100	97 - 103			0.3	N/A		

N/A = Not Applicable
RDL = Reportable Detection Limit
RPD = Relative Percent Difference
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).
(1) - Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.
(2) - Spike exceeds acceptance criteria for Sn. 10% of analytes failure in multielement scan is allowed.
(3) - Surrogate recovery above control limit - Matrix interference - Pot. high bias (No impact - ND)
Confirmed by re-analysis.
(4) - Detection limits raised due to dilution as a result of sample matrix inteference.
(5) - Detection limits raised due to sample matrix inteference.
(6) - RDL raised due to sample matrix interference.

Validation Signature Page

Maxxam Job #: B483621

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

Andy Lu, Data Validation Coordinator

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B483621

CHAIN OF CUSTODY RECORD

Page: 1 OF 6

G 087504

Invoice To: Require Report? Yes ☐ No ☐

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☐ CCME
- ☐ BC Water Quality
- ☐ Other
- ☐ DRINKING WATER

- ☒ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab) ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ **Ship Sample Bottles (please specify)** ☐

ANALYSIS REQUESTED

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH (☐ MTBE)	VOC/VPH ☒	EPH ☒ (☐ TEH)	PAH ☒ (☒ LEPH/HEPH)	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP (Phenols by GCMS)	TOG (MOG, SWOG)	Dissolved Metals (Field Filtered? Y N)	(Field Acidified? Y N)	Totals Metals Field Acidified? Y N	Nitrate (Nitrite, Ammonia)	Chloride (Fluoride, Sulphate)	Total Suspended Solids-TSS (TDS)	pH (Conductivity, Alkalinity)	BOD	COD	Coliform, Total & E.coli (Fecal)	Asbestos	METALS	PAH only					HOLD ☒
1	14BH09-4	KQ4247	SOIL	SEPT 16/14		X		X																								
2	14BH09-5	KQ4248	↓	↓		X		X																								
3	14BH09-6	KQ4249						X																		X						
4	14BH09-7	KQ4250					X																									
5	14BH09-8	KQ4251	SEPT 16 →				X																									
6	14BH06-1	KQ4252	SOIL	SEPT 17/14																												X
7	14BH06-2	KQ4253						X																		X						
8	14BH06-3	KQ4254					X																									
9	14BH06-4	KQ4255						X																								
10	14BH06-5	KQ4256						X																								
11	14BH06-6	KQ4257					X																									
12	14BH07-1	KQ4258	↓	↓																						X	X					

Samples are from a Drinking Water Source? YES ☐ NO ☐

Does source supply multiple households? YES ☐ NO ☐

B483621

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
M. Gallo	Sep 18	6:00PM	[signature]	2014/09/19	0810	☐	5,6,5 / 5,4,4 / 6,8,9	N/A Yes ☐ No ☐

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B483621

CHAIN OF CUSTODY RECORD

Page: 2 of 6

G 087505

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: LORA.PAUL@Tetratech.com
KRISTY.GABELHOUSE@tetratech.com

PO #:
Quotation #:
Project #: ENVIN003511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH	VOC/VPH	EPH	PAH	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP	TOG	Dissolved Metals	Totals Metals Field Acidified?	Nitrate	Chloride	Total Suspended Solids-TSS	pH	BOD	COD	Coliform, Total & E.coli	Asbestos	METALS	PAH only	Chlorinated Phenols			HOLD
1	14BH07-2	KQ4270	SOIL	SEP 17/14																										X
2	14BH07-3	KQ4271	↓	↓				X																	X					
3	14BH07-4	KQ4272						X																						
4	14BH07-5	KQ4273					X																							
5	14BH10-1	KQ4274																												X
6	14BH10-2	KQ4275				X																			X		X			
7	14BH10-3	KQ4276				X																					X			
8	14BH10-4	KQ4277																									X			
9	14BH10-5	KQ4278																												X
10	14BH10-6	KQ4279																												X
11	14BH11-1	KQ4280																												X
12	14BH11-2	KQ4281																									X			

B483621

Samples are from a Drinking Water Source? YES [ ] NO [ ]
Does source supply multiple households? YES [ ] NO [ ]

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
MKGallo	Sep 18 14	6:00 PM	[signature]	2014/09/19	08:10	[ ]	5,6,5 / 5,4,4 / 6,8,9	NA — Yes [ ] No [ ]

Laboratory Use Only

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

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Maxxam Job#: B483621

CHAIN OF CUSTODY RECORD

Page: 3 of 6

G 087506

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: CORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph (250) 756-2256 Fax:
E-mail: mike.gallo@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Analysis columns: MTBE; BTEX/VPH; VOC/VPH; TEH; EPH; LEPH/HEPH; PAH; CCME-PHC (Fractions 1-4 Plus BTEX); CCME-PHC (Fractions 2-4); CCME BTEX (Fraction 1 Plus BTEX); PCB; Phenols by GCMS; Phenols by 4AAP; SWOG; MOG; TOG; Dissolved Metals (Field Filtered? Y / N; Field Acidified? Y / N); Totals Metals Field Acidified? Y / N; Ammonia; Nitrite; Nitrate; Sulphate; Fluoride; Chloride; TDS; Total Suspended Solids-TSS; Alkalinity; Conductivity; pH; BOD; COD; Fecal; Coliform, Total & E.coli; Asbestos; METALS; PAH only; Chlorinated Phenols; HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	METALS	PAH only	Chlorinated Phenols	HOLD
1	14BH11-3	KQ4307	SOIL	Sept17/14				✓
2	14BH11-4	KQ4308	↓	↓	X		X	
3	14BH11-5	KQ4309						X
4	14BH11-6	KQ4310						X
5	14BH12-1	KQ4311			X		X	
6	14BH12-2	KQ4312					X	X
7	14BH12-3	KQ4313						
8	14BH12-4	KQ4314					X	
9	14BH12-5	KQ4315						X
10	14BH13-1	KQ4316					X	
11	14BH13-2	KQ4317			X	X	X	
12	14BH13-3	KQ4318	↓	↓				X

B483621

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
MGallo	Sep18/14	6:00PM	[signature]	2014/09/19	08:10

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C): 5,6,5 / 5,4,4 / 6,8,9

Custody Seal Intact on Cooler? NA Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B483621

CHAIN OF CUSTODY RECORD

Page: 4 of 6

G 077246

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph (250) 756-2256 Fax:
E-mail: lora.paul@tetratech.com
kristy.gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

Analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH [X], TEH, PAH [X], LEPH/HEPH [X], CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N), Field Acidified? Y/N, Totals Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, Chlorinated Phenols, HOLD

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	EPH	Chlorinated Phenols	HOLD
1	14BH13-4	KQ4338	SOIL	SEPT. 17/14			X
2	14BH13-5	KQ4339	↓	↓			X
3	DUP.6	KQ4340			X		
4	DUP.7	KQ4341					
5	DUP.8	KQ4342				X	
6	DUP.9	KQ4343	SOIL	SEP 18/14			X
7	DUP.10	KQ4344	↓	↓			X
8	DUP.11	KQ4345					X
9	14BH14-1	KQ4346					X
10	14BH14-2	KQ4347					X
11	14BH14-3	KQ4348					X
12	14BH14-4	KQ4349					X

B483621

Samples are from a Drinking Water Source? YES [ ] NO [ ]

Does source supply multiple households? YES [ ] NO [ ]

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
M. Gallo	Sep 18/14	6:00PM	[signature]	2014/09/19	08:10

Laboratory Use Only

Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
[ ]	5,6,5 / 5,4,4	NA Yes / No

6,8,9

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B483621

CHAIN OF CUSTODY RECORD

Page: 5 of 6

G 077247

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: P (250) 756-2256 Fax:
E-mail lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N), Field Acidified? Y/N, Totals Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH14-5	KQ4369	SOIL	SEP 18/14	X
2	14BH15-1	KQ4370	↓	↓	X
3	14BH15-2	KQ4371			X
4	14BH15-3	KQ4372			X
5	14BH15-4	KQ4373			X
6	14BH15-5	KQ4374			X
7	14BH16-1	KQ4375			X
8	14BH16-2	KQ4376			X
9	14BH16-3	KQ4377			X
10	14BH16-4	KQ4378			X
11	14BH16-5	KQ4379			X
12	14BH24-1	KQ4380	↓	↓	X

B483621

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
[signature]	Sep 18/14	6:00	[signature]	2014/09/19	08:10

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C): 5,6,5 / 5,4,4 / 6,8,9

Custody Seal Intact on Cooler? Yes No — NA

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B483621

CHAIN OF CUSTODY RECORD

Page: 6 of 6

G 077248

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO, BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? N/Y), Metals (Field Acidified? N/Y), Totals Metals Field Acidified? N/Y, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH24-2	KQ4400	SOIL	Sep 18/14	X
2	14BH24-3	KQ4401	SOIL	Sep 18/14	X
3	14BH24-4	KQ4402	SOIL	Sep 18/14	X
4	14BH24-5	KQ4403	SOIL	Sep 18/14	X
5	14BH25-1	KQ4404	SOIL	Sep 18/14	X
6	14BH25-2	KQ4405	SOIL	Sep 18/14	X
7	14BH25-3	KQ4406	SOIL	Sep 18/14	X
8	14BH25-4	KQ4407	SOIL	Sep 18/14	X
9	14BH25-5	KQ4408	SOIL	Sep 18/14	X
10					
11					
12					

B483621

Samples are from a Drinking Water Source? YES [ ] NO [ ]
Does source supply multiple households? YES [ ] NO [ ]

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
M Gallo	Sep 18/14		[signature]	2014/09/19	08:10

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C): 5,6,5 / 5,4,4
6,8,9

Custody Seal Intact on Cooler? NA Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam

4606 Canada Way, Burnaby BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#:

CHAIN OF CUSTODY RECORD

Page: 5 of 6

G 077247

Invoice To: Require Report? Yes [ ] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail:

Report To:

Company Name: TETRA TECH EBA INC
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: lora.paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.003
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:
Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

Printed analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME PHC (Fractions 1-4 Plus BTEX), CCME PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y N), Field Acidified? (Y N), Totals Metals Field Acidified? (Y N), Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids / TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

Handwritten analysis columns: Metals, Chlorinated Phenols, PAH only

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	EPH	Metals	Chlorinated Phenols	PAH only	HOLD
1	14BH14-5	KQ4369	SOIL	SEP 18/14			X		X
2	14BH15-1	KQ4370	↓	↓			X		X
3	14BH15-2	KQ4371				X	X	X	X
4	14BH15-3	KQ4372							X
5	14BH15-4	KQ4373					X		X
6	14BH15-5	KQ4374							X
7	14BH16-1	KQ4375				X	X	X	X
8	14BH16-2	KQ4376					X		X
9	14BH16-3	KQ4377							X
10	14BH16-4	KQ4378					X		X
11	14BH16-5	KQ4379							X
12	14BH24-1	KQ4380	↓	↓	X	X			X

B483621

Samples are from a Drinking Water Source? YES [ ] NO [ ]
Does source supply multiple households? YES [ ] NO [ ]

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
[signature]	Sep 18/14	6:00						Yes [ ] No [ ]

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (09/11)

Maxxam

4606 Canada Way Burnaby BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#:

CHAIN OF CUSTODY RECORD

Page 6 of 6

G 077248

Invoice To: Require Report? Yes [ ] No [ ]		Report To:	
Company Name:	TETRA TECH EBA INC.	Company Name:	TETRA TECH EBA INC.
Contact Name:		Contact Name:	LORA PAUL / KRISTY GABELHOUSE
Address:		Address:	1-4376 BOBAN DRIVE
PC:			NANAIMO BC PC: V9T 6A7
Phone / Fax#:	Ph: Fax:	Phone / Fax#:	Ph: (250) 756-2256 Fax:
E-mail		E-mail	Lora.Paul@tetratech.com Kristy.Gabelhouse@tetratech.com

PO #:	
Quotation #:	
Project #:	ENVIND03511-01.002
Proj. Name:	1 PORT DRIVE DSI
Location:	NANAIMO, BC
Sampled By:	MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH / MTBE	VOC/VPH	EPH / TEH	PAH / LEPH/HEPH [X]	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP / Phenols by GCMS	TOG / MOG / SWOG	Dissolved Metals (Field Filtered? Y / N)	Field Acidified? Y / N	Totals Metals Field Acidified? Y / N	Nitrate / Nitrite / Ammonia	Chloride / Fluoride / Sulphate	Total Suspended Solids-TSS / TDS	pH / Conductivity / Alkalinity	BOD	COD	Coliform, Total & E.coli / Fecal	Asbestos	METALS	PAH only	Chlorinated Phenols				HOLD [X]
1	14BH24-2	KQ4400	SOIL	Sep 18/14				X																								X
2	14BH24-3	KQ4401					X																					X				X
3	14BH24-4	KQ4402																														X
4	14BH24-5	KQ4403																														X
5	14BH25-1	KQ4404																										X				X
6	14BH25-2	KQ4405																								X	X					X
7	14BH25-3	KQ4406					X																									X
8	14BH25-4	KQ4407																								X						X
9	14BH25-5	KQ4408																														X
10																																
11																																
12																																

B483621

	YES	NO
Samples are from a Drinking Water Source?		
Does source supply multiple households?		

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
M Gallo	Sep 18/14					[ ]		Yes / No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (2010)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#:

CHAIN OF CUSTODY RECORD

Page: 4 of 6

G 077246

Invoice To: Require Report? Yes ☐ No ☐

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DRIVE
NANAIMO BC PC: V9T 6A7
Phone / Fax#: (250) 756-2256 Fax:
E-mail: lora.paul@tetratech.com
kristy.gabelhouse@tetratech.com

PO #:	
Quotation #:	
Project #:	ENVIND03511-01.003
Proj. Name:	1 PORT DRIVE DSI
Location:	NANAIMO BC
Sampled By:	MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☐ CCME
- ☐ BC Water Quality
- ☐ Other
- ☐ DRINKING WATER

- ☒ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab) ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ **Ship Sample Bottles (please specify)** ☐

ANALYSIS REQUESTED

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH (☐ MTBE)	VOC/VPH	EPH (☒) (☐ TEH)	PAH (☒) (☒ LEPH/HEPH)	CCME-PHC (Fraction 1-4 Plus BTEX)	CCME-PHC (Fraction 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP (☐ Phenols by GCMS)	TOG (☐ MOG) (☐ SWOG)	Dissolved Metals: Field Filtered? Y/N	Field Acidified? Y/N	Totals Metals Field Acidified? Y/N	N Infra (☐ Nitrite) (☐ Ammonia)	Chloride (☐ Fluoride) (☐ Sulphate)	Total Suspended Solids-TSS (☐ TDS)	pH (☐ Conductivity) (☐ Alkalinity)	BOD	COD	Coliform, Total & E.coli (☐ Fecal)	Asbestos	Chlorinated Phenols	Potets	PAH only				HOLD
1	14BH13-4		SOIL	SEPT. 17/14																												X
2	14BH13-5																															X
3	DUP.6						X																									
4	DUP.7																															X
5	DUP.8																									X						
6	DUP.9		SOIL	SEP 10/14																												X
7	DUP.10																									X	X					X
8	DUP.11																										X	X				X
9	14BH14-1																									X	X					X
10	14BH14-2																									X						X
11	14BH14-3																									X						X
12	14BH14-4																															X

Samples are from a Drinking Water Source? YES ☐ NO ☐
Does source supply multiple households? YES ☐ NO ☐

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
M Gallo	Sep 18/14	5:00PM				☐		Yes ☐ No ☐

IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

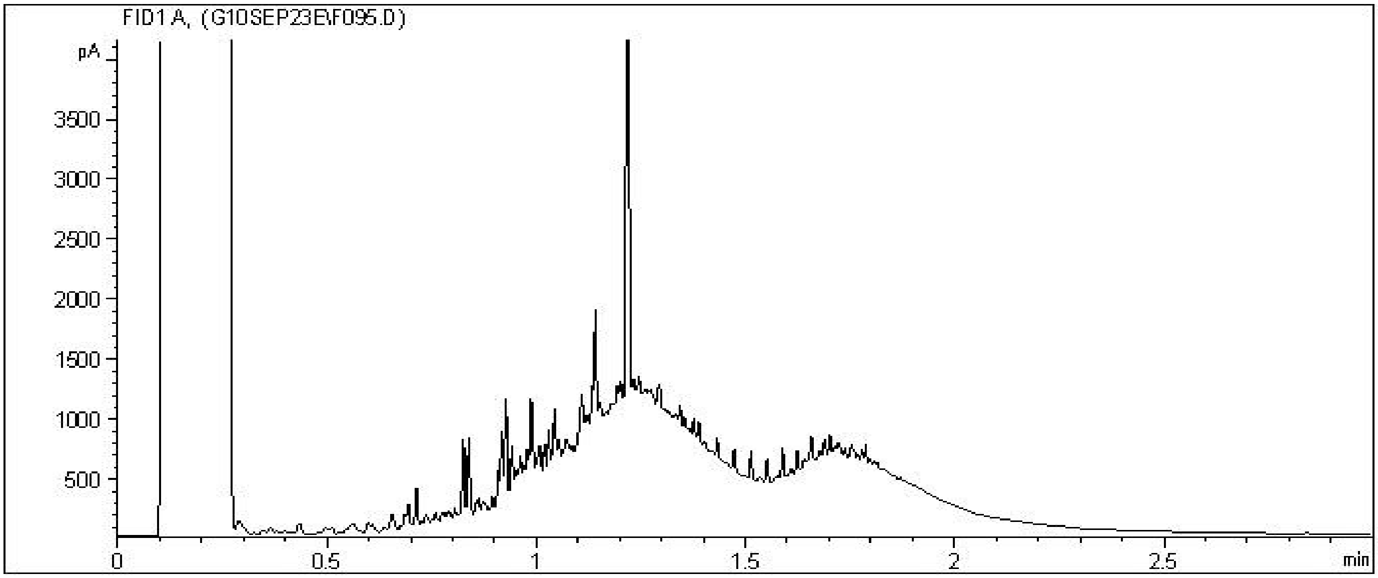
COC-1020 (06/10)

Maxxam International Corporation o/a Maxxam Analytics

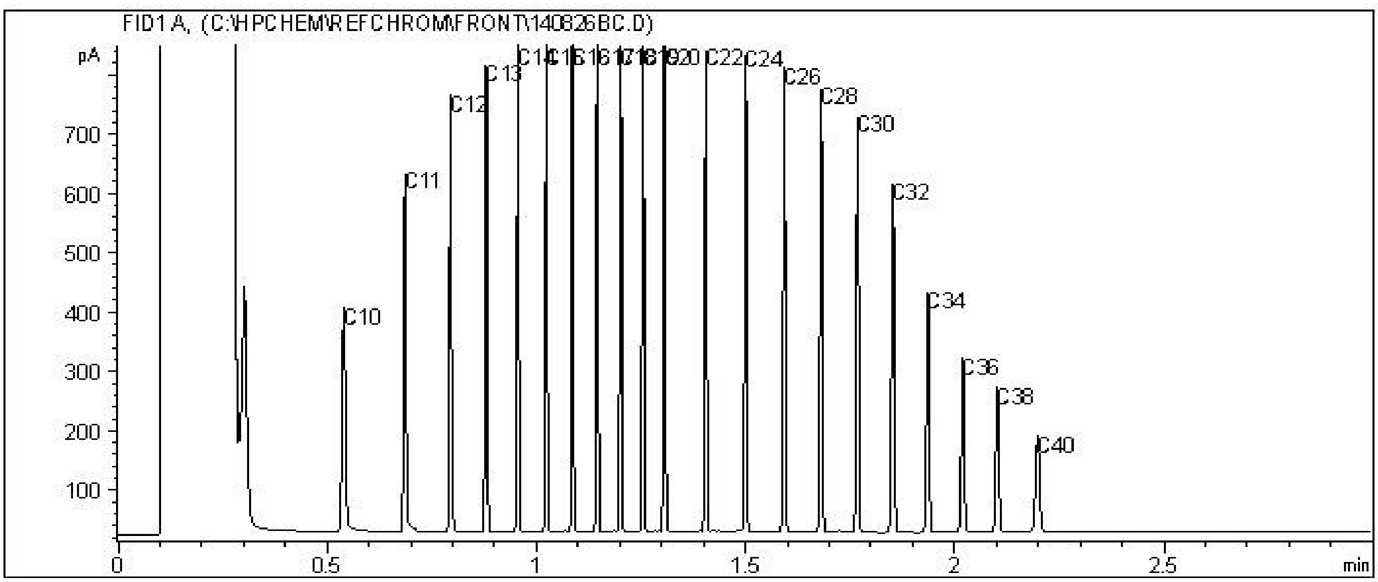
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4247

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH09-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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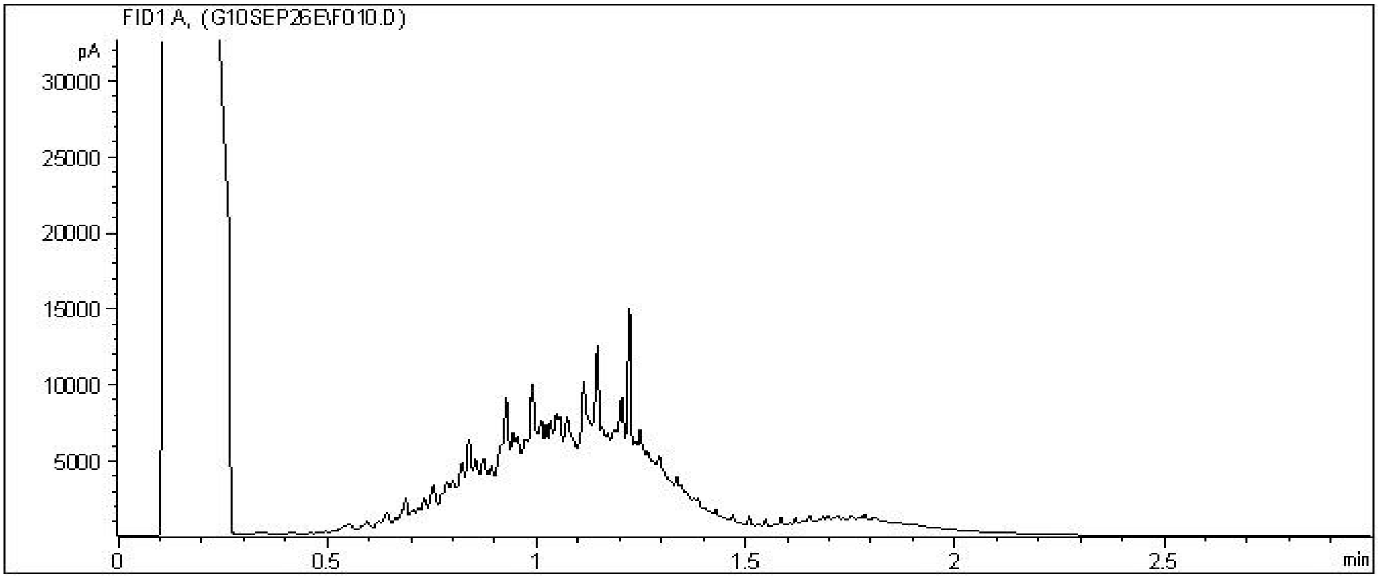
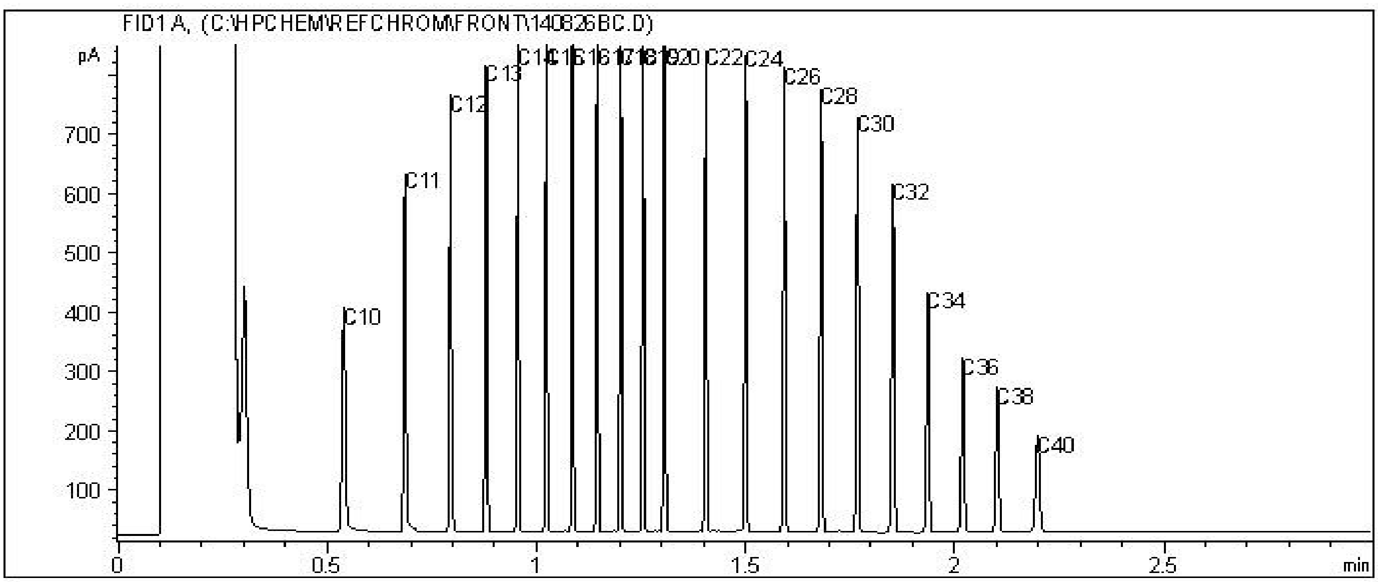
Report Date: 2014/11/12	Tetra Tech EBA
Maxxam Job #: B483621	Client Project #: ENVIND03511-01.003 1
Maxxam Sample: KQ4248	Site Reference: NANAIMO BC
	Client ID: 14BH09-5

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

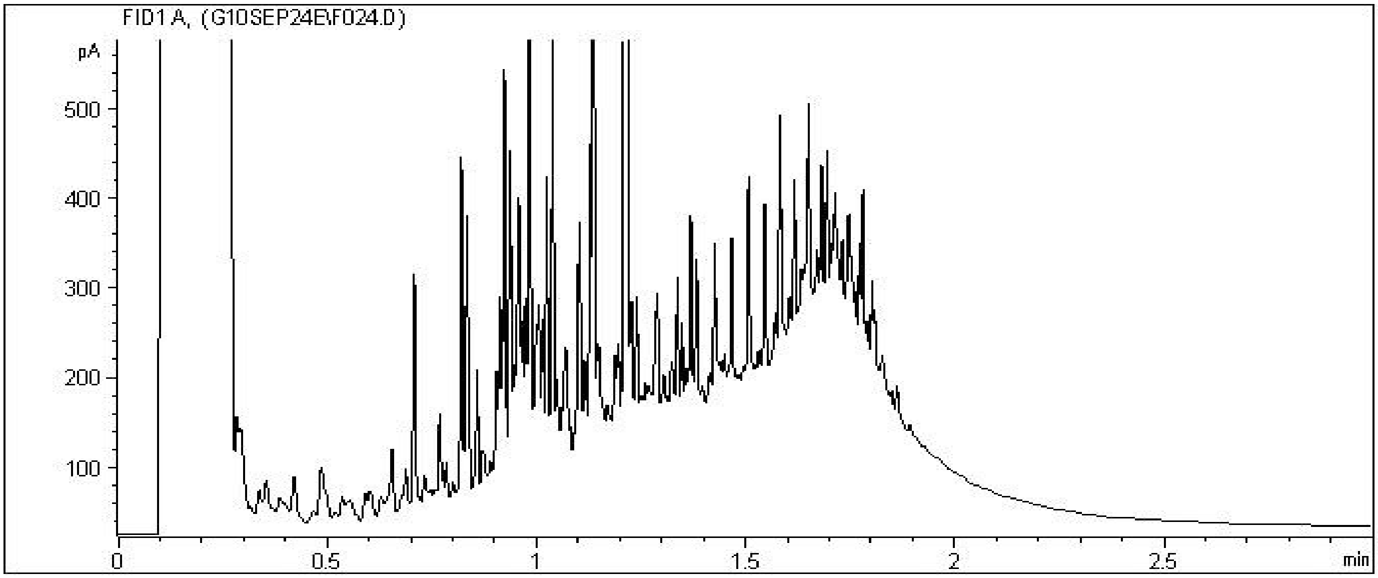
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

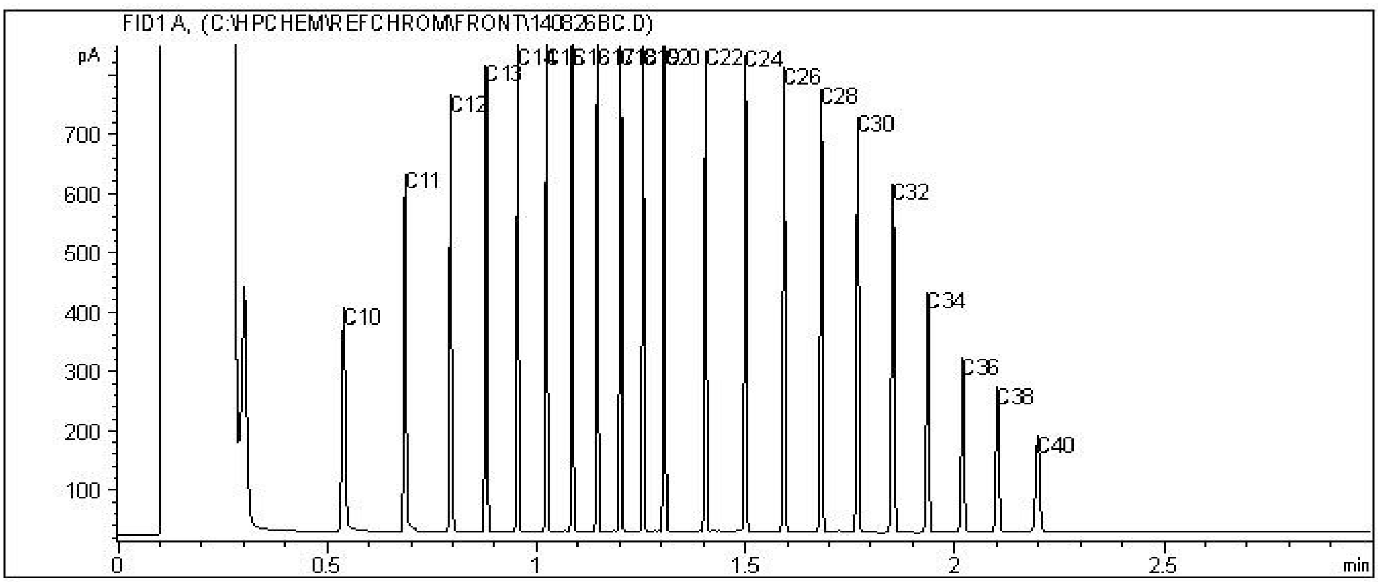
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4249

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH09-6

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

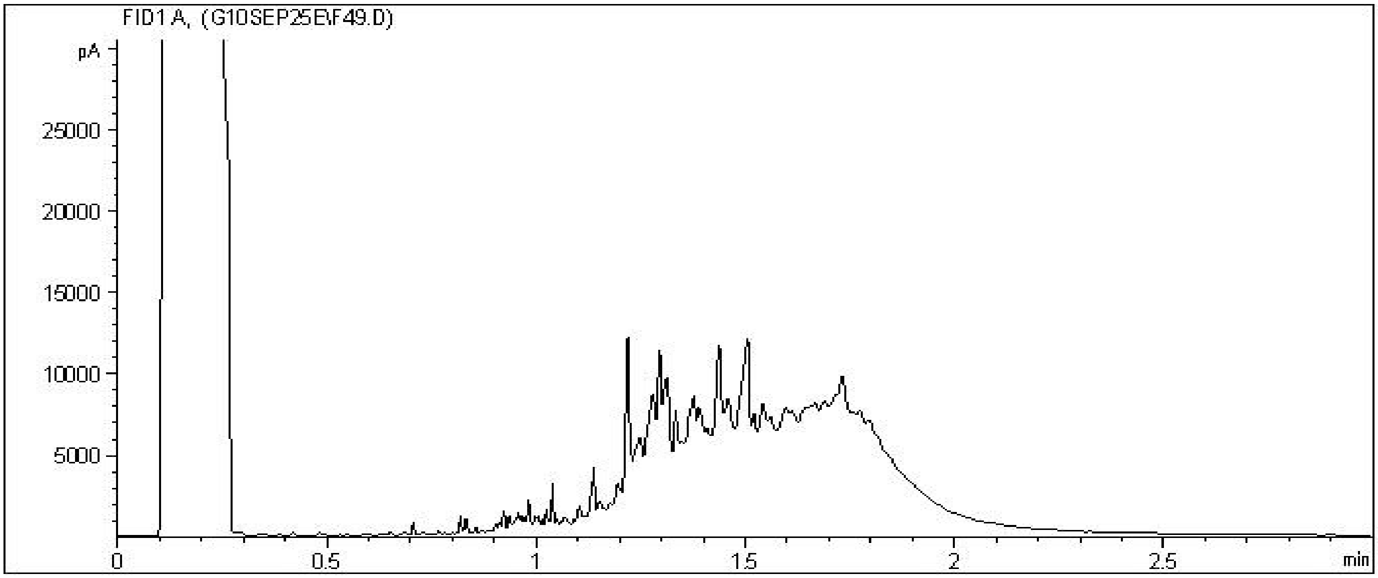
Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

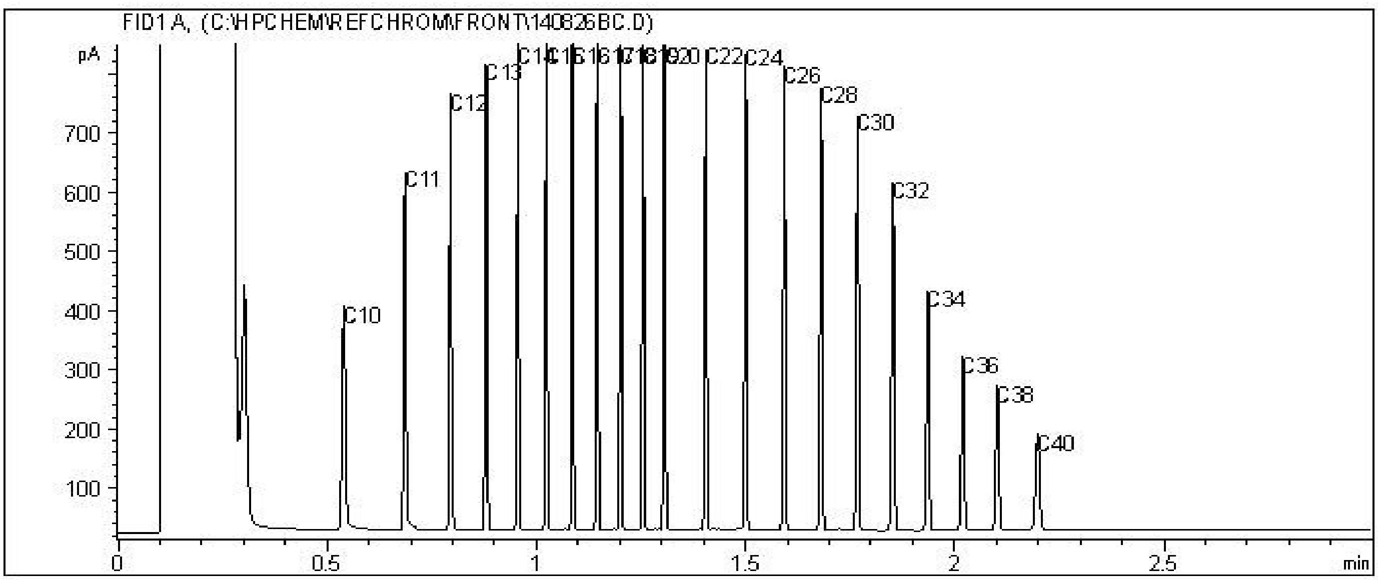
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4250

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH09-7

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

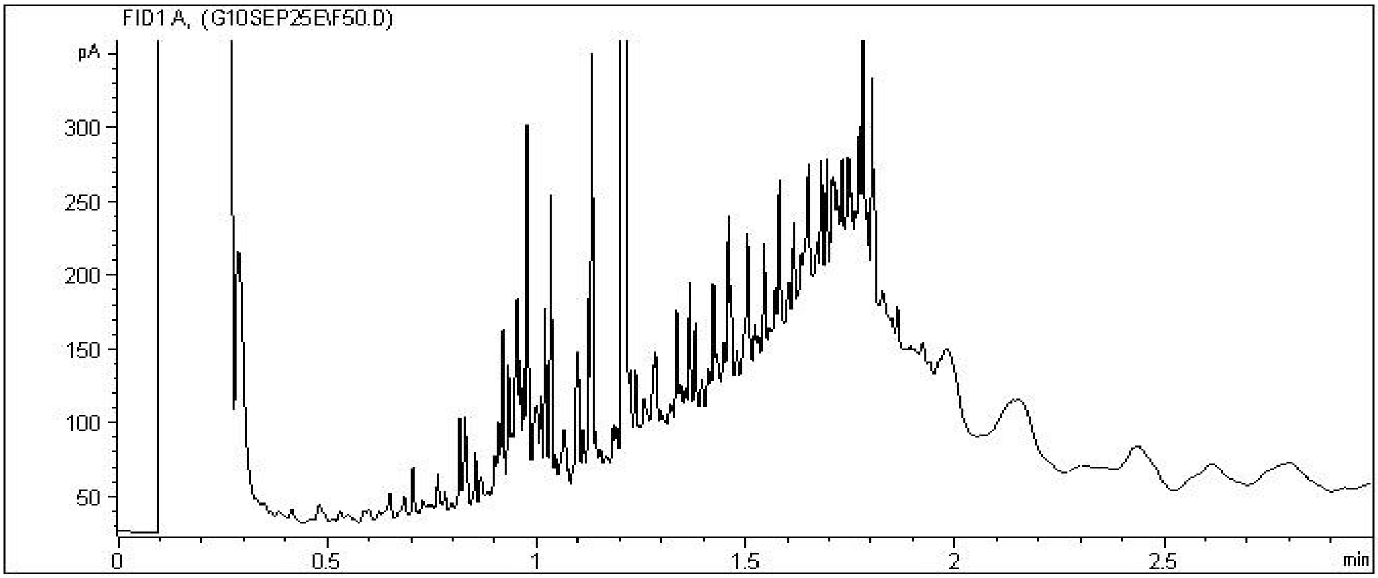
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

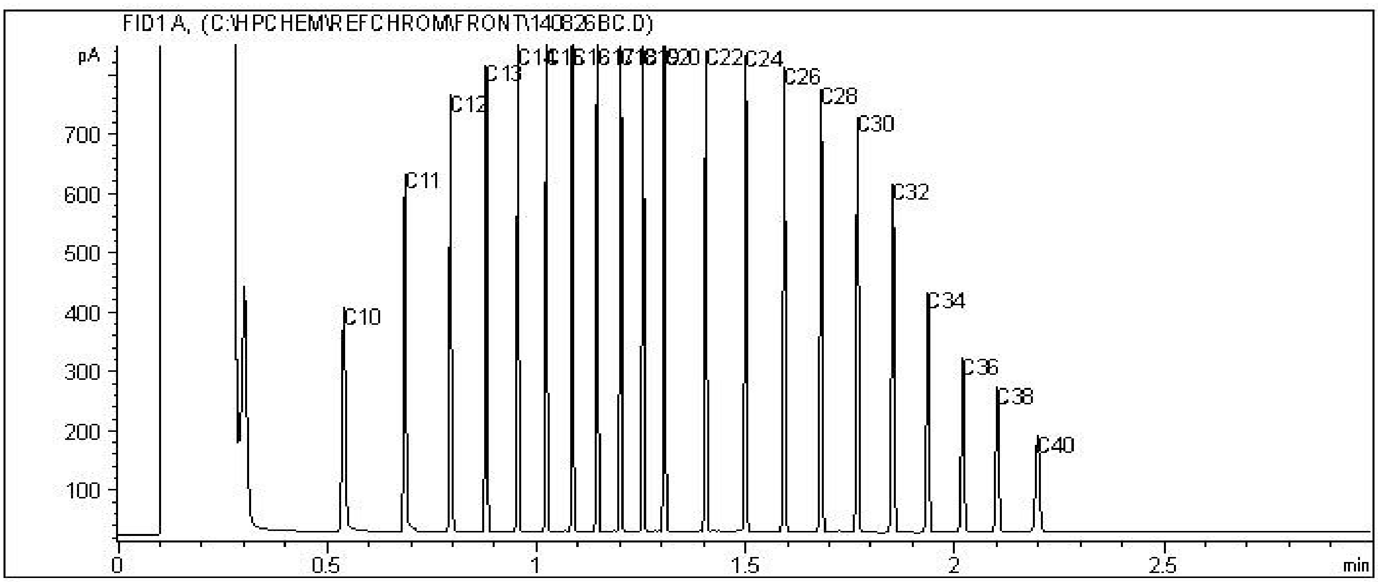
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4251

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH09-8

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

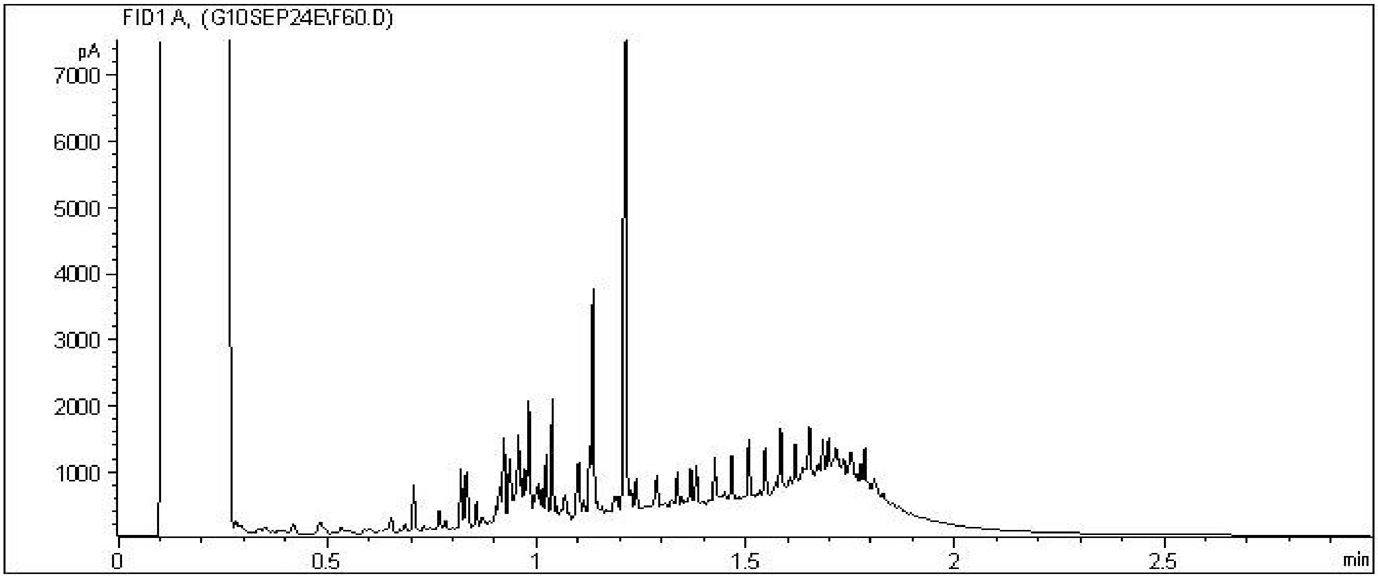
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

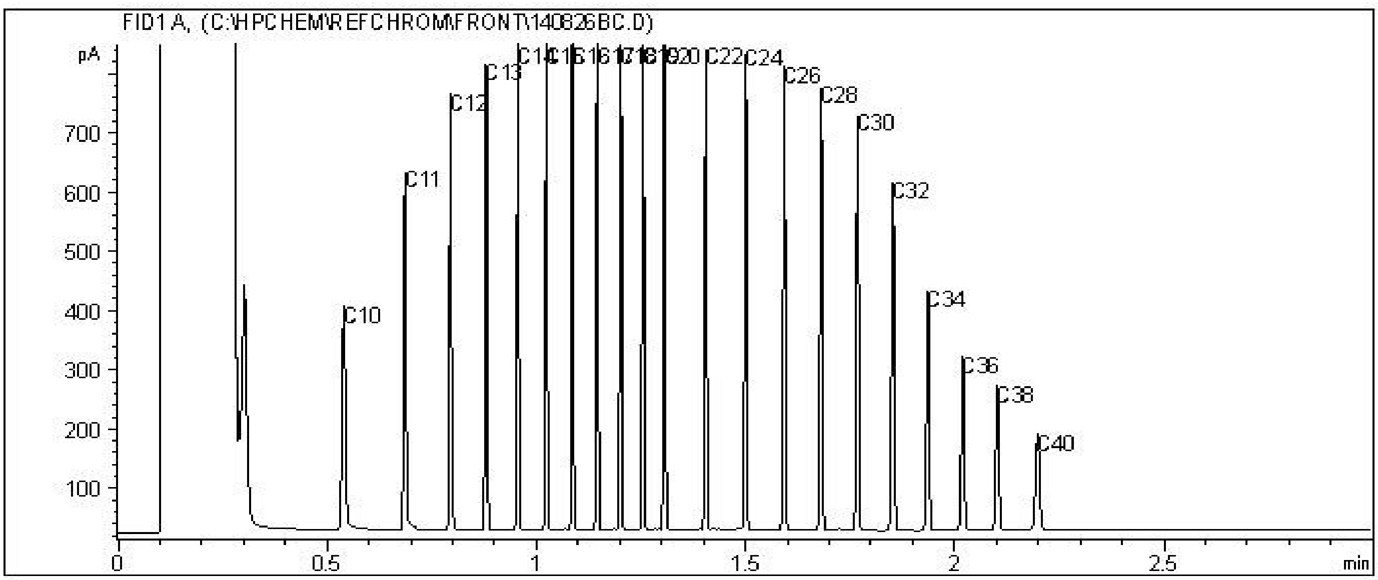
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4253

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH06-2

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

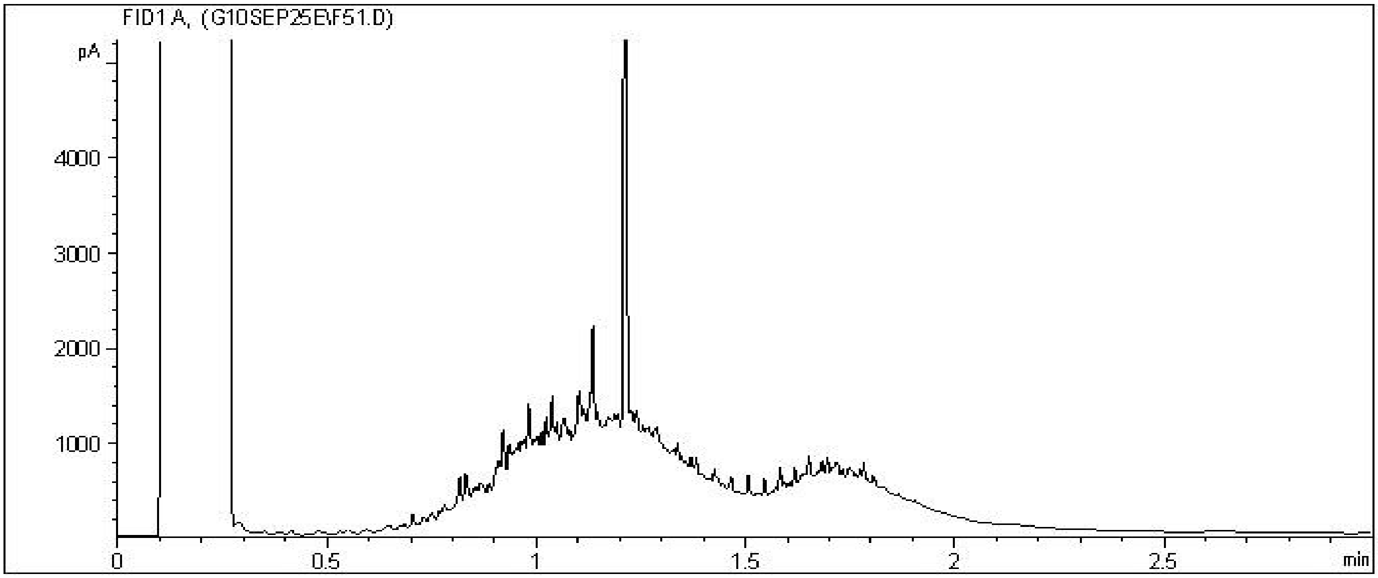
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

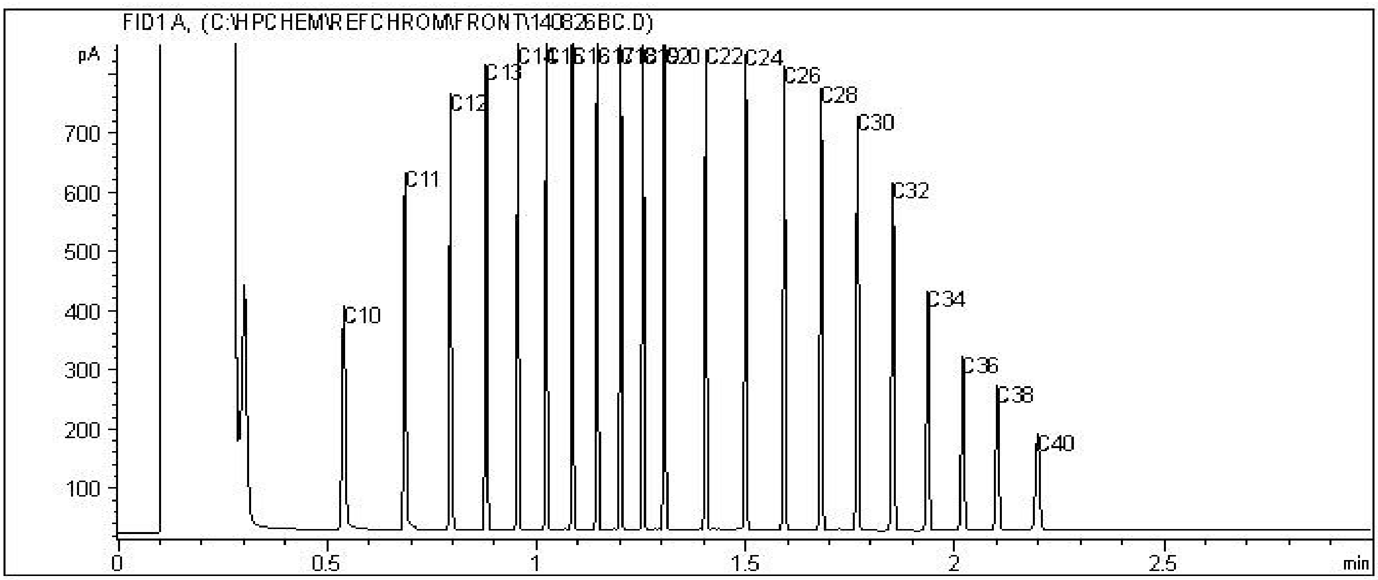
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4254

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH06-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

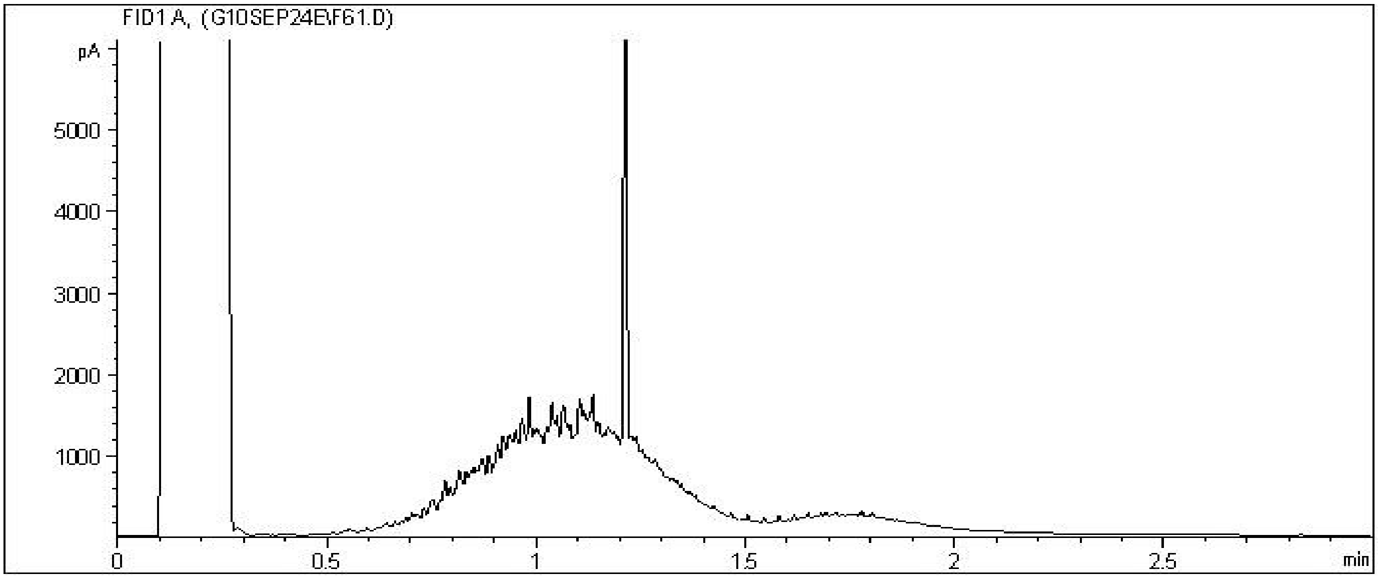
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

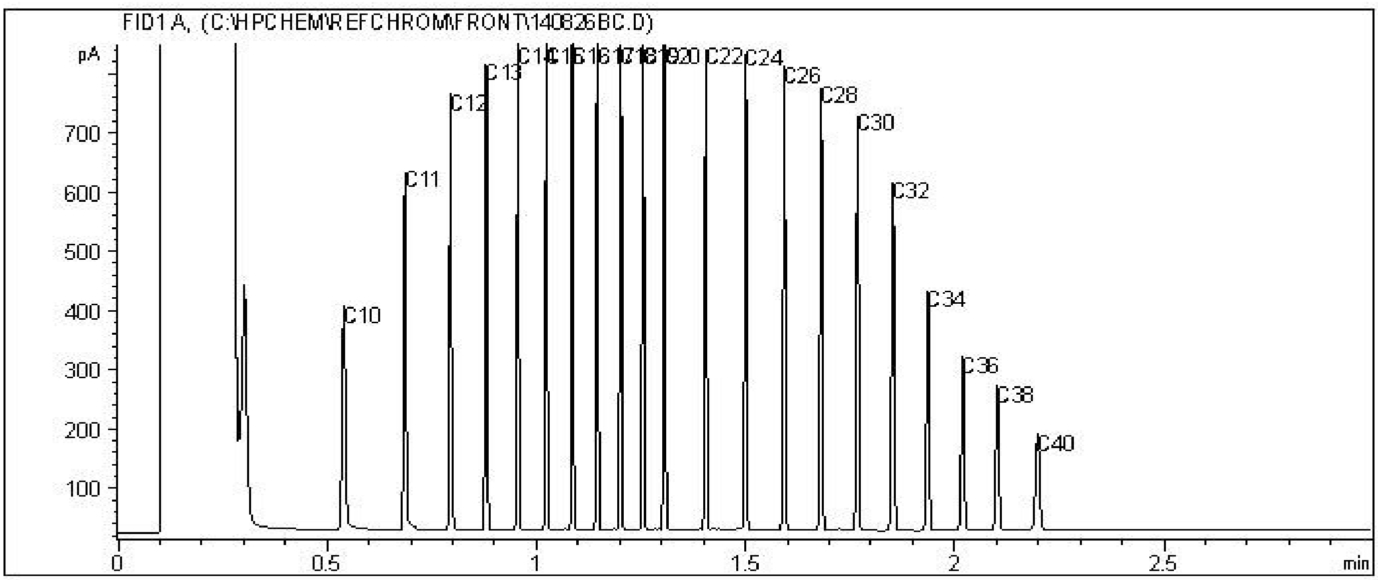
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4255

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH06-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

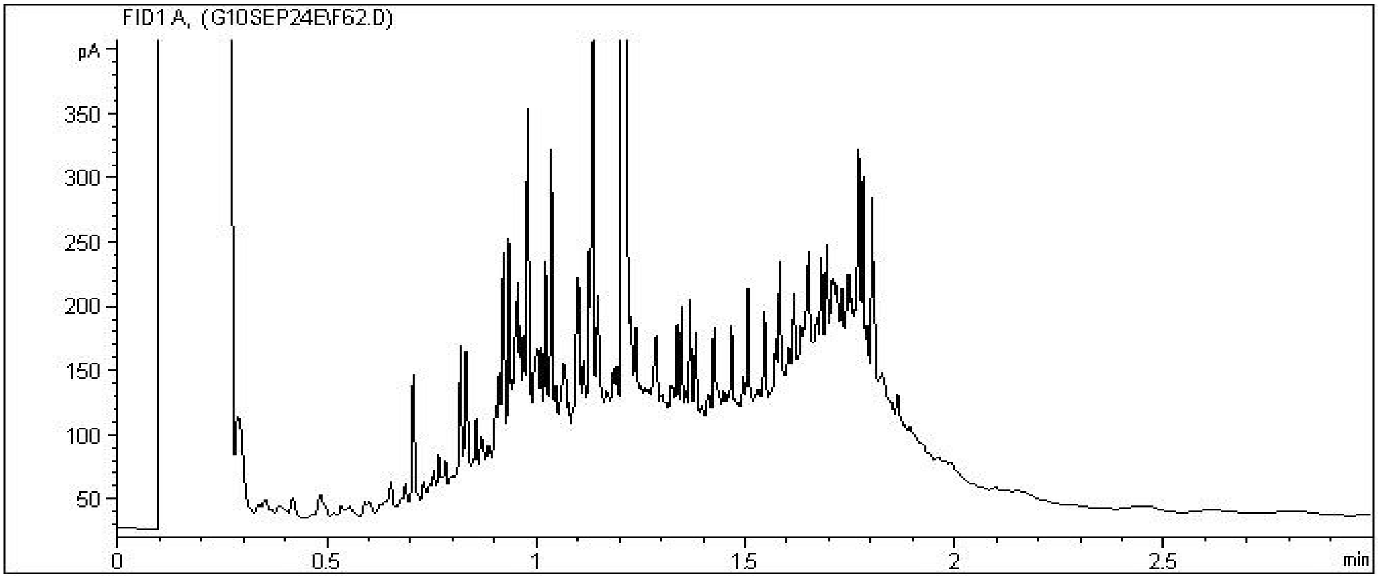
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

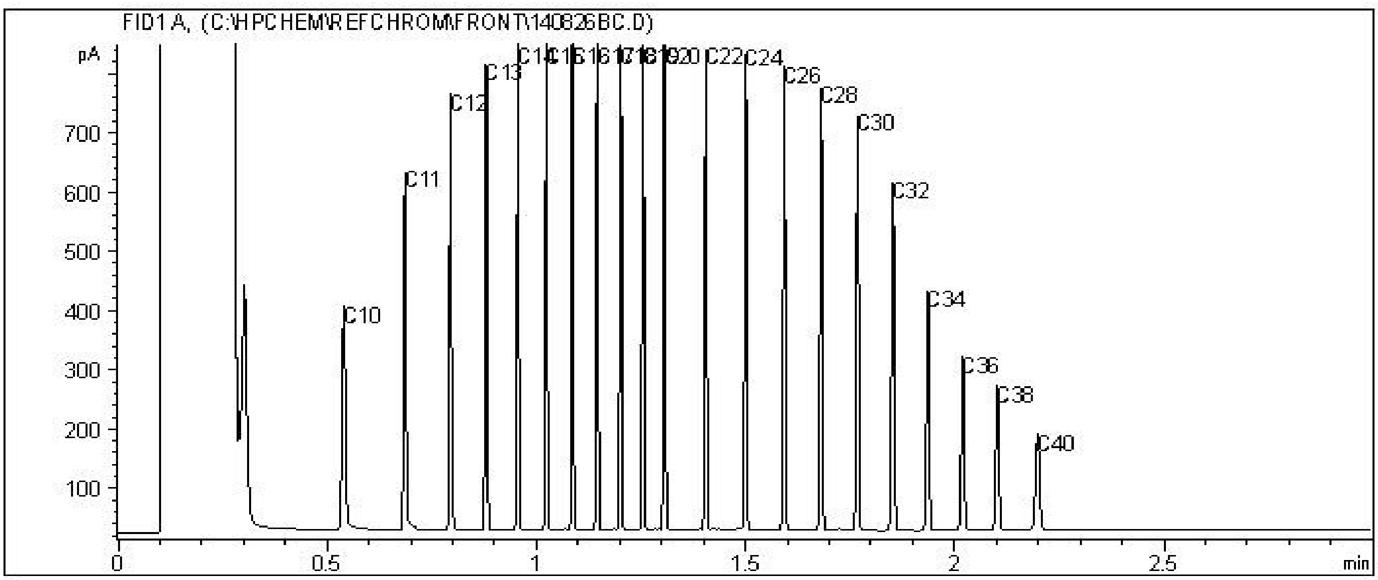
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4256

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH06-5

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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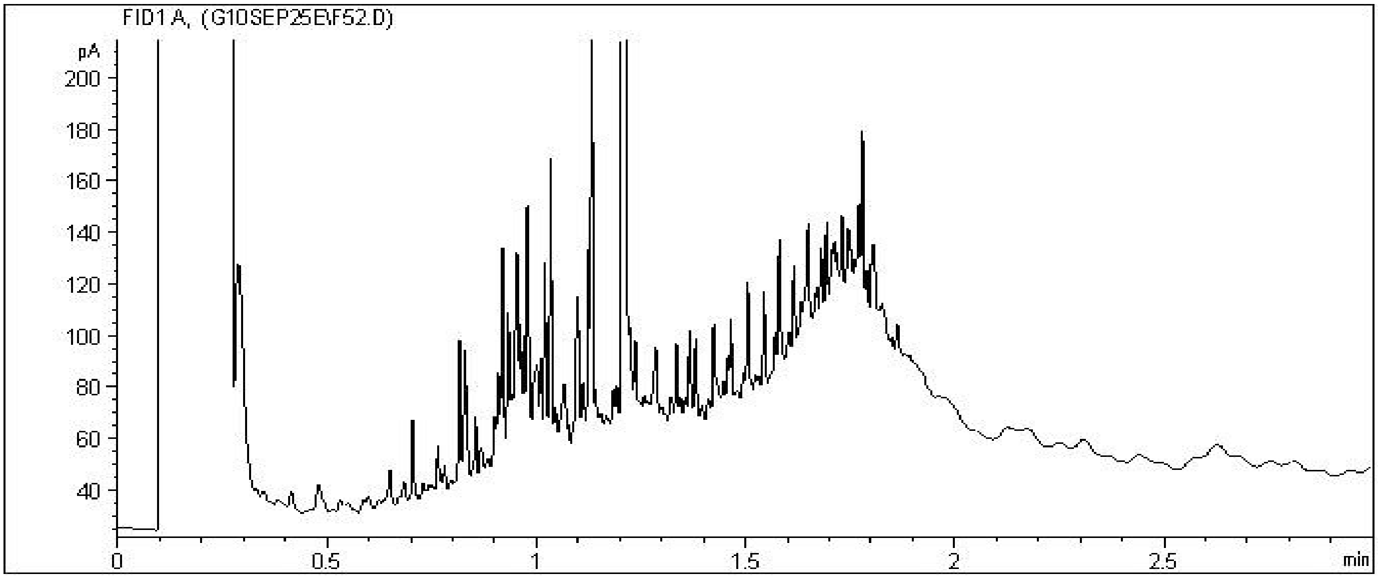
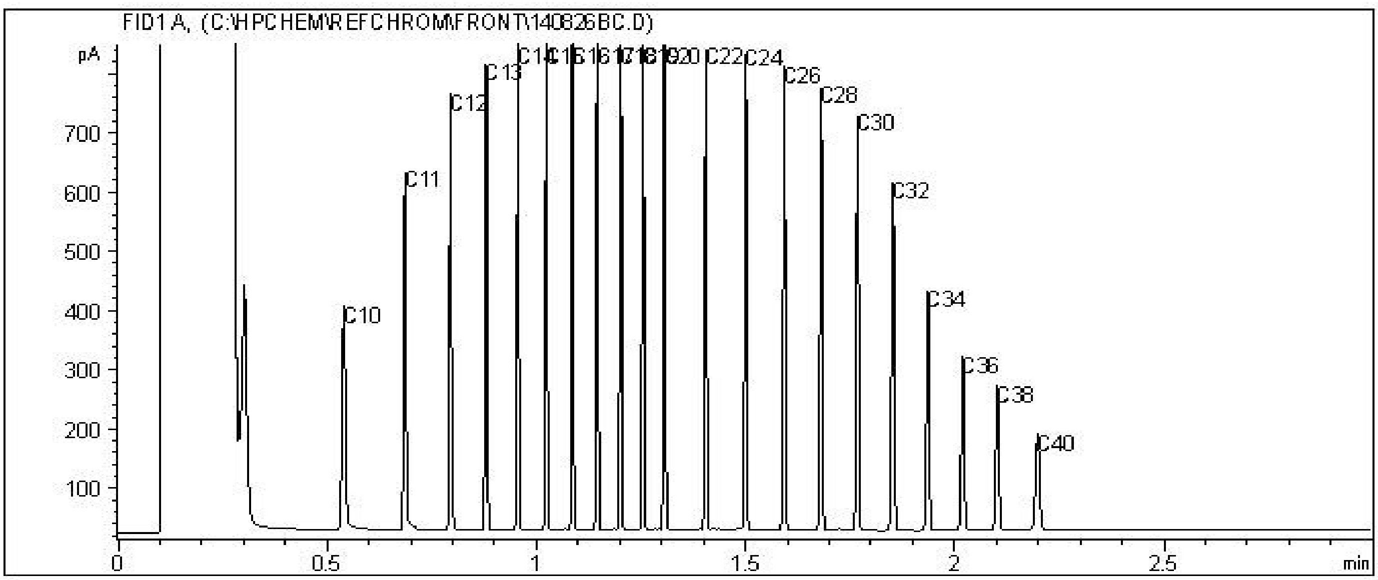
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4257

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH06-6

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
A Bureau Veritas Group Company

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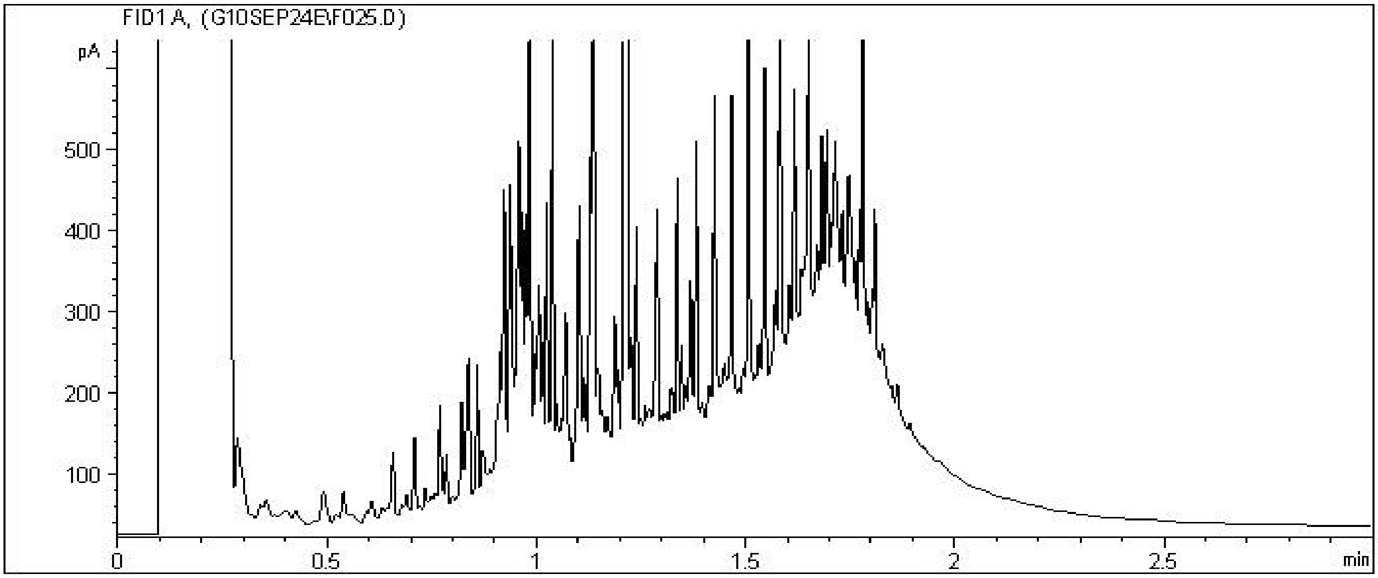
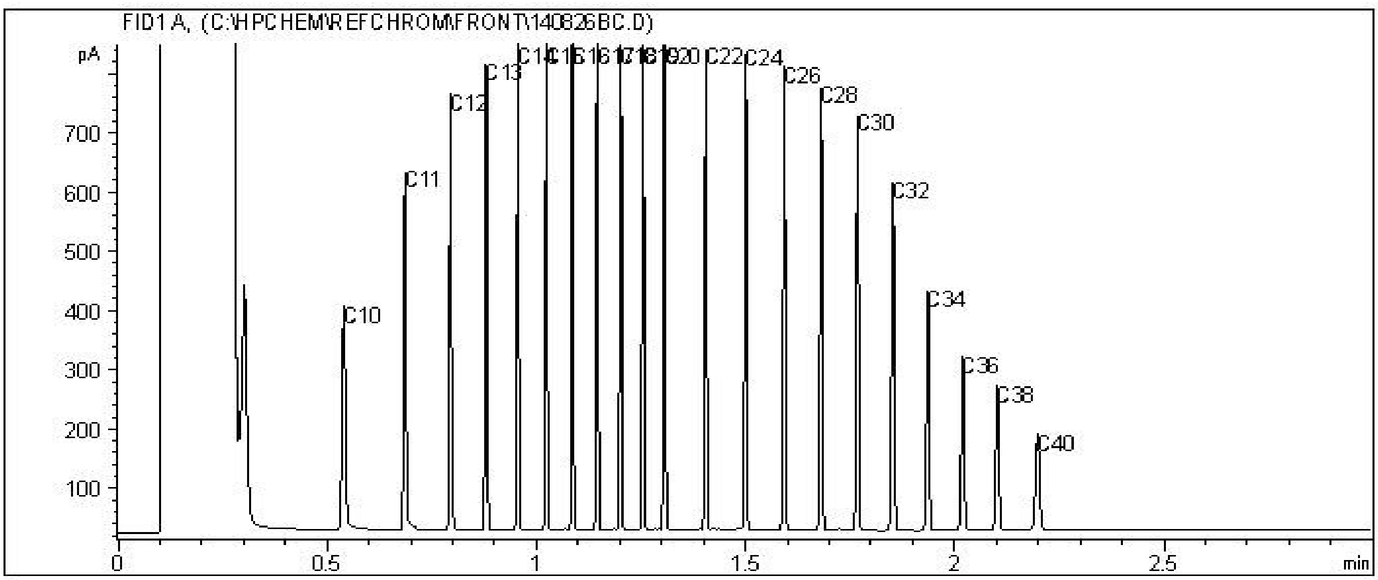
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4271

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH07-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

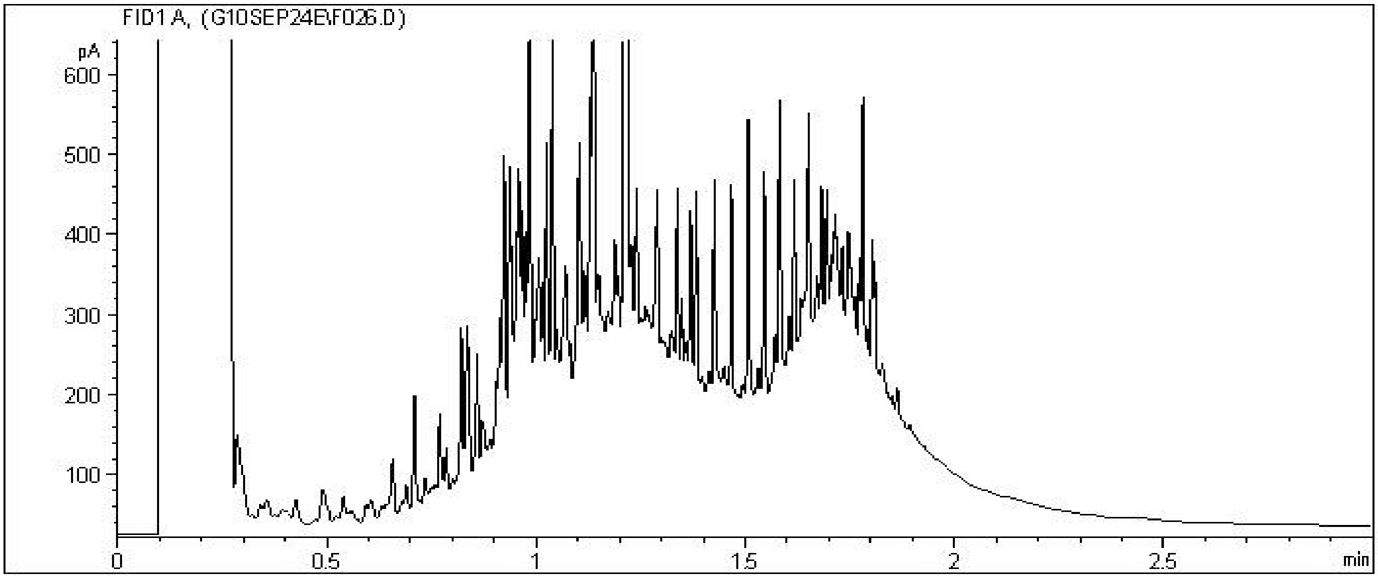
Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

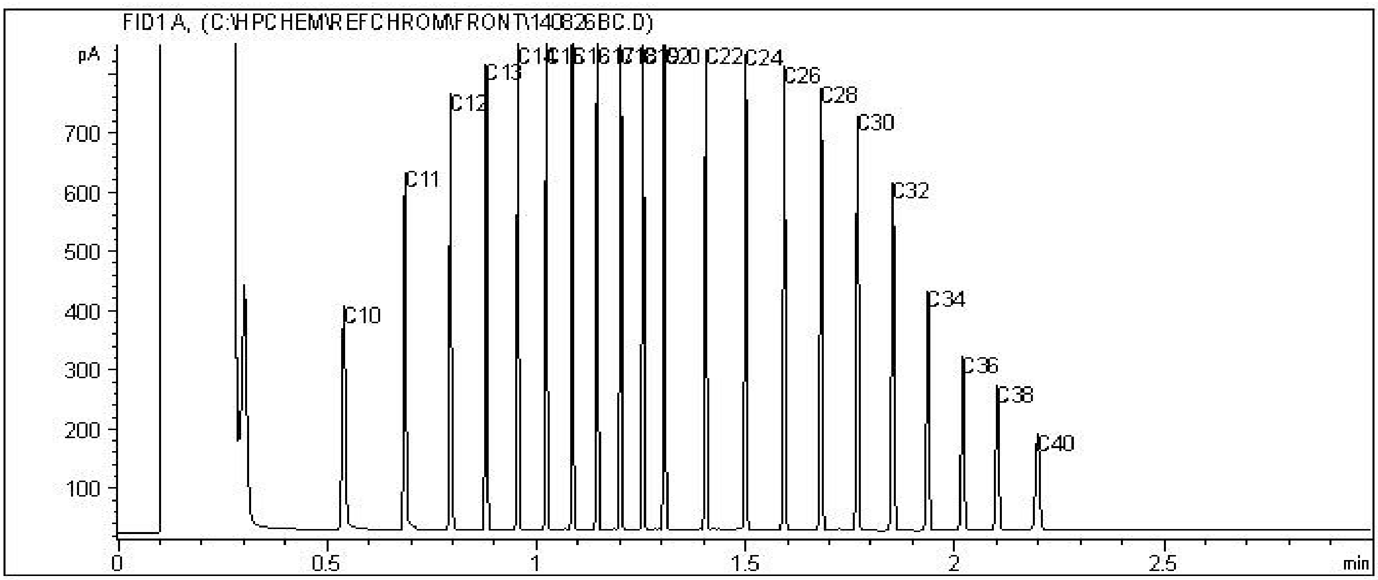
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4272

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH07-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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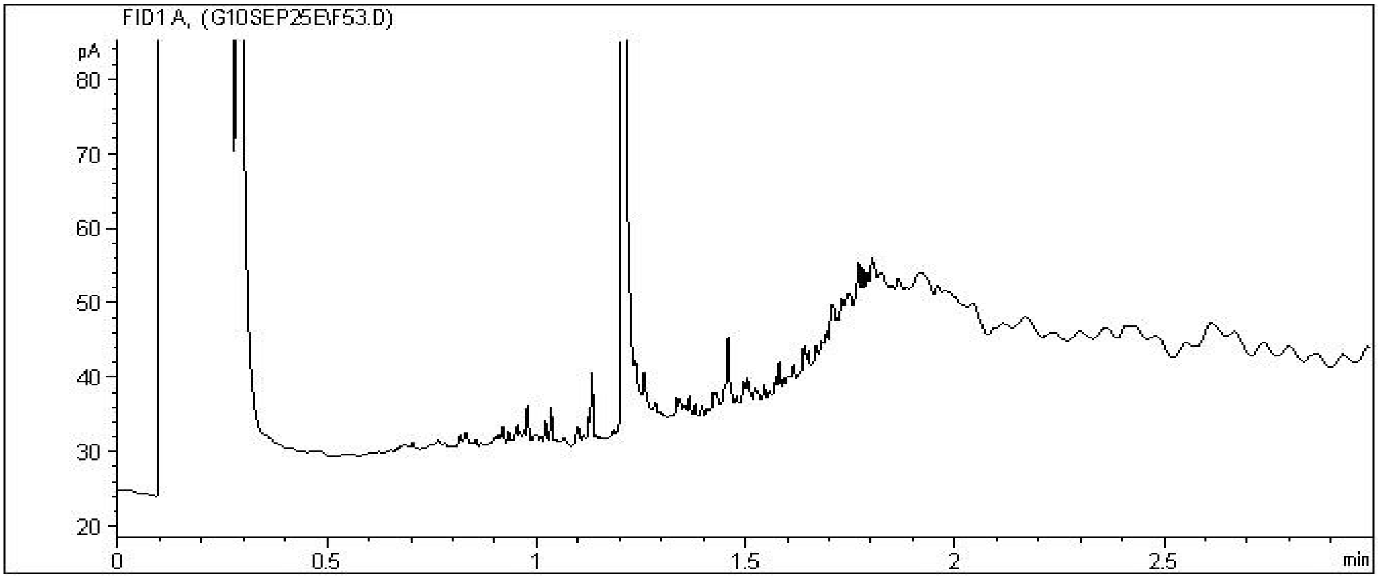
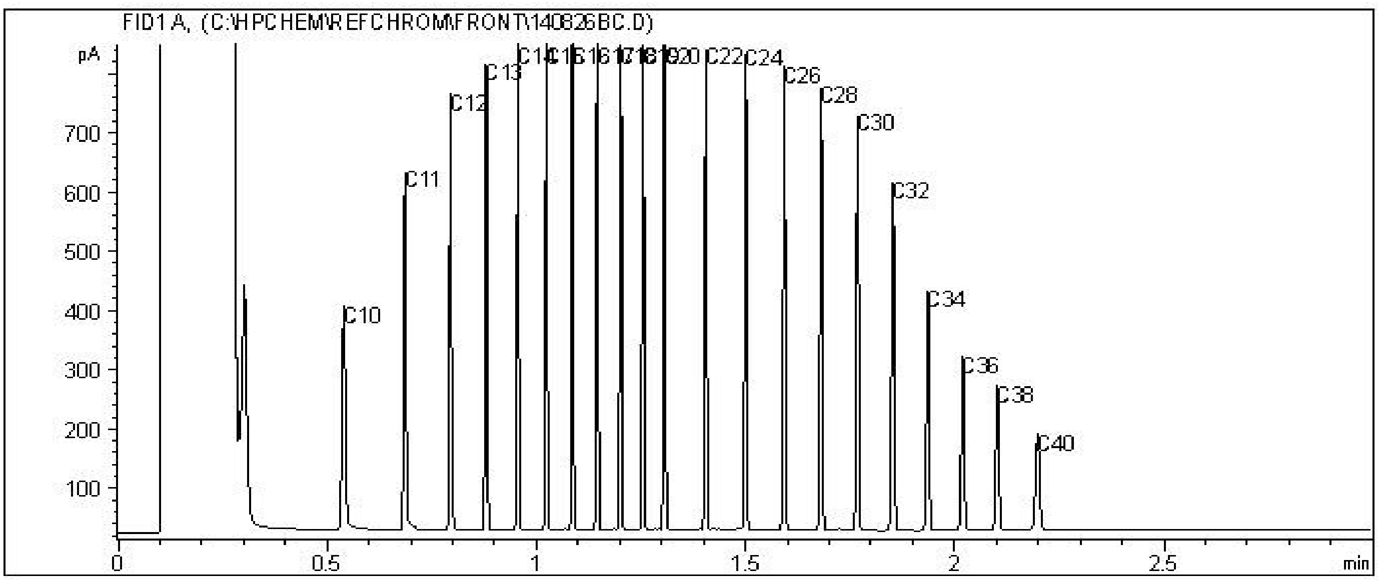
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4273

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH07-5

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

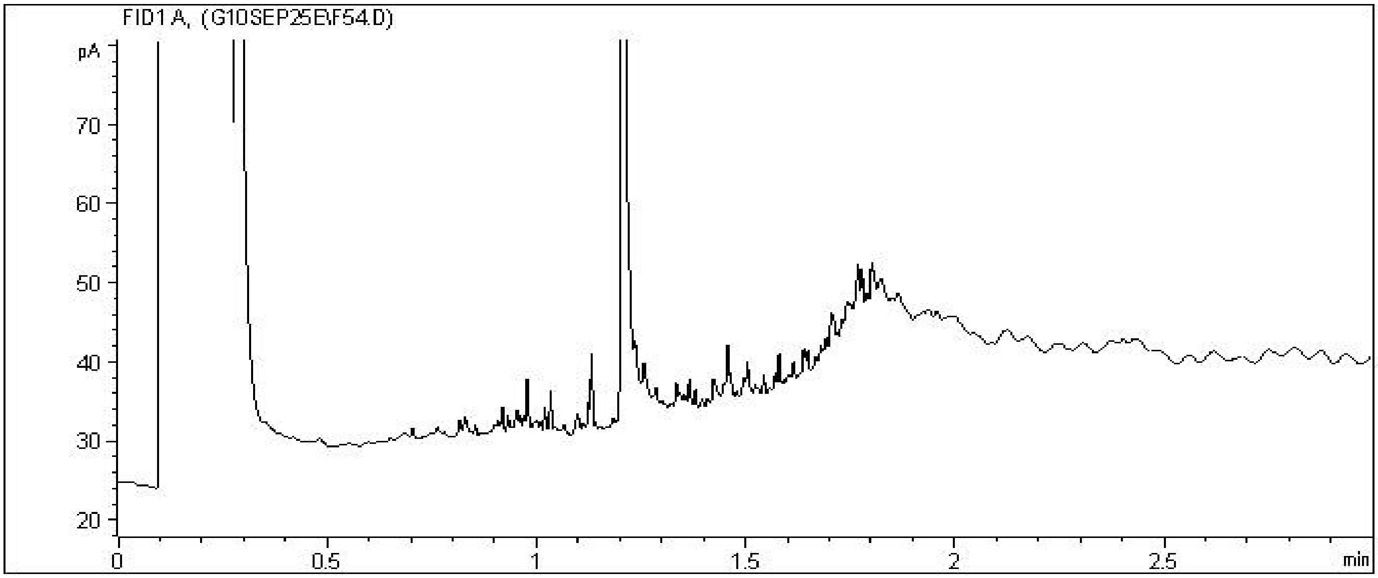
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

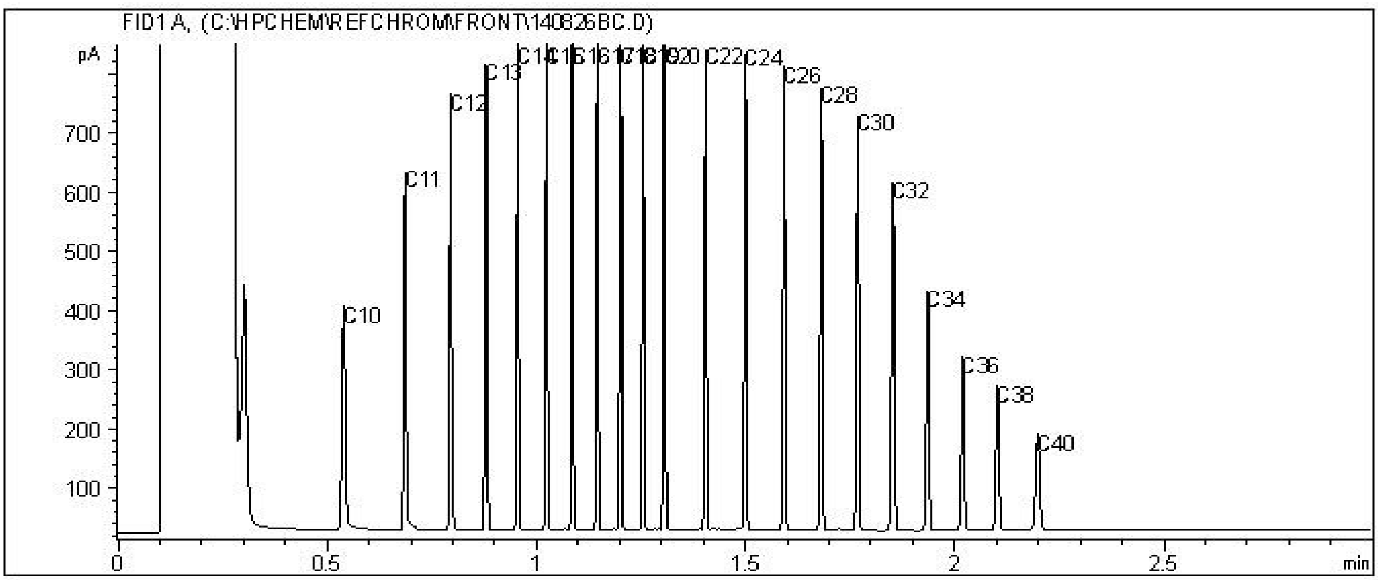
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4273 Lab-Dup

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH07-5

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

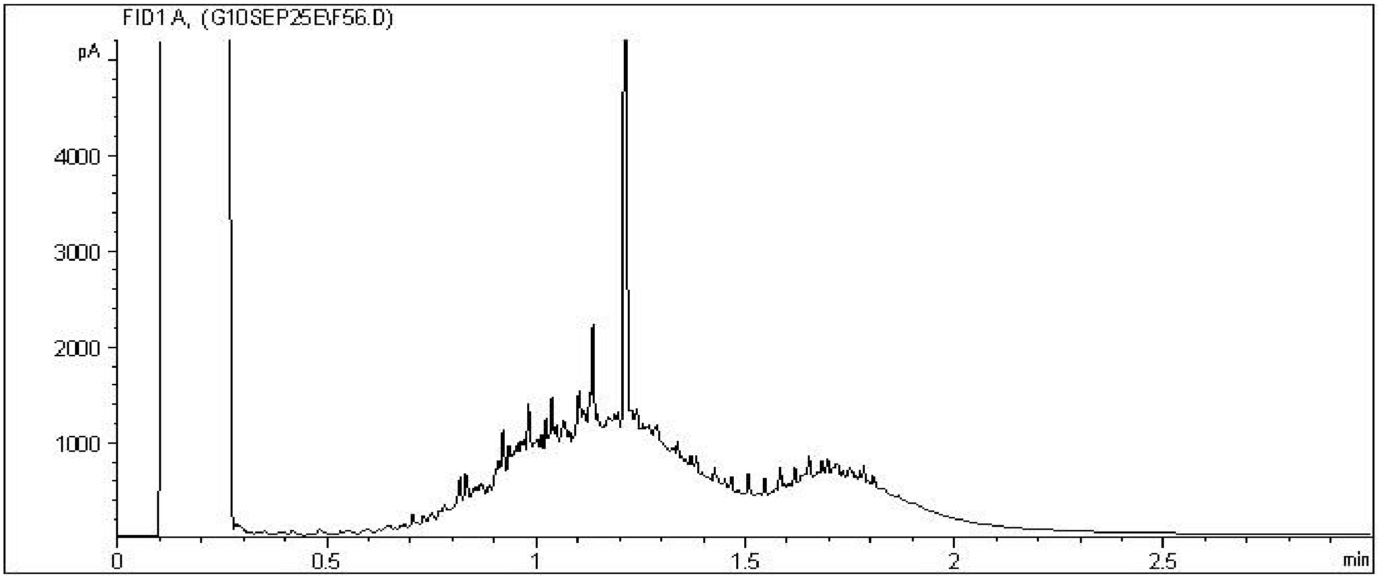
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

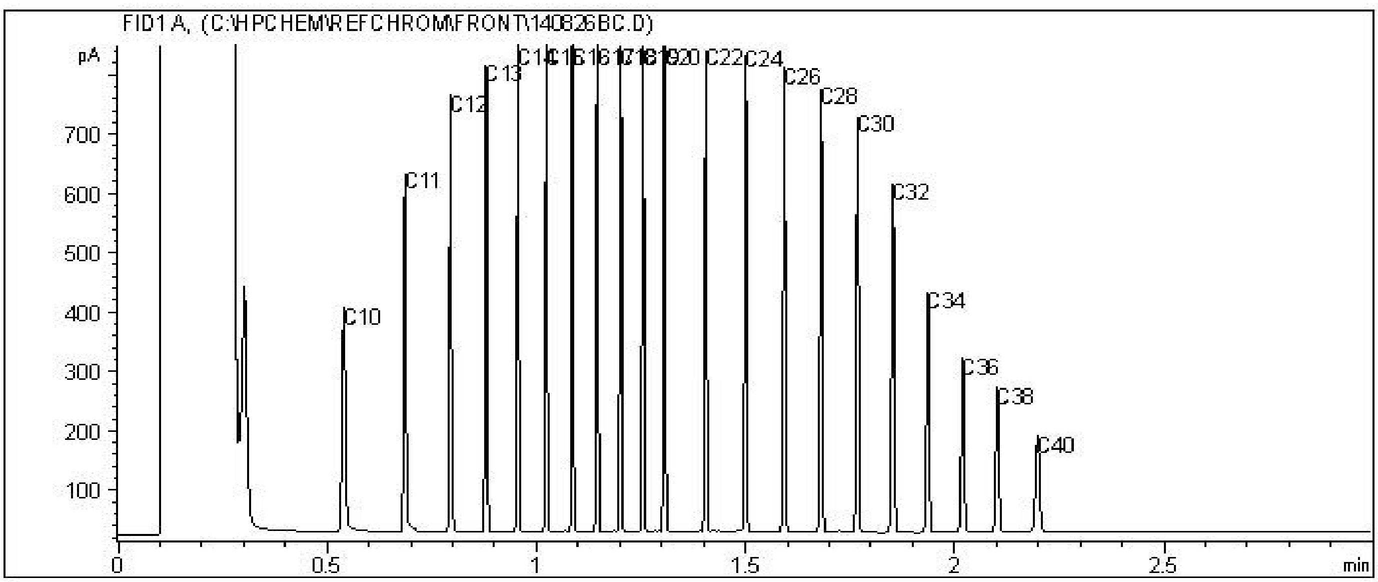
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4340

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: DUP 6

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

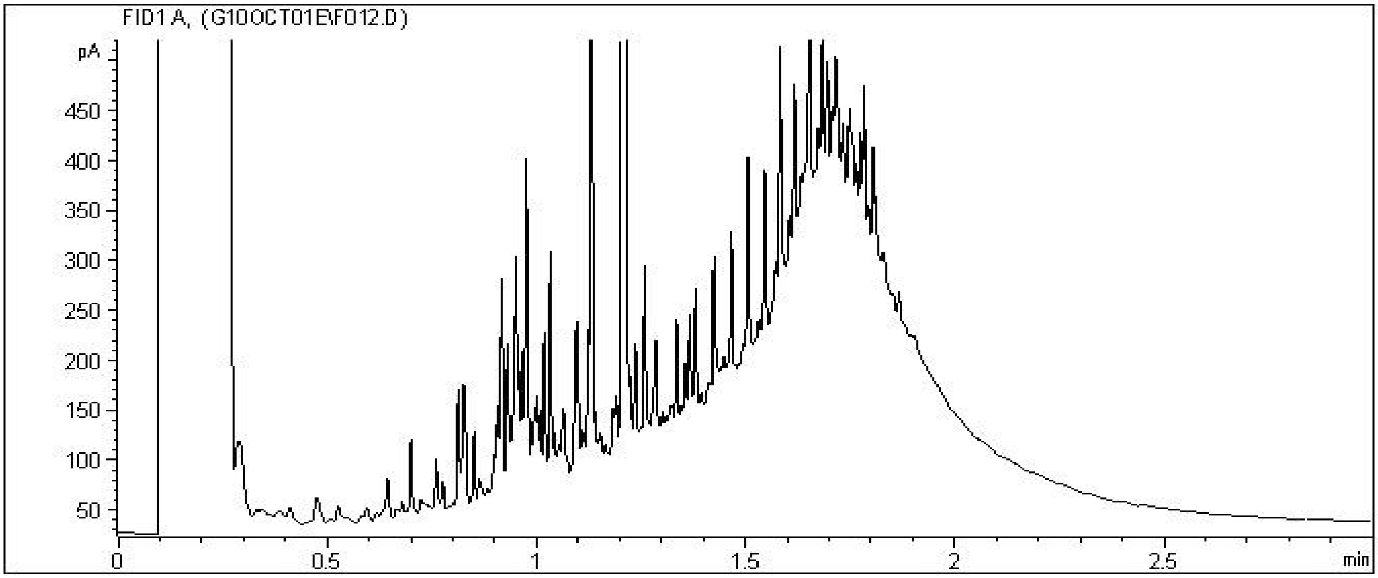
Gasoline:	C4	-	C12	Diesel:	C8	-	C22
Varsol:	C8	-	C12	Lubricating Oils:	C20	-	C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

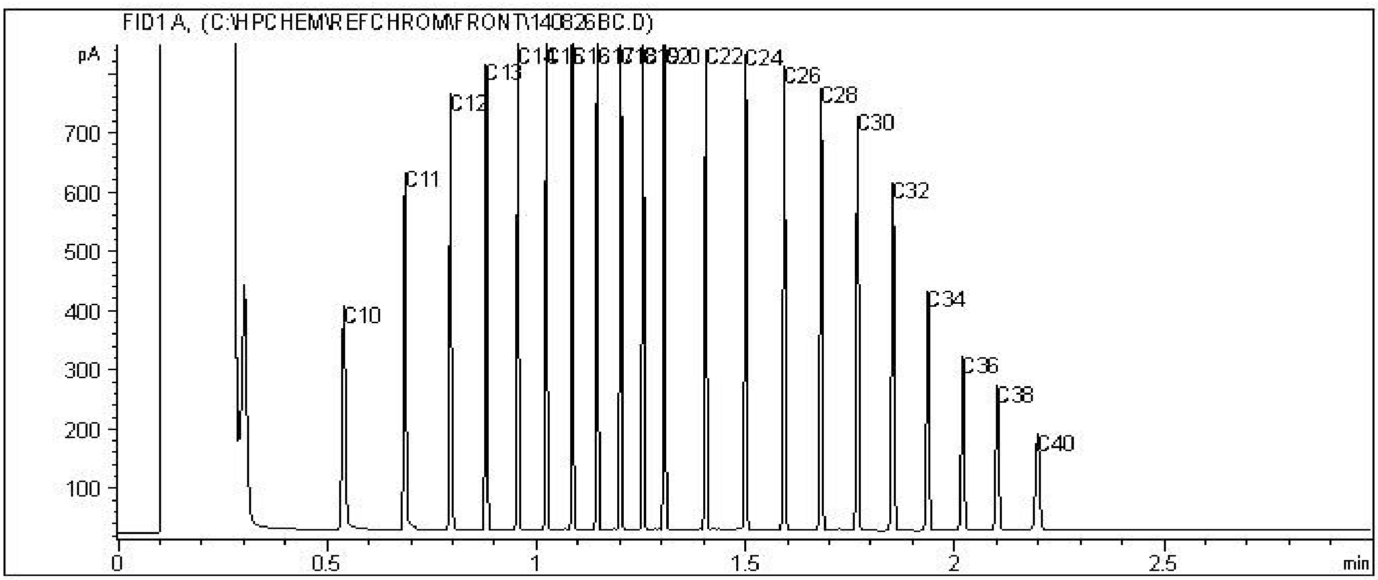
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4380

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH24-1

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

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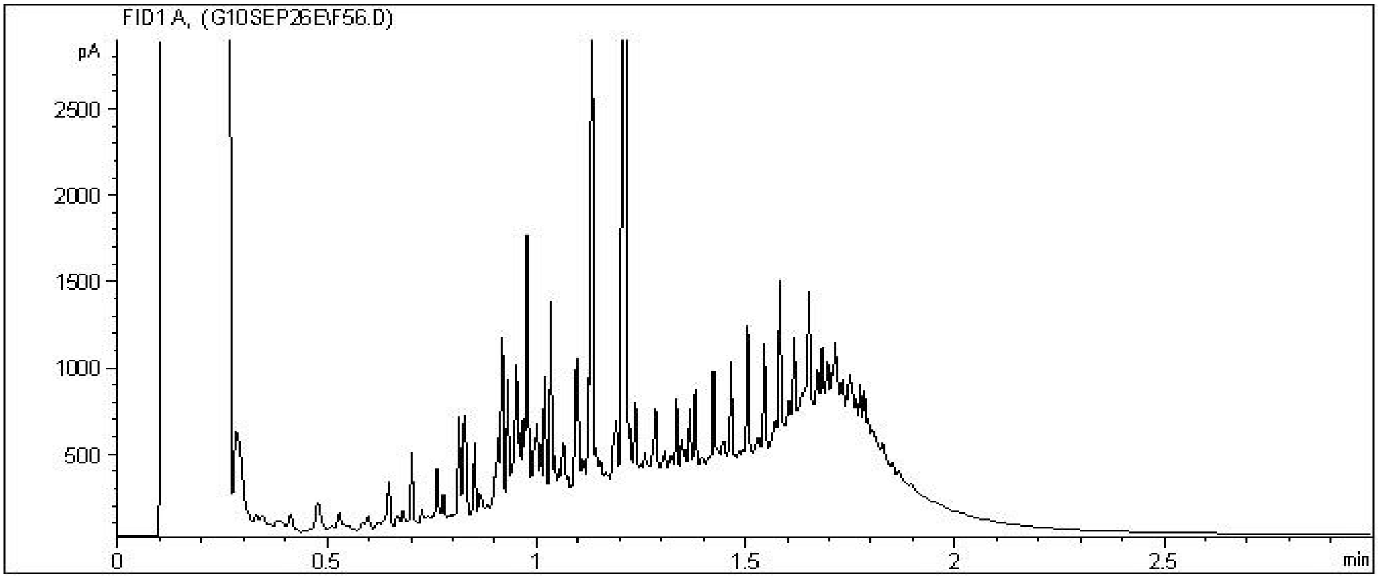
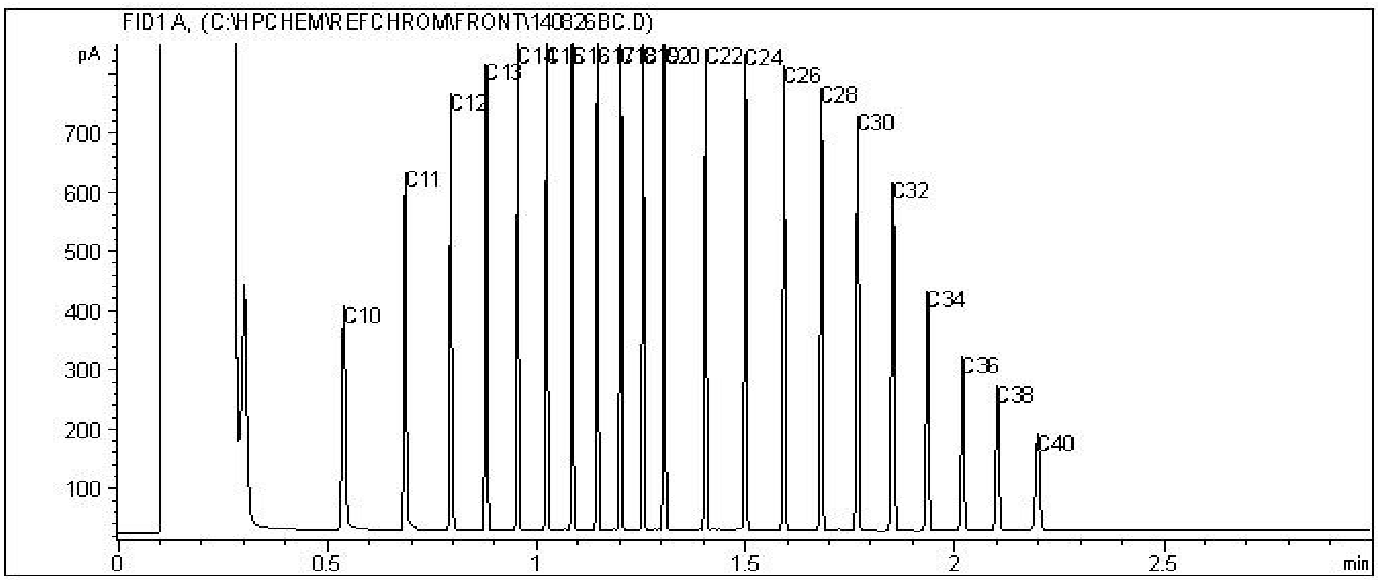
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4400

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH24-2

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

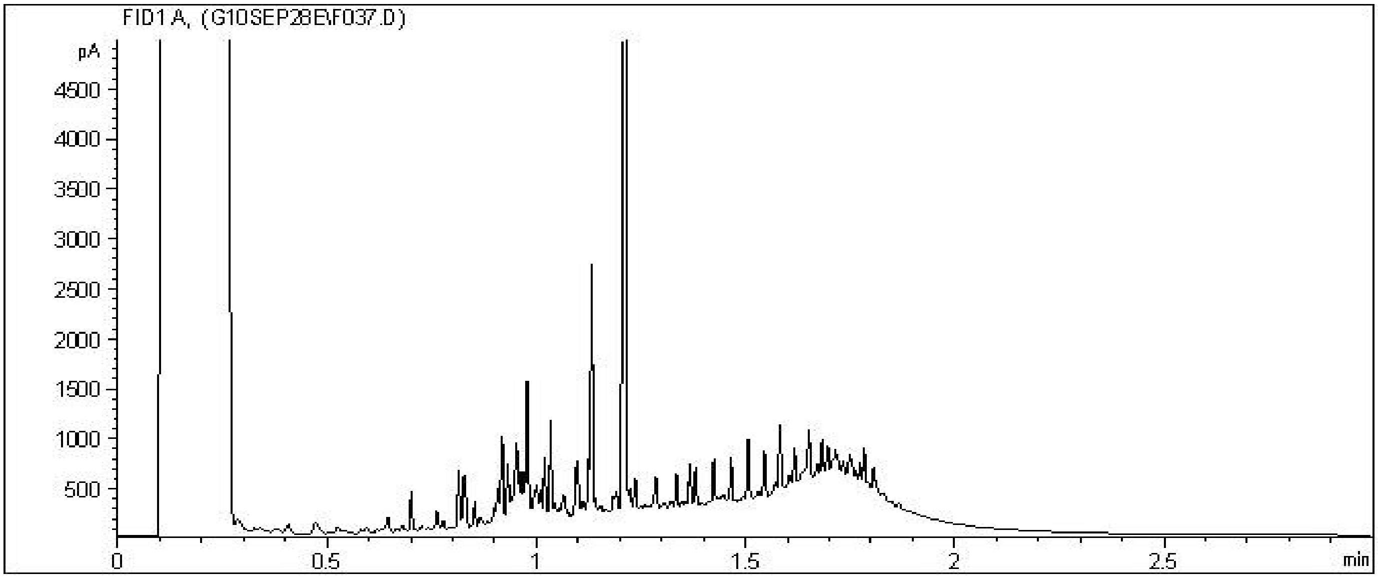
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

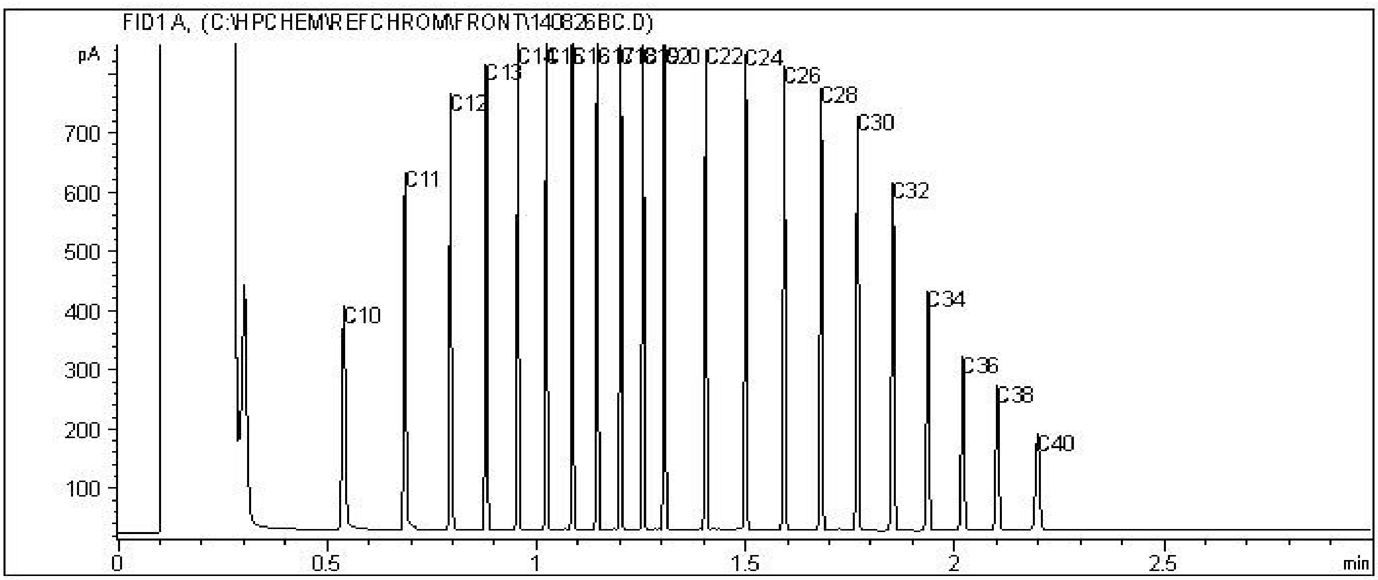
Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH24-3

Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4401

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

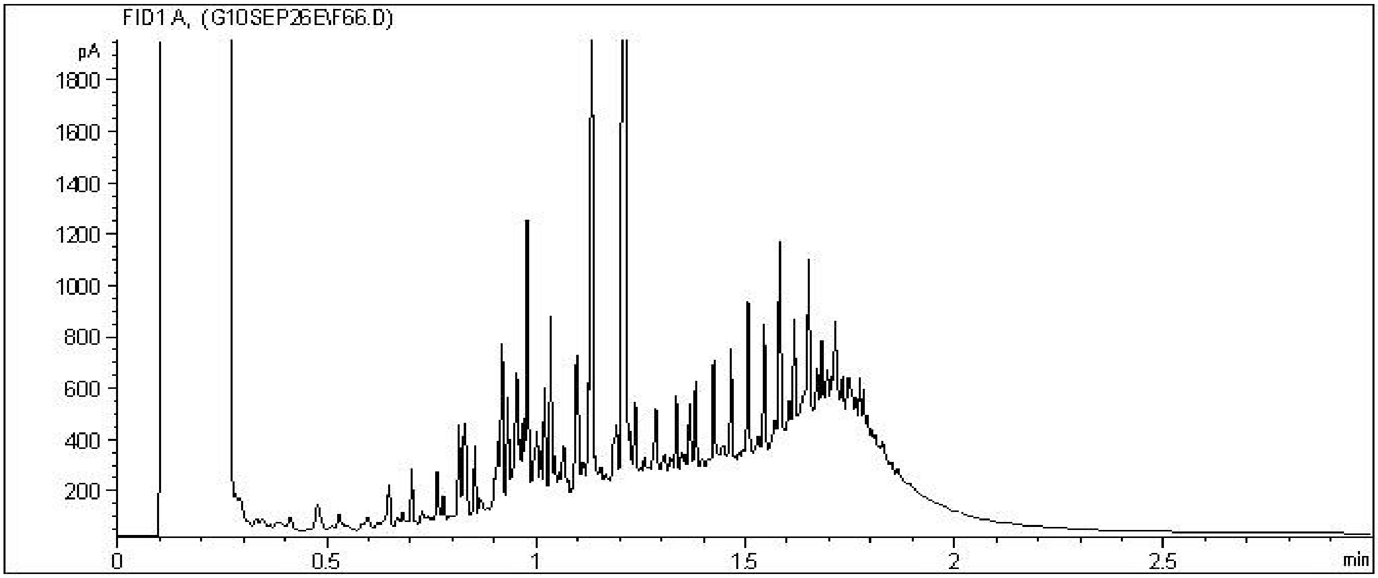
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

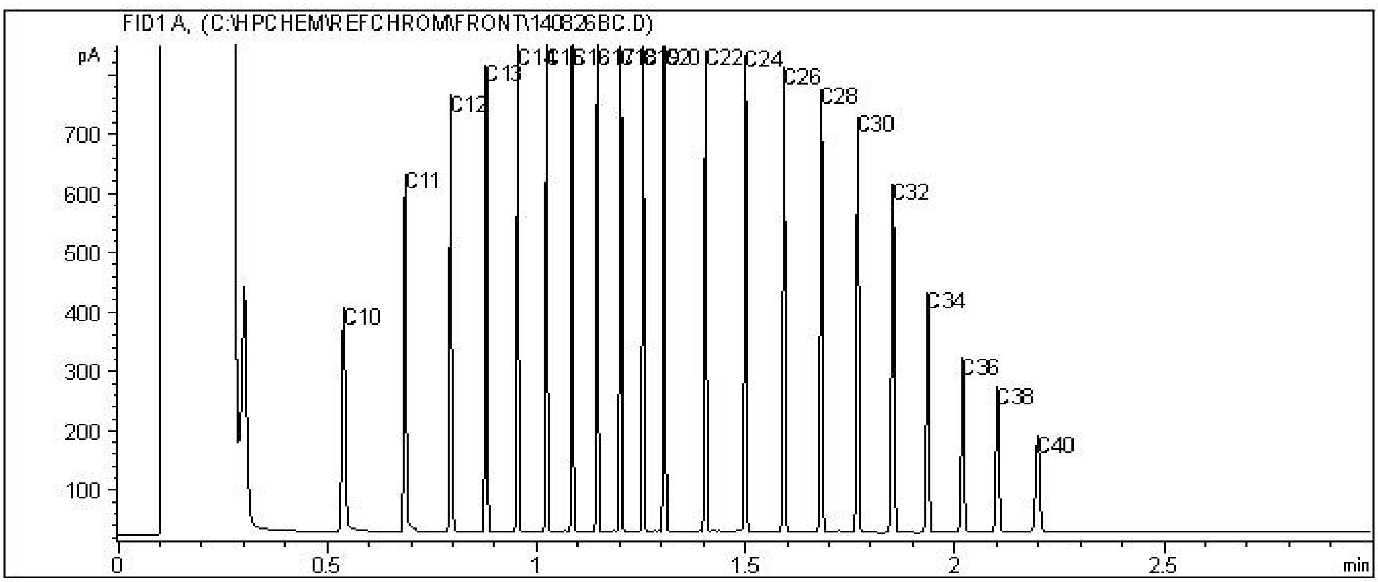
Report Date: 2014/11/12
Maxxam Job #: B483621
Maxxam Sample: KQ4406

Tetra Tech EBA
Client Project #: ENVIND03511-01.003 1
Site Reference: NANAIMO BC
Client ID: 14BH25-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Maxxam
A Bureau Veritas Group Company

Your Project #: ENVIN003511-01.004
Site#: SEDIMENT DRILLING
Site Location: PORT DRIVE
Your C.O.C. #: G089219, G089220, G089221

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/11/18
Report #: R1686056
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4A2450
Received: 2014/11/08, 10:20

Sample Matrix: Sediment
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Moisture	11	N/A	2014/11/13	BBY8SOP-00017	OMOE E3139 3.1 m
Benzo[a]pyrene Equivalency	11	N/A	2014/11/18	BBY WI-00033	Auto Calc
PAH in Soil by GC/MS Lowlevel (Extended)	11	2014/11/12	2014/11/18	BBY8SOP-00022	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	11	N/A	2014/11/18	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

PHYSICAL TESTING (SEDIMENT)

Maxxam ID		LC5349	LC5349	LC5352	LC5356	LC5367		
Sampling Date		2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06		
COC Number		G089219	G089219	G089219	G089219	G089220		
	Units	**14SED019@1.1**	**14SED019@1.1 Lab-Dup**	**14SED020@1.0**	**14SED021@1.5**	**14SED022@1.5**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	31	29	7.1	10	20	0.30	7714474

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		LC5371	LC5372	LC5373	LC5374	LC5375	LC5376		
Sampling Date		2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06		
COC Number		G089220	G089220	G089220	G089220	G089220	G089220		
	Units	**14SED023@1.8**	**14SED023-A**	**14SED023-B**	**14SED023-C**	**14SED023-D**	**DUP1**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	15	29	30	25	29	16	0.30	7714474

RDL = Reportable Detection Limit

Maxxam ID		LC5379		
Sampling Date		2014/11/06		
COC Number		G089221		
	Units	**14SED024@1.3**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	19	0.30	7714474

RDL = Reportable Detection Limit

Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

CCME PAH IN SEDIMENTS BY GC-MS (SEDIMENT)

Maxxam ID		LC5349		LC5352	LC5356		LC5367		
Sampling Date		2014/11/06		2014/11/06	2014/11/06		2014/11/06		
COC Number		G089219		G089219	G089219		G089220		
	Units	**14SED019@1.1**	**RDL**	**14SED020@1.0**	**14SED021@1.5**	**RDL**	**14SED022@1.5**	**RDL**	**QC Batch**
Calculated Parameters									
Index of Additive Cancer Risk(IARC)	N/A	0.11	0.10	<0.10	<0.10	0.10	0.11	0.10	7714409
Benzo[a]pyrene equivalency	N/A	<0.10	0.10	<0.10	<0.10	0.10	<0.10	0.10	7714409
Polycyclic Aromatics									
Naphthalene	mg/kg	<0.010 (1)	0.010	0.0013	0.014	0.0010	0.023 (1)	0.010	7722301
2-Methylnaphthalene	mg/kg	0.010 (1)	0.010	0.0017	0.029	0.0010	0.045 (1)	0.010	7722301
Acenaphthylene	mg/kg	<0.0050 (1)	0.0050	<0.00050	<0.00050	0.00050	<0.0050 (1)	0.0050	7722301
Acenaphthene	mg/kg	<0.0050 (1)	0.0050	<0.00050	0.0075	0.00050	0.0057 (1)	0.0050	7722301
Fluorene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0041	0.0010	<0.010 (1)	0.010	7722301
Phenanthrene	mg/kg	0.011 (1)	0.010	0.0016	0.020	0.0010	0.023 (1)	0.010	7722301
Anthracene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0037	0.0010	<0.010 (1)	0.010	7722301
Fluoranthene	mg/kg	<0.010 (1)	0.010	0.0016	0.0061	0.0010	0.018 (1)	0.010	7722301
Pyrene	mg/kg	<0.010 (1)	0.010	0.0014	0.0066	0.0010	0.014 (1)	0.010	7722301
Benzo(a)anthracene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0041	0.0010	<0.010 (1)	0.010	7722301
Chrysene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0058	0.0010	<0.010 (1)	0.010	7722301
Benzo(b)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0026	0.0010	<0.010 (1)	0.010	7722301
Benzo(b&j)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0037	0.0010	<0.010 (1)	0.010	7722301
Benzo(k)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.0010	<0.0010	0.0010	<0.010 (1)	0.010	7722301
Benzo(a)pyrene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0026	0.0010	<0.010 (1)	0.010	7722301
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020 (1)	0.020	<0.0020	<0.0020	0.0020	<0.020 (1)	0.020	7722301
Dibenz(a,h)anthracene	mg/kg	<0.0050 (1)	0.0050	<0.00050	<0.00050	0.00050	<0.0050 (1)	0.0050	7722301
Benzo(g,h,i)perylene	mg/kg	<0.020 (1)	0.020	<0.0020	0.0029	0.0020	<0.020 (1)	0.020	7722301
Low Molecular Weight PAH`s	mg/kg	0.021	0.010	0.0046	0.078	0.0010	0.097	0.010	7713593
High Molecular Weight PAH`s	mg/kg	<0.010	0.010	0.0030	0.025	0.0010	0.032	0.010	7713593
Total PAH	mg/kg	0.021	0.010	0.0076	0.10	0.0010	0.13	0.010	7713593
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	94		79	75		88		7722301
D8-ACENAPHTHYLENE (sur.)	%	68		72	68		64		7722301
D8-NAPHTHALENE (sur.)	%	77		70	68		72		7722301
TERPHENYL-D14 (sur.)	%	87		85	82		84		7722301

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution as a result of sample matrix inteference.

Maxxam
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Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

CCME PAH IN SEDIMENTS BY GC-MS (SEDIMENT)

Maxxam ID		LC5371	LC5372	LC5373	LC5373	LC5374	LC5375		
Sampling Date		2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06		
COC Number		G089220	G089220	G089220	G089220	G089220	G089220		
	Units	**14SED023@1.8**	**14SED023-A**	**14SED023-B**	**14SED023-B Lab-Dup**	**14SED023-C**	**14SED023-D**	**RDL**	**QC Batch**
Calculated Parameters									
Index of Additive Cancer Risk(IARC)	N/A	0.11	4.0	4.3		13	4.3	0.10	7714409
Benzo[a]pyrene equivalency	N/A	<0.10	0.26	0.27		1.0	0.29	0.10	7714409
Polycyclic Aromatics									
Naphthalene	mg/kg	0.034 (1)	3.3 (1)	2.2 (1)	2.3 (1)	1.7 (1)	3.6 (1)	0.010	7722301
2-Methylnaphthalene	mg/kg	0.058 (1)	5.3 (1)	3.4 (1)	3.5 (1)	2.7 (1)	5.9 (1)	0.010	7722301
Acenaphthylene	mg/kg	<0.0050 (1)	0.035 (1)	0.034 (1)	0.037 (1)	0.15 (1)	0.042 (1)	0.0050	7722301
Acenaphthene	mg/kg	0.011 (1)	0.83 (1)	0.66 (1)	0.66 (1)	0.49 (1)	0.86 (1)	0.0050	7722301
Fluorene	mg/kg	<0.010 (1)	0.61 (1)	0.63 (1)	0.67 (1)	0.68 (1)	0.65 (1)	0.010	7722301
Phenanthrene	mg/kg	0.022 (1)	1.7 (1)	1.4 (1)	1.7 (1)	3.0 (1)	1.8 (1)	0.010	7722301
Anthracene	mg/kg	<0.010 (1)	0.55 (1)	0.55 (1)	0.57 (1)	1.3 (1)	0.64 (1)	0.010	7722301
Fluoranthene	mg/kg	0.021 (1)	1.1 (1)	1.5 (1)	1.7 (1)	2.6 (1)	1.1 (1)	0.010	7722301
Pyrene	mg/kg	0.026 (1)	1.0 (1)	1.2 (1)	1.4 (1)	2.6 (1)	1.1 (1)	0.010	7722301
Benzo(a)anthracene	mg/kg	<0.010 (1)	0.38 (1)	0.43 (1)	0.50 (1)	0.94 (1)	0.41 (1)	0.010	7722301
Chrysene	mg/kg	<0.010 (1)	0.38 (1)	0.47 (1)	0.55 (1)	0.91 (1)	0.41 (1)	0.010	7722301
Benzo(b)fluoranthene	mg/kg	<0.010 (1)	0.17 (1)	0.18 (1)	0.21 (1)	0.50 (1)	0.18 (1)	0.010	7722301
Benzo(b&j)fluoranthene	mg/kg	<0.010 (1)	0.27 (1)	0.28 (1)	0.33 (1)	0.83 (1)	0.28 (1)	0.010	7722301
Benzo(k)fluoranthene	mg/kg	<0.010 (1)	0.069 (1)	0.079 (1)	0.098 (1)	0.31 (1)	0.073 (1)	0.010	7722301
Benzo(a)pyrene	mg/kg	<0.010 (1)	0.15 (1)	0.16 (1)	0.21 (1)	0.67 (1)	0.17 (1)	0.010	7722301
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020 (1)	0.038 (1)	0.044 (1)	0.061 (1)	0.26 (1)	0.047 (1)	0.020	7722301
Dibenz(a,h)anthracene	mg/kg	<0.0050 (1)	0.027 (1)	0.025 (1)	0.033 (1)	0.10 (1)	0.030 (1)	0.0050	7722301
Benzo(g,h,i)perylene	mg/kg	<0.020 (1)	0.070 (1)	0.067 (1)	0.089 (1)	0.28 (1)	0.081 (1)	0.020	7722301
Low Molecular Weight PAH`s	mg/kg	0.12	12	8.9		10	13	0.010	7713593
High Molecular Weight PAH`s	mg/kg	0.047	3.1	3.8		7.9	3.2	0.010	7713593
Total PAH	mg/kg	0.17	15	13		18	17	0.010	7713593
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	87	70	79	78	78	67		7722301
D8-ACENAPHTHYLENE (sur.)	%	66	61	57	61	61	64		7722301
D8-NAPHTHALENE (sur.)	%	68	98	91	92	83	107		7722301
TERPHENYL-D14 (sur.)	%	79	80	82	83	84	83		7722301

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits raised due to dilution as a result of sample matrix inteference.

Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

CCME PAH IN SEDIMENTS BY GC-MS (SEDIMENT)

Maxxam ID		LC5376		LC5379		
Sampling Date		2014/11/06		2014/11/06		
COC Number		G089220		G089221		
	Units	**DUP1**	**RDL**	**14SED024@1.3**	**RDL**	**QC Batch**
Calculated Parameters						
Index of Additive Cancer Risk(IARC)	N/A	0.11	0.10	0.11	0.10	7714409
Benzo[a]pyrene equivalency	N/A	<0.10	0.10	<0.10	0.10	7714409
Polycyclic Aromatics						
Naphthalene	mg/kg	0.036 (1)	0.010	0.062 (1)	0.010	7722301
2-Methylnaphthalene	mg/kg	0.057 (1)	0.010	0.092 (1)	0.010	7722301
Acenaphthylene	mg/kg	<0.0050 (1)	0.0050	<0.0050 (1)	0.0050	7722301
Acenaphthene	mg/kg	0.0080 (1)	0.0050	<0.0081 (2)	0.0081	7722301
Fluorene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Phenanthrene	mg/kg	0.024 (1)	0.010	0.023 (1)	0.010	7722301
Anthracene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Fluoranthene	mg/kg	0.020 (1)	0.010	<0.010 (1)	0.010	7722301
Pyrene	mg/kg	0.021 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(a)anthracene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Chrysene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(b)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(b&j)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(k)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(a)pyrene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020 (1)	0.020	<0.020 (1)	0.020	7722301
Dibenz(a,h)anthracene	mg/kg	<0.0050 (1)	0.0050	<0.0050 (1)	0.0050	7722301
Benzo(g,h,i)perylene	mg/kg	<0.020 (1)	0.020	<0.020 (1)	0.020	7722301
Low Molecular Weight PAH`s	mg/kg	0.12	0.010	0.18	0.010	7713593
High Molecular Weight PAH`s	mg/kg	0.041	0.010	<0.010	0.010	7713593
Total PAH	mg/kg	0.17	0.010	0.18	0.010	7713593
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	99		91		7722301
D8-ACENAPHTHYLENE (sur.)	%	72		66		7722301
D8-NAPHTHALENE (sur.)	%	72		71		7722301
TERPHENYL-D14 (sur.)	%	87		84		7722301

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution as a result of sample matrix inteference.
(2) RDL raised due to sample matrix interference.

Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C

Results relate only to the items tested.

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Maxxam Job #: B4A2450
Report Date: 2014/11/18

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7722301	D10-ANTHRACENE (sur.)	2014/11/18	117	60 - 130	79	60 - 130	83	%		
7722301	D8-ACENAPHTHYLENE (sur.)	2014/11/18	88	50 - 130	75	50 - 130	79	%		
7722301	D8-NAPHTHALENE (sur.)	2014/11/18	137 (1)	50 - 130	74	50 - 130	78	%		
7722301	TERPHENYL-D14 (sur.)	2014/11/18	127	60 - 130	83	60 - 130	86	%		
7714474	Moisture	2014/11/13					<0.30	%	4.3	20
7722301	2-Methylnaphthalene	2014/11/18	NC	40 - 130	77	40 - 130	<0.0010	mg/kg	1.6 (2)	50
7722301	Acenaphthene	2014/11/18	NC	40 - 130	79	40 - 130	<0.00050	mg/kg	0.43 (2)	50
7722301	Acenaphthylene	2014/11/18	82	40 - 130	74	40 - 130	<0.00050	mg/kg	9.3 (2)	50
7722301	Anthracene	2014/11/18	NC	40 - 130	81	40 - 130	<0.0010	mg/kg	3.8 (2)	50
7722301	Benzo(a)anthracene	2014/11/18	NC	40 - 130	76	40 - 130	<0.0010	mg/kg	15 (2)	50
7722301	Benzo(a)pyrene	2014/11/18	93	40 - 130	77	40 - 130	<0.0010	mg/kg	28 (2)	50
7722301	Benzo(b&j)fluoranthene	2014/11/18	NC	40 - 130	82	40 - 130	<0.0010	mg/kg	18 (2)	50
7722301	Benzo(b)fluoranthene	2014/11/18	109	N/A			<0.0010	mg/kg	15 (2)	50
7722301	Benzo(g,h,i)perylene	2014/11/18	70	40 - 130	80	40 - 130	<0.0020	mg/kg	NC (2)	50
7722301	Benzo(k)fluoranthene	2014/11/18	87	40 - 130	76	40 - 130	<0.0010	mg/kg	22 (2)	50
7722301	Chrysene	2014/11/18	NC	40 - 130	79	40 - 130	<0.0010	mg/kg	16 (2)	50
7722301	Dibenz(a,h)anthracene	2014/11/18	87	40 - 130	69	40 - 130	<0.00050	mg/kg	NC (2)	50
7722301	Fluoranthene	2014/11/18	NC	40 - 130	81	40 - 130	<0.0010	mg/kg	12 (2)	50
7722301	Fluorene	2014/11/18	NC	40 - 130	75	40 - 130	<0.0010	mg/kg	5.3 (2)	50
7722301	Indeno(1,2,3-cd)pyrene	2014/11/18	75	40 - 130	76	40 - 130	<0.0020	mg/kg	NC (2)	50
7722301	Naphthalene	2014/11/18	NC	40 - 130	73	40 - 130	<0.0010	mg/kg	1.3 (2)	50
7722301	Phenanthrene	2014/11/18	NC	40 - 130	77	40 - 130	<0.0010	mg/kg	21 (2)	50

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Maxxam Job #: B4A2450
Report Date: 2014/11/18

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7722301	Pyrene	2014/11/18	NC	40 - 130	82	40 - 130	<0.0010	mg/kg	18 (2)	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Detection limits raised due to dilution as a result of sample matrix inteference.

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Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B4A2450

CHAIN OF CUSTODY RECORD

Page: 2 of 3

G 089220

Invoice To: Require Report? Yes ☑ No ☐

Company Name: Tetra Tech EBA
Contact Name: Lora Paul
Address: #1-4376 Boban Dr Nanaimo BC V9T 6A7
Phone / Fax#: 250 756 2256
E-mail: lora.paul@tetratech.com

Report To:

Company Name: Same
Contact Name:
Address:
PC:
Ph: Fax:
E-mail:

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: Sed. Drilling
Location: Port Drive
Sampled By: Shawneen Walker

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☒ CCME
- ☐ BC Water Quality
- ☐ Other
- ☐ DRINKING WATER

- ☒ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab)
- ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ Ship Sample Bottles (please specify) ☐

ANALYSIS REQUESTED

Analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N; Field Acidified? Y/N), Totals Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	PAH	HOLD
1	14Sed022@1.0	LC5366				X
2	@1.5	LC5367			X	
3	@2.0	LC5368				X
4	14Sed023@0.5	LC5369				X
5	14Sed023@1.0	LC5370				X
6	14Sed023@1.8	LC5371			X	
7	14Sed023-A	LC5372			X	
8	14Sed023-B	LC5373			X	
9	14Sed023-C	LC5374			X	
10	14Sed023-D	LC5375			X	
11	Dupl	LC5376			X	
12						

B4A2450

Samples are from a Drinking Water Source? YES ☐ NO ☐

Does source supply multiple households? YES ☐ NO ☐

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
S. Walker	14/11/07	13:30	DARIA IVANOVA	2014/11/08	10:20	☐	5, 5, 4	Yes ☐ No ☐ N/A

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

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Maxxam Job#: B4A2450

CHAIN OF CUSTODY RECORD

Page: 1 of 3

G 089219

Invoice To: Require Report? Yes ☒ No ☐

Company Name: Tetra Tech EBA
Contact Name: Lora Paul
Address: #1-4376 Boban Dr Nanaimo BC V9T 6A7
Phone / Fax#: 250 756-2256
E-mail: lora.paul@tetratech.com

Report To:

Company Name: same
Contact Name:
Address:
PC:
Ph: Fax:

PO #:	
Quotation #:	
Project #:	ENVIND03511-01.004
Proj. Name:	Sediment Drilling
Location:	Port Drive
Sampled By:	Shaineen Walker

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☒ CCME
- ☐ BC Water Quality
- ☐ Other
- ☐ DRINKING WATER

- ☒ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab) ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ **Ship Sample Bottles (please specify)** ☐

ANALYSIS REQUESTED

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH (MTBE)	VOC/VPH	EPH (TEH)	PAH (LEPH/HEPH)	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP (Phenols by GC/MS)	TOG (MOG, SWOG)	Dissolved Metals (Field Filtered? Y/N)	Metals (Field Acidified? Y/N)	Totals Metals Field Acidified? Y/N	Nitrate (Nitrite, Ammonia)	Chloride (Fluoride, Sulphate)	Total Suspended Solids-TSS (TDS)	pH (Conductivity, Alkalinity)	BOD	COD	Coliform, Total & E.coli (Fecal)	Asbestos	HOLD
								☒																		☒
1	14Sed019@0.5	LC5347																								X
2	14Sed019 @1.0	LC5348																								X
3	14Sed019 @1.1	LC5349						X																		
4	14Sed019 @1.5	LC5350																								X
5	14Sed020@0.5	LC5351																								
6	14Sed020 @1.0	LC5352						X																		
7	14Sed020 @1.5	LC5353																								X
8	14Sed021@0.5	LC5354																								X
9	14Sed021 @1.0	LC5355																								X
10	14Sed021 @1.5	LC5356						X																		
11	14Sed021 @2.0	LC5357																								X
12	14Sed022@0.5	LC5358																								X

B4A2450

Samples are from a Drinking Water Source? YES / NO

Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
[signature]	14/11/07	13:30	DARIA IVANOVA	2014/11/08	10:20

Laboratory Use Only

Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
☐	5, 5, 4	Yes ☐ No ☒

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

W/A

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B4A2450

CHAIN OF CUSTODY RECORD

Page: 3 of 3

G 089221

Invoice To: Require Report? Yes ☑ No ☐

Company Name: TetraTech EBA
Contact Name: Lora Paul
Address: #1-4376 Boban Dr
Nanaimo BC PC: V9T 6A7
Phone / Fax#: 250 756 2256
E-mail: lora.paul@tetratech.com

Report To:

Company Name: Same
Contact Name:
Address:
PC:
Ph: Fax:
E-mail

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: Sediment drilling
Location: Port Drive
Sampled By: Shawneen Walker

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☒ CCME
- ☐ BC Water Quality
- ☐ Other
- ☐ DRINKING WATER

- ☐ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab) ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ **Ship Sample Bottles (please specify)** ☐

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	PAH	HOLD
1	14Sed024@0.5	LC5377	Sed.	Nov 6/14		X
2	14Sed024@1.0	LC5378	"	"		X
3	14Sed024@1.3	LC5379	"	"	X	
4						
5						
6						
7						
8						
9						
10						
11						
12						

Analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH (☒), CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, SWOG, MOG, Dissolved Metals (Field Filtered? Y/N), Field Acidified? Y/N, Totals Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD (☒)

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

B4A2450

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
Walker	14/11/07	13:30	DARIA IVANOVA	2014/11/08	10:20

Laboratory Use Only

Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
	5, 5, 4	Yes / No — N/A

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

EBA INTERNAL QA/QC FOR LABORATORY RESULTS

Project File No: ENVIND03511-01.003 **Date:** October 2014/Nov. 2014

Project Description (report title): ENV. Invest. Remediation City of Nanaimo

Table(s) that this QA checklist addresses (list table numbers): Soil and Groundwater tables and Sediment

Laboratory Certificates Reviewed (list certificate numbers):

Report # R1686056, ~~R1680919~~, R1680717, R1658131, R1664809, R1672261
Maxxam job # B484263, B483023, B482450

Verification completed by: Mike Gallo	**Reviewed by:** Kristy Gabelhouse
Signature: [signature]	**Signature:** [signature]

Tasks		Issues Identified
1. Have all data in the report tables been confirmed with those in the laboratory certificates? Name of the individual who compiled the table(s): Data Mgmt Describe how data was originally entered into the tables: ☑ Electronically transferred from a spreadsheet file provided by the laboratory ☐ Other. Describe: ____ Describe how the data verification was achieved: ☐ Spot checking of data in tables with data in lab certificates (spot checking for all analyses) at a frequency of approximately ____% ☑ Checking all data in tables with data in lab certificates Describe any data not verified (or list 'none'): None	Y ☑ N ☐	
2. Have all samples and parameters analyzed been reported in the tables?	Y ☑ N ☐	
3. Are the results being compared to the correct applicable standards? Applicable Standards: CSR	Y ☑ N ☐	
4. Have the Standards in the report tables been compared with the published regulations (e.g. CSR) or other criteria? Minimum requirement: Every standard listed in the tables to be compared to the published regulation	Y ☑ N ☐	
5. Have the data in the report tables been highlighted where they exceed Standards? (including non-detect results, where the detection limit is greater than the Standard) Minimum requirement: Every data point listed in the tables to be compared to the Standards and highlighted where concentrations (or detection limits) are greater than the Standard.	Y ☑ N ☐	
6. Have Matrix Spikes been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
7. Have Laboratory Duplicates been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
8. Have Surrogate Compound Spike been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
FORMATTING		
9. Are the tables numbered correctly?	Y ☑ N ☐	
10. Are the headers and footers correct and formatted consistently?	Y ☑ N ☐	
11. Are the footnotes of the tables correct and appropriate for the table in which they follow?	Y ☑ N ☐	
12. Are the table borders formatted correctly?	Y ☑ N ☐	
13. Do the tables print correctly?	Y ☑ N ☐	

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A Bureau Veritas Group Company

Your Project #: ENVIN003511-01.004
Site#: SEDIMENT DRILLING
Site Location: PORT DRIVE
Your C.O.C. #: G089219, G089220, G089221

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/11/18
Report #: R1686056
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4A2450
Received: 2014/11/08, 10:20

Sample Matrix: Sediment
Samples Received: 11

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Moisture	11	N/A	2014/11/13	BBY8SOP-00017	OMOE E3139 3.1 m
Benzo[a]pyrene Equivalency	11	N/A	2014/11/18	BBY WI-00033	Auto Calc
PAH in Soil by GC/MS Lowlevel (Extended)	11	2014/11/12	2014/11/18	BBY8SOP-00022	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	11	N/A	2014/11/18	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
This report has been generated and distributed using a secure automated process.
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Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

PHYSICAL TESTING (SEDIMENT)

Maxxam ID		LC5349	LC5349	LC5352	LC5356	LC5367		
Sampling Date		2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06		
COC Number		G089219	G089219	G089219	G089219	G089220		
	Units	**14SED019@1.1**	**14SED019@1.1 Lab-Dup**	**14SED020@1.0**	**14SED021@1.5**	**14SED022@1.5**	**RDL**	**QC Batch**
Physical Properties								
Moisture	%	31	29	7.1	10	20	0.30	7714474
RDL = Reportable Detection Limit								
Lab-Dup = Laboratory Initiated Duplicate								

Maxxam ID		LC5371	LC5372	LC5373	LC5374	LC5375	LC5376		
Sampling Date		2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06		
COC Number		G089220	G089220	G089220	G089220	G089220	G089220		
	Units	**14SED023@1.8**	**14SED023-A**	**14SED023-B**	**14SED023-C**	**14SED023-D**	**DUP1**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	15	29	30	25	29	16	0.30	7714474
RDL = Reportable Detection Limit									

Maxxam ID		LC5379		
Sampling Date		2014/11/06		
COC Number		G089221		
	Units	**14SED024@1.3**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	19	0.30	7714474
RDL = Reportable Detection Limit				

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Maxxam Job #: B4A2450
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Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

CCME PAH IN SEDIMENTS BY GC-MS (SEDIMENT)

Maxxam ID		LC5349		LC5352	LC5356		LC5367		
Sampling Date		2014/11/06		2014/11/06	2014/11/06		2014/11/06		
COC Number		G089219		G089219	G089219		G089220		
	Units	**14SED019@1.1**	**RDL**	**14SED020@1.0**	**14SED021@1.5**	**RDL**	**14SED022@1.5**	**RDL**	**QC Batch**
Calculated Parameters									
Index of Additive Cancer Risk(IARC)	N/A	0.11	0.10	<0.10	<0.10	0.10	0.11	0.10	7714409
Benzo[a]pyrene equivalency	N/A	<0.10	0.10	<0.10	<0.10	0.10	<0.10	0.10	7714409
Polycyclic Aromatics									
Naphthalene	mg/kg	<0.010 (1)	0.010	0.0013	0.014	0.0010	0.023 (1)	0.010	7722301
2-Methylnaphthalene	mg/kg	0.010 (1)	0.010	0.0017	0.029	0.0010	0.045 (1)	0.010	7722301
Acenaphthylene	mg/kg	<0.0050 (1)	0.0050	<0.00050	<0.00050	0.00050	<0.0050 (1)	0.0050	7722301
Acenaphthene	mg/kg	<0.0050 (1)	0.0050	<0.00050	0.0075	0.00050	0.0057 (1)	0.0050	7722301
Fluorene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0041	0.0010	<0.010 (1)	0.010	7722301
Phenanthrene	mg/kg	0.011 (1)	0.010	0.0016	0.020	0.0010	0.023 (1)	0.010	7722301
Anthracene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0037	0.0010	<0.010 (1)	0.010	7722301
Fluoranthene	mg/kg	<0.010 (1)	0.010	0.0016	0.0061	0.0010	0.018 (1)	0.010	7722301
Pyrene	mg/kg	<0.010 (1)	0.010	0.0014	0.0066	0.0010	0.014 (1)	0.010	7722301
Benzo(a)anthracene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0041	0.0010	<0.010 (1)	0.010	7722301
Chrysene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0058	0.0010	<0.010 (1)	0.010	7722301
Benzo(b)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0026	0.0010	<0.010 (1)	0.010	7722301
Benzo(b&j)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0037	0.0010	<0.010 (1)	0.010	7722301
Benzo(k)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.0010	<0.0010	0.0010	<0.010 (1)	0.010	7722301
Benzo(a)pyrene	mg/kg	<0.010 (1)	0.010	<0.0010	0.0026	0.0010	<0.010 (1)	0.010	7722301
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020 (1)	0.020	<0.0020	<0.0020	0.0020	<0.020 (1)	0.020	7722301
Dibenz(a,h)anthracene	mg/kg	<0.0050 (1)	0.0050	<0.00050	<0.00050	0.00050	<0.0050 (1)	0.0050	7722301
Benzo(g,h,i)perylene	mg/kg	<0.020 (1)	0.020	<0.0020	0.0029	0.0020	<0.020 (1)	0.020	7722301
Low Molecular Weight PAH`s	mg/kg	0.021	0.010	0.0046	0.078	0.0010	0.097	0.010	7713593
High Molecular Weight PAH`s	mg/kg	<0.010	0.010	0.0030	0.025	0.0010	0.032	0.010	7713593
Total PAH	mg/kg	0.021	0.010	0.0076	0.10	0.0010	0.13	0.010	7713593
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	94		79	75		88		7722301
D8-ACENAPHTHYLENE (sur.)	%	68		72	68		64		7722301
D8-NAPHTHALENE (sur.)	%	77		70	68		72		7722301
TERPHENYL-D14 (sur.)	%	87		85	82		84		7722301

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution as a result of sample matrix inteference.

Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

CCME PAH IN SEDIMENTS BY GC-MS (SEDIMENT)

Maxxam ID		LC5371	LC5372	LC5373	LC5373	LC5374	LC5375		
Sampling Date		2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06	2014/11/06		
COC Number		G089220	G089220	G089220	G089220	G089220	G089220		
	Units	**14SED023@1.8**	**14SED023-A**	**14SED023-B**	**14SED023-B Lab-Dup**	**14SED023-C**	**14SED023-D**	**RDL**	**QC Batch**
Calculated Parameters									
Index of Additive Cancer Risk(IARC)	N/A	0.11	4.0	4.3		13	4.3	0.10	7714409
Benzo[a]pyrene equivalency	N/A	<0.10	0.26	0.27		1.0	0.29	0.10	7714409
Polycyclic Aromatics									
Naphthalene	mg/kg	0.034 (1)	3.3 (1)	2.2 (1)	2.3 (1)	1.7 (1)	3.6 (1)	0.010	7722301
2-Methylnaphthalene	mg/kg	0.058 (1)	5.3 (1)	3.4 (1)	3.5 (1)	2.7 (1)	5.9 (1)	0.010	7722301
Acenaphthylene	mg/kg	<0.0050 (1)	0.035 (1)	0.034 (1)	0.037 (1)	0.15 (1)	0.042 (1)	0.0050	7722301
Acenaphthene	mg/kg	0.011 (1)	0.83 (1)	0.66 (1)	0.66 (1)	0.49 (1)	0.86 (1)	0.0050	7722301
Fluorene	mg/kg	<0.010 (1)	0.61 (1)	0.63 (1)	0.67 (1)	0.68 (1)	0.65 (1)	0.010	7722301
Phenanthrene	mg/kg	0.022 (1)	1.7 (1)	1.4 (1)	1.7 (1)	3.0 (1)	1.8 (1)	0.010	7722301
Anthracene	mg/kg	<0.010 (1)	0.55 (1)	0.55 (1)	0.57 (1)	1.3 (1)	0.64 (1)	0.010	7722301
Fluoranthene	mg/kg	0.021 (1)	1.1 (1)	1.5 (1)	1.7 (1)	2.6 (1)	1.1 (1)	0.010	7722301
Pyrene	mg/kg	0.026 (1)	1.0 (1)	1.2 (1)	1.4 (1)	2.6 (1)	1.1 (1)	0.010	7722301
Benzo(a)anthracene	mg/kg	<0.010 (1)	0.38 (1)	0.43 (1)	0.50 (1)	0.94 (1)	0.41 (1)	0.010	7722301
Chrysene	mg/kg	<0.010 (1)	0.38 (1)	0.47 (1)	0.55 (1)	0.91 (1)	0.41 (1)	0.010	7722301
Benzo(b)fluoranthene	mg/kg	<0.010 (1)	0.17 (1)	0.18 (1)	0.21 (1)	0.50 (1)	0.18 (1)	0.010	7722301
Benzo(b&j)fluoranthene	mg/kg	<0.010 (1)	0.27 (1)	0.28 (1)	0.33 (1)	0.83 (1)	0.28 (1)	0.010	7722301
Benzo(k)fluoranthene	mg/kg	<0.010 (1)	0.069 (1)	0.079 (1)	0.098 (1)	0.31 (1)	0.073 (1)	0.010	7722301
Benzo(a)pyrene	mg/kg	<0.010 (1)	0.15 (1)	0.16 (1)	0.21 (1)	0.67 (1)	0.17 (1)	0.010	7722301
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020 (1)	0.038 (1)	0.044 (1)	0.061 (1)	0.26 (1)	0.047 (1)	0.020	7722301
Dibenz(a,h)anthracene	mg/kg	<0.0050 (1)	0.027 (1)	0.025 (1)	0.033 (1)	0.10 (1)	0.030 (1)	0.0050	7722301
Benzo(g,h,i)perylene	mg/kg	<0.020 (1)	0.070 (1)	0.067 (1)	0.089 (1)	0.28 (1)	0.081 (1)	0.020	7722301
Low Molecular Weight PAH`s	mg/kg	0.12	12	8.9		10	13	0.010	7713593
High Molecular Weight PAH`s	mg/kg	0.047	3.1	3.8		7.9	3.2	0.010	7713593
Total PAH	mg/kg	0.17	15	13		18	17	0.010	7713593
Surrogate Recovery (%)									
D10-ANTHRACENE (sur.)	%	87	70	79	78	78	67		7722301
D8-ACENAPHTHYLENE (sur.)	%	66	61	57	61	61	64		7722301
D8-NAPHTHALENE (sur.)	%	68	98	91	92	83	107		7722301
TERPHENYL-D14 (sur.)	%	79	80	82	83	84	83		7722301

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits raised due to dilution as a result of sample matrix inteference.

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Maxxam Job #: B4A2450
Report Date: 2014/11/18

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

CCME PAH IN SEDIMENTS BY GC-MS (SEDIMENT)

Maxxam ID		LC5376		LC5379		
Sampling Date		2014/11/06		2014/11/06		
COC Number		G089220		G089221		
	Units	**DUP1**	**RDL**	**14SED024@1.3**	**RDL**	**QC Batch**
Calculated Parameters						
Index of Additive Cancer Risk(IARC)	N/A	0.11	0.10	0.11	0.10	7714409
Benzo[a]pyrene equivalency	N/A	<0.10	0.10	<0.10	0.10	7714409
Polycyclic Aromatics						
Naphthalene	mg/kg	0.036 (1)	0.010	0.062 (1)	0.010	7722301
2-Methylnaphthalene	mg/kg	0.057 (1)	0.010	0.092 (1)	0.010	7722301
Acenaphthylene	mg/kg	<0.0050 (1)	0.0050	<0.0050 (1)	0.0050	7722301
Acenaphthene	mg/kg	0.0080 (1)	0.0050	<0.0081 (2)	0.0081	7722301
Fluorene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Phenanthrene	mg/kg	0.024 (1)	0.010	0.023 (1)	0.010	7722301
Anthracene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Fluoranthene	mg/kg	0.020 (1)	0.010	<0.010 (1)	0.010	7722301
Pyrene	mg/kg	0.021 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(a)anthracene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Chrysene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(b)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(b&j)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(k)fluoranthene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Benzo(a)pyrene	mg/kg	<0.010 (1)	0.010	<0.010 (1)	0.010	7722301
Indeno(1,2,3-cd)pyrene	mg/kg	<0.020 (1)	0.020	<0.020 (1)	0.020	7722301
Dibenz(a,h)anthracene	mg/kg	<0.0050 (1)	0.0050	<0.0050 (1)	0.0050	7722301
Benzo(g,h,i)perylene	mg/kg	<0.020 (1)	0.020	<0.020 (1)	0.020	7722301
Low Molecular Weight PAH`s	mg/kg	0.12	0.010	0.18	0.010	7713593
High Molecular Weight PAH`s	mg/kg	0.041	0.010	<0.010	0.010	7713593
Total PAH	mg/kg	0.17	0.010	0.18	0.010	7713593
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	99		91		7722301
D8-ACENAPHTHYLENE (sur.)	%	72		66		7722301
D8-NAPHTHALENE (sur.)	%	72		71		7722301
TERPHENYL-D14 (sur.)	%	87		84		7722301

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution as a result of sample matrix inteference.
(2) RDL raised due to sample matrix interference.

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C

Results relate only to the items tested.

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Maxxam Job #: B4A2450
Report Date: 2014/11/18

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7722301	D10-ANTHRACENE (sur.)	2014/11/18	117	60 - 130	79	60 - 130	83	%		
7722301	D8-ACENAPHTHYLENE (sur.)	2014/11/18	88	50 - 130	75	50 - 130	79	%		
7722301	D8-NAPHTHALENE (sur.)	2014/11/18	137 (1)	50 - 130	74	50 - 130	78	%		
7722301	TERPHENYL-D14 (sur.)	2014/11/18	127	60 - 130	83	60 - 130	86	%		
7714474	Moisture	2014/11/13					<0.30	%	4.3	20
7722301	2-Methylnaphthalene	2014/11/18	NC	40 - 130	77	40 - 130	<0.0010	mg/kg	1.6 (2)	50
7722301	Acenaphthene	2014/11/18	NC	40 - 130	79	40 - 130	<0.00050	mg/kg	0.43 (2)	50
7722301	Acenaphthylene	2014/11/18	82	40 - 130	74	40 - 130	<0.00050	mg/kg	9.3 (2)	50
7722301	Anthracene	2014/11/18	NC	40 - 130	81	40 - 130	<0.0010	mg/kg	3.8 (2)	50
7722301	Benzo(a)anthracene	2014/11/18	NC	40 - 130	76	40 - 130	<0.0010	mg/kg	15 (2)	50
7722301	Benzo(a)pyrene	2014/11/18	93	40 - 130	77	40 - 130	<0.0010	mg/kg	28 (2)	50
7722301	Benzo(b&j)fluoranthene	2014/11/18	NC	40 - 130	82	40 - 130	<0.0010	mg/kg	18 (2)	50
7722301	Benzo(b)fluoranthene	2014/11/18	109	N/A			<0.0010	mg/kg	15 (2)	50
7722301	Benzo(g,h,i)perylene	2014/11/18	70	40 - 130	80	40 - 130	<0.0020	mg/kg	NC (2)	50
7722301	Benzo(k)fluoranthene	2014/11/18	87	40 - 130	76	40 - 130	<0.0010	mg/kg	22 (2)	50
7722301	Chrysene	2014/11/18	NC	40 - 130	79	40 - 130	<0.0010	mg/kg	16 (2)	50
7722301	Dibenz(a,h)anthracene	2014/11/18	87	40 - 130	69	40 - 130	<0.00050	mg/kg	NC (2)	50
7722301	Fluoranthene	2014/11/18	NC	40 - 130	81	40 - 130	<0.0010	mg/kg	12 (2)	50
7722301	Fluorene	2014/11/18	NC	40 - 130	75	40 - 130	<0.0010	mg/kg	5.3 (2)	50
7722301	Indeno(1,2,3-cd)pyrene	2014/11/18	75	40 - 130	76	40 - 130	<0.0020	mg/kg	NC (2)	50
7722301	Naphthalene	2014/11/18	NC	40 - 130	73	40 - 130	<0.0010	mg/kg	1.3 (2)	50
7722301	Phenanthrene	2014/11/18	NC	40 - 130	77	40 - 130	<0.0010	mg/kg	21 (2)	50

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Report Date: 2014/11/18

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7722301	Pyrene	2014/11/18	NC	40 - 130	82	40 - 130	<0.0010	mg/kg	18 (2)	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Detection limits raised due to dilution as a result of sample matrix inteference.

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Tetra Tech EBA
Client Project #: ENVIN003511-01.004
Site Location: PORT DRIVE
Sampler Initials: SW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Maxxam Job#: B4A2450

CHAIN OF CUSTODY RECORD

Page: 2 of 3

G 089220

Invoice To: Require Report? Yes ✓ No

Company Name: Tetra Tech EBA
Contact Name: Lora Paul
Address: #1-4376 Boban Dr Nanaimo BC V9T 6A7
Phone / Fax#: 250 756 2256
E-mail: lora.paul@tetratech.com

Report To:

Company Name: same
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail:

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: Sed. Drilling
Location: Port Drive
Sampled By: Shawneen Walker

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [X] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH (MTBE)	VOC/VPH	EPH (TEH)	PAH (LEPH/HEPH)	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP / Phenols by GCMS	TOG / MOG / SWOG	Dissolved Metals (Field Filtered? Y N)	Field Acidified? Y N	Totals Metals Field Acidified? Y N	Nitrate / Nitrite / Ammonia	Chloride / Fluoride / Sulphate	Total Suspended Solids-TSS / TDS	pH / Conductivity / Alkalinity	BOD	COD	Coliform, Total & E.coli / Fecal	Asbestos	HOLD
1	14Sed022 @ 1.0	LC5366																								X
2	@ 1.5	LC5367						X																		
3	@ 2.0	LC5368																								X
4	14Sed023 @ 0.5	LC5369																								X
5	14Sed023 @ 1.0	LC5370																								X
6	14Sed023 @ 1.8	LC5371						X																		
7	14Sed023-A	LC5372						X																		
8	14Sed023-B	LC5373						X																		
9	14Sed023-C	LC5374						X																		
10	14Sed023-D	LC5375						X																		
11	Dupl	LC5376						X																		
12																										

B4A2450

Samples are from a Drinking Water Source? YES NO

Does source supply multiple households? YES NO

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
S. Walker	14/11/07	13:30	DARIA IVANOVA	2014/11/08	10:20		5, 5, 4	Yes No N/A

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B4A2450

CHAIN OF CUSTODY RECORD

Page: 1 of 3

G 089219

Invoice To: Require Report? Yes ☑ No ☐

Company Name: Tetra Tech EBA
Contact Name: Lora Paul
Address: #1-4376 Boban Dr Nanaimo BC V9T 6A7
Phone / Fax#: 250 756-2256
E-mail: lora.paul@tetratech.com

Report To:

Company Name: same
Contact Name:
Address:
PC:
Ph: Fax:

PO #:
Quotation #:
Project # ENVIND03511-01.004
Proj. Name: Sediment Drilling
Location: Port Drive
Sampled By: Shaineen Walker

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☒ CCME
- ☐ BC Water Quality
- ☐ Other
- ☐ DRINKING WATER

- ☒ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab) ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ Ship Sample Bottles (please specify) ☐

ANALYSIS REQUESTED

Columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GC/MS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y / N), Metals (Field Acidified? Y / N), Totals Metals Field Acidified? (Y / N), Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	PAH	HOLD
1	14Sed019 @0.5	LC5347				X
2	14Sed019 @1.0	LC5348				X
3	14Sed019 @1.1	LC5349			X	
4	14Sed019 @1.5	LC5350				X
5	14Sed020 @0.5	LC5351				
6	14Sed020 @1.0	LC5352			X	
7	14Sed020 @1.5	LC5353				X
8	14Sed021 @0.5	LC5354				X
9	14Sed021 @1.0	LC5355				X
10	14Sed021 @1.5	LC5356			X	
11	14Sed021 @2.0	LC5357				X
12	14Sed022 @0.5	LC5358				X

B4A2450

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
[signature]	14/11/07	13:30	DARIA IVANOVA	2014/11/08	10:20

Laboratory Use Only
Time Sensitive ☐
Temperature on Receipt (°C): 5,5,4
Custody Seal Intact on Cooler? Yes ☐ No ☐

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

W/A

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B4A2450

CHAIN OF CUSTODY RECORD

Page: 3 of 3

G 089221

Invoice To: Require Report? Yes ✓ No

Company Name: TetraTech EBA
Contact Name: Lora Paul
Address: #1-4376 Boban Dr Nanaimo BC PC: V9T 6A7
Phone / Fax#: 250 756 2256
E-mail: lora.paul@tetratech.com

Report To:

Company Name: Same
Contact Name:
Address:
PC:
Ph: Fax:
E-mail

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: Sediment drilling
Location: Port Drive
Sampled By: Shawneen Walker

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [X] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [ ] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH	VOC/VPH	EPH	PAH	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP	TOG	Dissolved Metals	Totals Metals Field Acidified?	Nitrate	Chloride	Total Suspended Solids-TSS	pH	BOD	COD	Coliform, Total & E.coli	Asbestos	HOLD
1	14Sed024@0.5	LC5377	Sed.	Nov 6/14																					X
2	14Sed024@1.0	LC5378	"	"																					X
3	14Sed024@1.3	LC5379	"	"				X																	
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

Additional analysis column headings: MTBE, TEH, LEPH/HEPH, Phenols by GCMS, SWOG, MOG, Field Filtered? Y/N, Field Acidified? Y/N, Y/N, Ammonia, Sulphate, Nitrite, Fluoride, TDS, Alkalinity, Conductivity, Fecal.

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

B4A2450

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
S Walker	14/11/07	13:30	DARIA IVANOVA	2014/11/08	10:20		5,5,4	Yes / No — N/A

Laboratory Use Only

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (06/10)

Maxxam International Corporation o/a Maxxam Analytics

Your Project #: ENVIND03511-001.004
Site Location: CON
Your C.O.C. #: 454578-01-01

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/12/01
Report #: R1694493
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4A6528
Received: 2014/11/22, 10:00

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Phenols in Water by GCMS	1	2014/11/27	2014/11/27	BBY8SOP-00025	EPA 8270d R4
Hardness (calculated as CaCO3)	1	N/A	2014/11/28	BBY7SOP-00002	EPA 6020a R1 m
Extrac. Pet HC when LEPH/HEPH required	3	2014/11/24	2014/11/25	BBY8SOP-00029	BCMOE EPH w 12/00 m
Extrac. Pet HC when LEPH/HEPH required	1	2014/11/24	2014/11/26	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2014/11/28	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	1	N/A	2014/11/27	BBY7SOP-00002	EPA 6020A R1 m
PAH in Water by GC/MS (SIM)	2	2014/11/24	2014/11/25	BBY8SOP-00021	EPA 8270d R4 m
PAH in Water by GC/MS (SIM)	1	2014/11/24	2014/11/27	BBY8SOP-00021	EPA 8270d R4 m
PAH in Water by GC/MS (SIM)	1	2014/11/27	2014/11/28	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	2	N/A	2014/11/26	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	1	N/A	2014/11/27	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	1	N/A	2014/11/28	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	1	N/A	2014/11/27	BBY7 WI-00004	BCMOE Reqs 08/14
Total Chlorinated Phenols Water Calc.	1	2014/11/24	2014/11/30	BBY8SOP-00025	EPA 8270d R4
EPH less PAH in Water by GC/FID	2	N/A	2014/11/26	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	1	N/A	2014/11/27	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	1	N/A	2014/11/28	BBY WI-00033	Auto Calc
Extrac. Petroleum HC in Water by GC/FID	1	2014/11/25	2014/11/25	BBY8SOP-00029	BCMOE EPH w 07/99 m
VOCs, VH, F1, LH in Water by HS GC/MS	2	2014/11/27	2014/11/28	BBY8SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	2	N/A	2014/11/28	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: ENVIND03511-001.004
Site Location: CON
Your C.O.C. #: 454578-01-01

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/12/01
Report #: R1694493
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4A6528
Received: 2014/11/22, 10:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		LF2254	
Sampling Date		2014/11/21	
COC Number		454578-01-01	
	Units	**14MW29**	**QC Batch**
Calculated Parameters			
Filter and HNO3 Preservation	N/A	FIELD	ONSITE

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LF2255		
Sampling Date		2014/11/20		
COC Number		454578-01-01		
	Units	14MW35	RDL	QC Batch
Phenols				
Total Monochlorophenols	ug/L	<0.10	0.10	7730862
Total Dichlorophenols	ug/L	<0.10	0.10	7730862
Total Trichlorophenols	ug/L	<0.10	0.10	7730862
Total Tetrachlorophenols	ug/L	<0.10	0.10	7730862
Total Chlorophenols	ug/L	<0.10	0.10	7730862
SEMI-VOLATILE ORGANICS				
2-chlorophenol	ug/L	<0.10	0.10	7734065
3 & 4-chlorophenol	ug/L	<0.10	0.10	7734065
2,4 + 2,5-Dichlorophenol	ug/L	<0.10	0.10	7734065
2,3-Dichlorophenol	ug/L	<0.10	0.10	7734065
2,6-dichlorophenol	ug/L	<0.10	0.10	7734065
3,5-Dichlorophenol	ug/L	<0.10	0.10	7734065
3,4-Dichlorophenol	ug/L	<0.10	0.10	7734065
2,4,5-trichlorophenol	ug/L	<0.10	0.10	7734065
2,4,6-trichlorophenol	ug/L	<0.10	0.10	7734065
2,3,5-trichlorophenol	ug/L	<0.10	0.10	7734065
2,3,6-Trichlorophenol	ug/L	<0.10	0.10	7734065
2,3,4-trichlorophenol	ug/L	<0.10	0.10	7734065
3,4,5-Trichlorophenol	ug/L	<0.10	0.10	7734065
2,3,4,6-tetrachlorophenol	ug/L	<0.10	0.10	7734065
2,3,4,5-tetrachlorophenol	ug/L	<0.10	0.10	7734065
2,3,5,6-tetrachlorophenol	ug/L	<0.10	0.10	7734065
Pentachlorophenol	ug/L	<0.10	0.10	7734065
Surrogate Recovery (%)				
2,4,6-TRIBROMOPHENOL (sur.)	%	74		7734065
2-FLUOROPHENOL (sur.)	%	32		7734065
RDL = Reportable Detection Limit				

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

TOTAL PETROLEUM HYDROCARBONS (WATER)

Maxxam ID		LF2258		
Sampling Date		2014/11/20		
COC Number		454578-01-01		
	Units	**DUP4**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
EPH (C10-C19)	mg/L	<0.20	0.20	7731373
EPH (C19-C32)	mg/L	<0.20	0.20	7731373
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	107		7731373
RDL = Reportable Detection Limit				

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		LF2252		LF2253			LF2254		
Sampling Date		2014/11/20		2014/11/20			2014/11/21		
COC Number		454578-01-01		454578-01-01			454578-01-01		
	Units	14MW26	RDL	14MW27	RDL	QC Batch	14MW29	RDL	QC Batch
Polycyclic Aromatics									
Low Molecular Weight PAH`s	ug/L	<0.24	0.24	<0.40	0.40	7729779	0.27	0.24	7729779
High Molecular Weight PAH`s	ug/L	<0.050	0.050	<0.050	0.050	7729779	<0.050	0.050	7729779
Total PAH	ug/L	<0.24	0.24	<0.40	0.40	7729779	0.27	0.24	7729779
Naphthalene	ug/L	<0.10	0.10	<0.10	0.10	7730785	0.13	0.10	7734545
2-Methylnaphthalene	ug/L	<0.10	0.10	<0.10	0.10	7730785	0.14	0.10	7734545
Quinoline	ug/L	<0.24	0.24	<0.40 (1)	0.40	7730785	<0.24	0.24	7734545
Acenaphthylene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Acenaphthene	ug/L	<0.050	0.050	<0.15 (1)	0.15	7730785	<0.050	0.050	7734545
Fluorene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Phenanthrene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Anthracene	ug/L	<0.010	0.010	<0.020 (1)	0.020	7730785	<0.010	0.010	7734545
Acridine	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Fluoranthene	ug/L	<0.020	0.020	<0.020	0.020	7730785	<0.020	0.020	7734545
Pyrene	ug/L	<0.020	0.020	<0.020	0.020	7730785	<0.020	0.020	7734545
Benzo(a)anthracene	ug/L	<0.010	0.010	<0.010	0.010	7730785	<0.010	0.010	7734545
Chrysene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Benzo(k)fluoranthene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Benzo(a)pyrene	ug/L	<0.0090	0.0090	<0.0090	0.0090	7730785	<0.0090	0.0090	7734545
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	<0.050	0.050	7730785	<0.050	0.050	7734545
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	<0.20	0.20	7729781	<0.20	0.20	7729781
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.20	<0.20	0.20	7729781	<0.20	0.20	7729781
Ext. Pet. Hydrocarbon									
EPH (C10-C19)	mg/L	<0.20	0.20	<0.20	0.20	7730792	<0.20	0.20	7730792
EPH (C19-C32)	mg/L	<0.20	0.20	<0.20	0.20	7730792	<0.20	0.20	7730792
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	107		108		7730792	108		7730792
D10-ANTHRACENE (sur.)	%	99		97		7730785	105		7734545
D8-ACENAPHTHYLENE (sur.)	%	93		89		7730785	102		7734545
D8-NAPHTHALENE (sur.)	%	83		79		7730785	96		7734545
D9-Acridine	%	84		82		7730785	64		7734545

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		LF2252		LF2253			LF2254		
Sampling Date		2014/11/20		2014/11/20			2014/11/21		
COC Number		454578-01-01		454578-01-01			454578-01-01		
	Units	**14MW26**	**RDL**	**14MW27**	**RDL**	**QC Batch**	**14MW29**	**RDL**	**QC Batch**
TERPHENYL-D14 (sur.)	%	70		60		7730785	61		7734545
RDL = Reportable Detection Limit									

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		LF2257		
Sampling Date		2014/11/21		
COC Number		454578-01-01		
	Units	**MW00-07**	**RDL**	**QC Batch**
Polycyclic Aromatics				
Low Molecular Weight PAH`s	ug/L	<0.24	0.24	7729779
High Molecular Weight PAH`s	ug/L	<0.050	0.050	7729779
Total PAH	ug/L	<0.24	0.24	7729779
Naphthalene	ug/L	<0.10	0.10	7733310
2-Methylnaphthalene	ug/L	<0.10	0.10	7733310
Quinoline	ug/L	<0.24	0.24	7733310
Acenaphthylene	ug/L	<0.050	0.050	7733310
Acenaphthene	ug/L	<0.050	0.050	7733310
Fluorene	ug/L	<0.050	0.050	7733310
Phenanthrene	ug/L	<0.050	0.050	7733310
Anthracene	ug/L	<0.010	0.010	7733310
Acridine	ug/L	<0.050	0.050	7733310
Fluoranthene	ug/L	<0.020	0.020	7733310
Pyrene	ug/L	<0.020	0.020	7733310
Benzo(a)anthracene	ug/L	<0.010	0.010	7733310
Chrysene	ug/L	<0.050	0.050	7733310
Benzo(b&j)fluoranthene	ug/L	<0.050	0.050	7733310
Benzo(k)fluoranthene	ug/L	<0.050	0.050	7733310
Benzo(a)pyrene	ug/L	<0.0090	0.0090	7733310
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	7733310
Dibenz(a,h)anthracene	ug/L	<0.050	0.050	7733310
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	7733310
Calculated Parameters				
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	7729781
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.20	7729781
Ext. Pet. Hydrocarbon				
EPH (C10-C19)	mg/L	<0.20	0.20	7733312
EPH (C19-C32)	mg/L	<0.20	0.20	7733312
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	107		7733312
D10-ANTHRACENE (sur.)	%	107		7733310
D8-ACENAPHTHYLENE (sur.)	%	104		7733310
D8-NAPHTHALENE (sur.)	%	101		7733310
D9-Acridine	%	88		7733310
TERPHENYL-D14 (sur.)	%	84		7733310
RDL = Reportable Detection Limit				

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

CSR DISSOLVED METALS IN WATER (WATER)

Maxxam ID		LF2254		
Sampling Date		2014/11/21		
COC Number		454578-01-01		
	Units	**14MW29**	**RDL**	**QC Batch**
Misc. Inorganics				
Dissolved Hardness (CaCO3)	mg/L	2610	0.50	7729776
Dissolved Metals by ICPMS				
Dissolved Aluminum (Al)	ug/L	<12	12	7733410
Dissolved Antimony (Sb)	ug/L	<2.0	2.0	7733410
Dissolved Arsenic (As)	ug/L	0.90	0.40	7733410
Dissolved Barium (Ba)	ug/L	91.0	4.0	7733410
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	7733410
Dissolved Bismuth (Bi)	ug/L	<4.0	4.0	7733410
Dissolved Boron (B)	ug/L	2260	200	7733410
Dissolved Cadmium (Cd)	ug/L	0.347	0.040	7733410
Dissolved Chromium (Cr)	ug/L	<4.0	4.0	7733410
Dissolved Cobalt (Co)	ug/L	2.3	2.0	7733410
Dissolved Copper (Cu)	ug/L	1.43	0.80	7733410
Dissolved Iron (Fe)	ug/L	<20	20	7733410
Dissolved Lead (Pb)	ug/L	<0.80	0.80	7733410
Dissolved Lithium (Li)	ug/L	76	20	7733410
Dissolved Manganese (Mn)	ug/L	910	4.0	7733410
Dissolved Mercury (Hg)	ug/L	<0.20	0.20	7733410
Dissolved Molybdenum (Mo)	ug/L	5.3	4.0	7733410
Dissolved Nickel (Ni)	ug/L	49.6	4.0	7733410
Dissolved Selenium (Se)	ug/L	0.45	0.40	7733410
Dissolved Silicon (Si)	ug/L	4450	400	7733410
Dissolved Silver (Ag)	ug/L	<0.080	0.080	7733410
Dissolved Strontium (Sr)	ug/L	3410	4.0	7733410
Dissolved Thallium (Tl)	ug/L	<0.20	0.20	7733410
Dissolved Tin (Sn)	ug/L	<20	20	7733410
Dissolved Titanium (Ti)	ug/L	<20	20	7733410
Dissolved Uranium (U)	ug/L	1.35	0.40	7733410
Dissolved Vanadium (V)	ug/L	<20	20	7733410
Dissolved Zinc (Zn)	ug/L	<20	20	7733410
Dissolved Zirconium (Zr)	ug/L	<2.0	2.0	7733410
Dissolved Calcium (Ca)	mg/L	218	0.20	7729777
Dissolved Magnesium (Mg)	mg/L	500	0.20	7729777
Dissolved Potassium (K)	mg/L	147	0.20	7729777
Dissolved Sodium (Na)	mg/L	4060	0.20	7729777
RDL = Reportable Detection Limit				

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

CSR DISSOLVED METALS IN WATER (WATER)

Maxxam ID		LF2254		
Sampling Date		2014/11/21		
COC Number		454578-01-01		
	Units	**14MW29**	**RDL**	**QC Batch**
Dissolved Sulphur (S)	mg/L	404	12	7729777
RDL = Reportable Detection Limit				

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		LF2255		LF2256		
Sampling Date		2014/11/20		2014/11/20		
COC Number		454578-01-01		454578-01-01		
	Units	14MW35	RDL	14MW10	RDL	QC Batch
Volatiles						
VPH (VH6 to 10 - BTEX)	ug/L	<300	300	<300	300	7729782
Chloromethane	ug/L	<1.0	1.0	<1.0	1.0	7734853
Vinyl chloride	ug/L	<0.50	0.50	<0.50	0.50	7734853
Chloroethane	ug/L	<1.0	1.0	<1.0	1.0	7734853
Trichlorofluoromethane	ug/L	<4.0	4.0	<4.0	4.0	7734853
1,1,2Trichloro-1,2,2Trifluoroethane	ug/L	<2.0	2.0	<2.0	2.0	7734853
Dichlorodifluoromethane	ug/L	<2.0	2.0	<2.0	2.0	7734853
1,1-dichloroethene	ug/L	<0.50	0.50	<0.50	0.50	7734853
Dichloromethane	ug/L	<2.0	2.0	<2.0	2.0	7734853
trans-1,2-dichloroethene	ug/L	<1.0	1.0	<1.0	1.0	7734853
1,1-dichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7734853
cis-1,2-dichloroethene	ug/L	<1.0	1.0	<1.0	1.0	7734853
Chloroform	ug/L	<1.0	1.0	<1.0	1.0	7734853
1,1,1-trichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7734853
1,2-dichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7734853
Carbon tetrachloride	ug/L	<0.50	0.50	<0.50	0.50	7734853
Benzene	ug/L	<0.40	0.40	<0.40	0.40	7734853
Methyl-tert-butylether (MTBE)	ug/L	<4.0	4.0	<4.0	4.0	7734853
1,2-dichloropropane	ug/L	<0.50	0.50	<0.50	0.50	7734853
cis-1,3-dichloropropene	ug/L	<1.0	1.0	<1.0	1.0	7734853
trans-1,3-dichloropropene	ug/L	<1.0	1.0	<1.1 (1)	1.1	7734853
Bromomethane	ug/L	<1.0	1.0	<1.0	1.0	7734853
1,1,2-trichloroethane	ug/L	<0.50	0.50	<0.50	0.50	7734853
Trichloroethene	ug/L	<0.50	0.50	<0.50	0.50	7734853
Chlorodibromomethane	ug/L	<1.0	1.0	<1.0	1.0	7734853
1,2-dibromoethane	ug/L	<0.20	0.20	<0.20	0.20	7734853
1,3-Butadiene	ug/L	<5.0	5.0	<5.0	5.0	7734853
Tetrachloroethene	ug/L	<0.50	0.50	<0.50	0.50	7734853
Bromodichloromethane	ug/L	<1.0	1.0	<1.0	1.0	7734853
Toluene	ug/L	<0.40	0.40	<0.40	0.40	7734853
Ethylbenzene	ug/L	<0.40	0.40	3.5	0.40	7734853
m & p-Xylene	ug/L	<0.40	0.40	20	0.40	7734853
Bromoform	ug/L	<1.0	1.0	<1.0	1.0	7734853
Styrene	ug/L	<0.50	0.50	<0.50	0.50	7734853

RDL = Reportable Detection Limit
(1) RDL raised due to sample matrix interference.

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

CSR VOC + VPH IN WATER (WATER)

Maxxam ID		LF2255		LF2256		
Sampling Date		2014/11/20		2014/11/20		
COC Number		454578-01-01		454578-01-01		
	Units	**14MW35**	**RDL**	**14MW10**	**RDL**	**QC Batch**
o-Xylene	ug/L	<0.40	0.40	8.2	0.40	7734853
Xylenes (Total)	ug/L	<0.40	0.40	28	0.40	7734853
1,1,1,2-tetrachloroethane	ug/L	<0.50	0.50	<0.50	0.50	7734853
1,1,2,2-tetrachloroethane	ug/L	<0.50	0.50	<0.50	0.50	7734853
1,2-dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7734853
1,3-dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7734853
1,4-dichlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7734853
Chlorobenzene	ug/L	<0.50	0.50	<0.50	0.50	7734853
1,3,5-trimethylbenzene	ug/L	<2.0	2.0	7.6	2.0	7734853
1,2,4-trimethylbenzene	ug/L	<2.0	2.0	110	2.0	7734853
Hexane	ug/L	<2.0	2.0	<2.0	2.0	7734853
n-Decane	ug/L	<29 (1)	29	<29 (1)	29	7734853
Isopropylbenzene	ug/L	<2.0	2.0	<2.4 (2)	2.4	7734853
Methylcyclohexane	ug/L	<2.0	2.0	<2.0	2.0	7734853
1,2,3-trichlorobenzene	ug/L	<2.0	2.0	<2.0	2.0	7734853
1,2,4-trichlorobenzene	ug/L	<2.0	2.0	<2.0	2.0	7734853
Hexachlorobutadiene	ug/L	<0.50	0.50	<0.50	0.50	7734853
VH C6-C10	ug/L	<300	300	<300	300	7734853
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	79		99		7734853
4-Bromofluorobenzene (sur.)	%	81		84		7734853
D4-1,2-Dichloroethane (sur.)	%	99		100		7734853

RDL = Reportable Detection Limit
(1) RDL raised due to background artifacts detected in analysis
(2) RDL raised due to sample matrix interference.

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.7°C

Sample LF2254-01 : Effective October 1, 2013, the BC MOE SAMPLE PRESERVATION & HOLDING TIME REQUIREMENTS states that Mercury in water requires a glass or PTFE container with Hydrochloric Acid (HCl) preservation. Sample container and preservation received was not in compliance. Maxxam added HCl to stabilize Mercury in this sample prior to analysis.

CSR DISSOLVED METALS IN WATER (WATER) Comments

Sample LF2254-02 Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference sample dilution required

Results relate only to the items tested.

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B4A6528
Report Date: 2014/12/01

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7730785	D10-ANTHRACENE (sur.)	2014/11/25	103	60 - 130	101	60 - 130	99	%		
7730785	D8-ACENAPHTHYLENE (sur.)	2014/11/25	97	50 - 130	93	50 - 130	93	%		
7730785	D8-NAPHTHALENE (sur.)	2014/11/25	92	50 - 130	87	50 - 130	89	%		
7730785	D9-Acridine	2014/11/25	87	50 - 130	85	50 - 130	77	%		
7730785	TERPHENYL-D14 (sur.)	2014/11/25	69	60 - 130	93	60 - 130	89	%		
7730792	O-TERPHENYL (sur.)	2014/11/25	109	50 - 130	109	50 - 130	109	%		
7731373	O-TERPHENYL (sur.)	2014/11/25	107	50 - 130	108	50 - 130	108	%		
7733310	D10-ANTHRACENE (sur.)	2014/11/27	114	60 - 130	114	60 - 130	120	%		
7733310	D8-ACENAPHTHYLENE (sur.)	2014/11/27	112	50 - 130	105	50 - 130	116	%		
7733310	D8-NAPHTHALENE (sur.)	2014/11/27	109	50 - 130	96	50 - 130	110	%		
7733310	D9-Acridine	2014/11/27	101	50 - 130	95	50 - 130	93	%		
7733310	TERPHENYL-D14 (sur.)	2014/11/27	90	60 - 130	107	60 - 130	111	%		
7733312	O-TERPHENYL (sur.)	2014/11/26	110	50 - 130	110	50 - 130	108	%		
7734065	2,4,6-TRIBROMOPHENOL (sur.)	2014/11/27			78	10 - 123	84	%		
7734065	2-FLUOROPHENOL (sur.)	2014/11/27			24	21 - 100	29	%		
7734545	D10-ANTHRACENE (sur.)	2014/11/28	102	60 - 130	110	60 - 130	119	%		
7734545	D8-ACENAPHTHYLENE (sur.)	2014/11/28	97	50 - 130	102	50 - 130	108	%		
7734545	D8-NAPHTHALENE (sur.)	2014/11/28	93	50 - 130	96	50 - 130	98	%		
7734545	D9-Acridine	2014/11/28	87	50 - 130	91	50 - 130	92	%		
7734545	TERPHENYL-D14 (sur.)	2014/11/28	67	60 - 130	100	60 - 130	109	%		
7734853	1,4-Difluorobenzene (sur.)	2014/11/28	84	70 - 130	86	70 - 130	78	%		
7734853	4-Bromofluorobenzene (sur.)	2014/11/28	91	70 - 130	92	70 - 130	79	%		
7734853	D4-1,2-Dichloroethane (sur.)	2014/11/28	108	70 - 130	105	70 - 130	97	%		
7730785	2-Methylnaphthalene	2014/11/25	57	50 - 130	56	50 - 130	<0.10	ug/L	NC	40
7730785	Acenaphthene	2014/11/25	77	50 - 130	77	50 - 130	<0.050	ug/L	NC	40
7730785	Acenaphthylene	2014/11/25	76	50 - 130	75	50 - 130	<0.050	ug/L	NC	40
7730785	Acridine	2014/11/25	80	50 - 130	81	50 - 130	<0.050	ug/L	NC	40
7730785	Anthracene	2014/11/25	93	60 - 130	94	60 - 130	<0.010	ug/L	NC	40
7730785	Benzo(a)anthracene	2014/11/25	70	60 - 130	82	60 - 130	<0.010	ug/L	NC	40
7730785	Benzo(a)pyrene	2014/11/25	75	60 - 130	90	60 - 130	<0.0090	ug/L	NC	40
7730785	Benzo(b&j)fluoranthene	2014/11/25	68	60 - 130	88	60 - 130	<0.050	ug/L	NC	40
7730785	Benzo(g,h,i)perylene	2014/11/25	74	60 - 130	87	60 - 130	<0.050	ug/L	NC	40

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7730785	Benzo(k)fluoranthene	2014/11/25	73	60 - 130	85	60 - 130	<0.050	ug/L	NC	40
7730785	Chrysene	2014/11/25	73	60 - 130	84	60 - 130	<0.050	ug/L	NC	40
7730785	Dibenz(a,h)anthracene	2014/11/25	74	60 - 130	86	60 - 130	<0.050	ug/L	NC	40
7730785	Fluoranthene	2014/11/25	84	60 - 130	87	60 - 130	<0.020	ug/L	NC	40
7730785	Fluorene	2014/11/25	82	50 - 130	82	50 - 130	<0.050	ug/L	NC	40
7730785	Indeno(1,2,3-cd)pyrene	2014/11/25	76	60 - 130	90	60 - 130	<0.050	ug/L	NC	40
7730785	Naphthalene	2014/11/25	65	50 - 130	64	50 - 130	<0.10	ug/L	NC	40
7730785	Phenanthrene	2014/11/25	87	60 - 130	86	60 - 130	<0.050	ug/L	NC	40
7730785	Pyrene	2014/11/25	86	60 - 130	89	60 - 130	<0.020	ug/L	NC	40
7730785	Quinoline	2014/11/25	112	50 - 130	118	50 - 130	<0.24	ug/L	NC	40
7730792	EPH (C10-C19)	2014/11/25	99	50 - 130	93	50 - 130	<0.20	mg/L	NC	30
7730792	EPH (C19-C32)	2014/11/25	110	50 - 130	101	50 - 130	<0.20	mg/L	NC	30
7731373	EPH (C10-C19)	2014/11/25	99	50 - 130	98	50 - 130	<0.20	mg/L		
7731373	EPH (C19-C32)	2014/11/25	106	50 - 130	105	50 - 130	<0.20	mg/L		
7733310	2-Methylnaphthalene	2014/11/27	114	50 - 130	86	50 - 130	<0.10	ug/L	NC	40
7733310	Acenaphthene	2014/11/27	117	50 - 130	97	50 - 130	<0.050	ug/L	1.2	40
7733310	Acenaphthylene	2014/11/27	113	50 - 130	93	50 - 130	<0.050	ug/L	NC	40
7733310	Acridine	2014/11/27	106	50 - 130	86	50 - 130	<0.050	ug/L	NC	40
7733310	Anthracene	2014/11/27	118	60 - 130	101	60 - 130	<0.010	ug/L	NC (1)	40
7733310	Benzo(a)anthracene	2014/11/27	94	60 - 130	86	60 - 130	<0.010	ug/L	NC	40
7733310	Benzo(a)pyrene	2014/11/27	99	60 - 130	95	60 - 130	<0.0090	ug/L	NC	40
7733310	Benzo(b&j)fluoranthene	2014/11/27	95	60 - 130	93	60 - 130	<0.050	ug/L	NC	40
7733310	Benzo(g,h,i)perylene	2014/11/27	93	60 - 130	90	60 - 130	<0.050	ug/L	NC	40
7733310	Benzo(k)fluoranthene	2014/11/27	95	60 - 130	90	60 - 130	<0.050	ug/L	NC	40
7733310	Chrysene	2014/11/27	94	60 - 130	87	60 - 130	<0.050	ug/L	NC	40
7733310	Dibenz(a,h)anthracene	2014/11/27	92	60 - 130	90	60 - 130	<0.050	ug/L	NC	40
7733310	Fluoranthene	2014/11/27	109	60 - 130	94	60 - 130	<0.020	ug/L	NC	40
7733310	Fluorene	2014/11/27	111	50 - 130	94	50 - 130	<0.050	ug/L	0.67	40
7733310	Indeno(1,2,3-cd)pyrene	2014/11/27	96	60 - 130	94	60 - 130	<0.050	ug/L	NC	40
7733310	Naphthalene	2014/11/27	114	50 - 130	83	50 - 130	<0.10	ug/L	NC (1)	40
7733310	Phenanthrene	2014/11/27	110	60 - 130	91	60 - 130	<0.050	ug/L	NC	40
7733310	Pyrene	2014/11/27	110	60 - 130	95	60 - 130	<0.020	ug/L	NC	40

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7733310	Quinoline	2014/11/27	112	50 - 130	107	50 - 130	<0.24	ug/L	NC (1)	40
7733312	EPH (C10-C19)	2014/11/26	82	50 - 130	95	50 - 130	<0.20	mg/L	NC	30
7733312	EPH (C19-C32)	2014/11/26	91	50 - 130	108	50 - 130	<0.20	mg/L	NC	30
7733410	Dissolved Aluminum (Al)	2014/11/27	107	80 - 120	106	80 - 120	<3.0	ug/L	NC	20
7733410	Dissolved Antimony (Sb)	2014/11/27	NC	80 - 120	102	80 - 120	<0.50	ug/L	NC	20
7733410	Dissolved Arsenic (As)	2014/11/27	107	80 - 120	111	80 - 120	<0.10	ug/L	NC	20
7733410	Dissolved Barium (Ba)	2014/11/27	NC	80 - 120	104	80 - 120	<1.0	ug/L	5.0	20
7733410	Dissolved Beryllium (Be)	2014/11/27	111	80 - 120	105	80 - 120	<0.10	ug/L	NC	20
7733410	Dissolved Bismuth (Bi)	2014/11/27	111	80 - 120	109	80 - 120	<1.0	ug/L	NC	20
7733410	Dissolved Boron (B)	2014/11/27					<50	ug/L	NC	20
7733410	Dissolved Cadmium (Cd)	2014/11/27	105	80 - 120	102	80 - 120	<0.010	ug/L	NC	20
7733410	Dissolved Chromium (Cr)	2014/11/27	105	80 - 120	108	80 - 120	<1.0	ug/L	NC	20
7733410	Dissolved Cobalt (Co)	2014/11/27	103	80 - 120	108	80 - 120	<0.50	ug/L	NC	20
7733410	Dissolved Copper (Cu)	2014/11/27	103	80 - 120	110	80 - 120	<0.20	ug/L	NC	20
7733410	Dissolved Iron (Fe)	2014/11/27	NC	80 - 120	105	80 - 120	<5.0	ug/L	1.6	20
7733410	Dissolved Lead (Pb)	2014/11/27	114	80 - 120	108	80 - 120	<0.20	ug/L	NC	20
7733410	Dissolved Lithium (Li)	2014/11/27	113	80 - 120	106	80 - 120	<5.0	ug/L	NC	20
7733410	Dissolved Manganese (Mn)	2014/11/27	NC	80 - 120	107	80 - 120	<1.0	ug/L	4.1	20
7733410	Dissolved Mercury (Hg)	2014/11/27	111	80 - 120	106	80 - 120	<0.050	ug/L		
7733410	Dissolved Molybdenum (Mo)	2014/11/27	NC	80 - 120	98	80 - 120	<1.0	ug/L	NC	20
7733410	Dissolved Nickel (Ni)	2014/11/27	105	80 - 120	110	80 - 120	<1.0	ug/L	NC	20
7733410	Dissolved Selenium (Se)	2014/11/27	86	80 - 120	86	80 - 120	<0.10	ug/L	NC	20
7733410	Dissolved Silicon (Si)	2014/11/27					<100	ug/L	1.6	20
7733410	Dissolved Silver (Ag)	2014/11/27	92	80 - 120	88	80 - 120	<0.020	ug/L	NC	20
7733410	Dissolved Strontium (Sr)	2014/11/27	NC	80 - 120	103	80 - 120	<1.0	ug/L	2.5	20
7733410	Dissolved Thallium (Tl)	2014/11/27	102	80 - 120	99	80 - 120	<0.050	ug/L	NC	20
7733410	Dissolved Tin (Sn)	2014/11/27	105	80 - 120	101	80 - 120	<5.0	ug/L	NC	20
7733410	Dissolved Titanium (Ti)	2014/11/27	112	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7733410	Dissolved Uranium (U)	2014/11/27	116	80 - 120	108	80 - 120	<0.10	ug/L	NC	20
7733410	Dissolved Vanadium (V)	2014/11/27	111	80 - 120	109	80 - 120	<5.0	ug/L	NC	20
7733410	Dissolved Zinc (Zn)	2014/11/27	104	80 - 120	109	80 - 120	<5.0	ug/L	NC	20
7733410	Dissolved Zirconium (Zr)	2014/11/27					<0.50	ug/L	NC	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7734065	2,3,4,5-tetrachlorophenol	2014/11/27			89	14 - 176	<0.10	ug/L		
7734065	2,3,4,6-tetrachlorophenol	2014/11/27			88	14 - 176	<0.10	ug/L		
7734065	2,3,4-trichlorophenol	2014/11/27			86	37 - 144	<0.10	ug/L		
7734065	2,3,5,6-tetrachlorophenol	2014/11/27			83	14 - 176	<0.10	ug/L		
7734065	2,3,5-trichlorophenol	2014/11/27			80	37 - 144	<0.10	ug/L		
7734065	2,3,6-Trichlorophenol	2014/11/27			81	37 - 144	<0.10	ug/L		
7734065	2,3-Dichlorophenol	2014/11/27			63	39 - 135	<0.10	ug/L		
7734065	2,4 + 2,5-Dichlorophenol	2014/11/27			63	39 - 135	<0.10	ug/L		
7734065	2,4,5-trichlorophenol	2014/11/27			85	37 - 144	<0.10	ug/L		
7734065	2,4,6-trichlorophenol	2014/11/27			78	37 - 144	<0.10	ug/L		
7734065	2,6-dichlorophenol	2014/11/27			62	39 - 135	<0.10	ug/L		
7734065	2-chlorophenol	2014/11/27			48	27 - 123	<0.10	ug/L		
7734065	3 & 4-chlorophenol	2014/11/27			69	27 - 123	<0.10	ug/L		
7734065	3,4,5-Trichlorophenol	2014/11/27			104	37 - 144	<0.10	ug/L		
7734065	3,4-Dichlorophenol	2014/11/27			84	39 - 135	<0.10	ug/L		
7734065	3,5-Dichlorophenol	2014/11/27			79	39 - 135	<0.10	ug/L		
7734065	Pentachlorophenol	2014/11/27			111	14 - 176	<0.10	ug/L		
7734545	2-Methylnaphthalene	2014/11/28	72	50 - 130	59	50 - 130	<0.10	ug/L	NC	40
7734545	Acenaphthene	2014/11/28	86	50 - 130	79	50 - 130	<0.050	ug/L	NC	40
7734545	Acenaphthylene	2014/11/28	82	50 - 130	78	50 - 130	<0.050	ug/L	NC	40
7734545	Acridine	2014/11/28	76	50 - 130	77	50 - 130	<0.050	ug/L	NC	40
7734545	Anthracene	2014/11/28	89	60 - 130	92	60 - 130	<0.010	ug/L	NC	40
7734545	Benzo(a)anthracene	2014/11/28	60	60 - 130	79	60 - 130	<0.010	ug/L	NC	40
7734545	Benzo(a)pyrene	2014/11/28	65	60 - 130	87	60 - 130	<0.0090	ug/L	NC	40
7734545	Benzo(b&j)fluoranthene	2014/11/28	61	60 - 130	88	60 - 130	<0.050	ug/L	NC	40
7734545	Benzo(g,h,i)perylene	2014/11/28	62	60 - 130	82	60 - 130	<0.050	ug/L	NC	40
7734545	Benzo(k)fluoranthene	2014/11/28	64	60 - 130	82	60 - 130	<0.050	ug/L	NC	40
7734545	Chrysene	2014/11/28	61	60 - 130	80	60 - 130	<0.050	ug/L	NC	40
7734545	Dibenz(a,h)anthracene	2014/11/28	60	60 - 130	79	60 - 130	<0.050	ug/L	NC	40
7734545	Fluoranthene	2014/11/28	80	60 - 130	84	60 - 130	<0.020	ug/L	NC	40
7734545	Fluorene	2014/11/28	85	50 - 130	81	50 - 130	<0.050	ug/L	NC	40
7734545	Indeno(1,2,3-cd)pyrene	2014/11/28	63	60 - 130	84	60 - 130	<0.050	ug/L	NC	40

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7734545	Naphthalene	2014/11/28	69	50 - 130	64	50 - 130	<0.10	ug/L	NC	40
7734545	Phenanthrene	2014/11/28	84	60 - 130	84	60 - 130	<0.050	ug/L	NC	40
7734545	Pyrene	2014/11/28	80	60 - 130	86	60 - 130	<0.020	ug/L	NC	40
7734545	Quinoline	2014/11/28	107	50 - 130	105	50 - 130	<0.24	ug/L	NC	40
7734853	1,1,1,2-tetrachloroethane	2014/11/28	74	70 - 130	71	70 - 130	<0.50	ug/L	NC	30
7734853	1,1,1-trichloroethane	2014/11/28	77	70 - 130	74	70 - 130	<0.50	ug/L	NC	30
7734853	1,1,2,2-tetrachloroethane	2014/11/28	81	70 - 130	85	70 - 130	<0.50	ug/L	NC	30
7734853	1,1,2Trichloro-1,2,2Trifluoroethane	2014/11/28					<2.0	ug/L		
7734853	1,1,2-trichloroethane	2014/11/28	85	70 - 130	82	70 - 130	<0.50	ug/L	NC	30
7734853	1,1-dichloroethane	2014/11/28	75	70 - 130	72	70 - 130	<0.50	ug/L	NC	30
7734853	1,1-dichloroethene	2014/11/28	81	70 - 130	79	70 - 130	<0.50	ug/L	NC	30
7734853	1,2,3-trichlorobenzene	2014/11/28	81	70 - 130	87	70 - 130	<2.0	ug/L		
7734853	1,2,4-trichlorobenzene	2014/11/28	83	70 - 130	88	70 - 130	<2.0	ug/L		
7734853	1,2,4-trimethylbenzene	2014/11/28	82	70 - 130	84	70 - 130	<2.0	ug/L		
7734853	1,2-dibromoethane	2014/11/28			64 (2)	70 - 130	<0.20	ug/L		
7734853	1,2-dichlorobenzene	2014/11/28	80	70 - 130	83	70 - 130	<0.50	ug/L	NC	30
7734853	1,2-dichloroethane	2014/11/28	79	70 - 130	79	70 - 130	<0.50	ug/L	NC	30
7734853	1,2-dichloropropane	2014/11/28	86	70 - 130	83	70 - 130	<0.50	ug/L	NC	30
7734853	1,3,5-trimethylbenzene	2014/11/28	86	70 - 130	89	70 - 130	<2.0	ug/L		
7734853	1,3-Butadiene	2014/11/28					<5.0	ug/L		
7734853	1,3-dichlorobenzene	2014/11/28	82	70 - 130	85	70 - 130	<0.50	ug/L	NC	30
7734853	1,4-dichlorobenzene	2014/11/28	80	70 - 130	83	70 - 130	<0.50	ug/L	NC	30
7734853	Benzene	2014/11/28	83	70 - 130	79	70 - 130	<0.40	ug/L	NC	30
7734853	Bromodichloromethane	2014/11/28	74	70 - 130	75	70 - 130	<1.0	ug/L	NC	30
7734853	Bromoform	2014/11/28	72	70 - 130	77	70 - 130	<1.0	ug/L	NC	30
7734853	Bromomethane	2014/11/28	77	60 - 140	86	60 - 140	<1.0	ug/L	NC	30
7734853	Carbon tetrachloride	2014/11/28	70	70 - 130	68 (2)	70 - 130	<0.50	ug/L	NC	30
7734853	Chlorobenzene	2014/11/28	73	70 - 130	73	70 - 130	<0.50	ug/L	NC	30
7734853	Chlorodibromomethane	2014/11/28	74	70 - 130	75	70 - 130	<1.0	ug/L	NC	30
7734853	Chloroethane	2014/11/28	76	60 - 140	67	60 - 140	<1.0	ug/L	NC	30
7734853	Chloroform	2014/11/28	78	70 - 130	76	70 - 130	<1.0	ug/L	NC	30
7734853	Chloromethane	2014/11/28	92	60 - 140	93	60 - 140	<1.0	ug/L	NC	30

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7734853	cis-1,2-dichloroethene	2014/11/28	82	70 - 130	80	70 - 130	<1.0	ug/L	NC	30
7734853	cis-1,3-dichloropropene	2014/11/28	76	70 - 130	94	70 - 130	<1.0	ug/L	NC	30
7734853	Dichlorodifluoromethane	2014/11/28	81	60 - 140	85	60 - 140	<2.0	ug/L		
7734853	Dichloromethane	2014/11/28	91	70 - 130	88	70 - 130	<2.0	ug/L	NC	30
7734853	Ethylbenzene	2014/11/28	86	70 - 130	86	70 - 130	<0.40	ug/L	NC	30
7734853	Hexachlorobutadiene	2014/11/28	95	70 - 130	91	70 - 130	<0.50	ug/L		
7734853	Hexane	2014/11/28					<2.0	ug/L		
7734853	Isopropylbenzene	2014/11/28	81	70 - 130	85	70 - 130	<2.0	ug/L		
7734853	m & p-Xylene	2014/11/28	81	70 - 130	81	70 - 130	<0.40	ug/L	NC	30
7734853	Methylcyclohexane	2014/11/28					<2.0	ug/L		
7734853	Methyl-tert-butylether (MTBE)	2014/11/28	83	70 - 130	81	70 - 130	<4.0	ug/L	NC	30
7734853	n-Decane	2014/11/28					22, RDL=20	ug/L		
7734853	o-Xylene	2014/11/28	74	70 - 130	79	70 - 130	<0.40	ug/L	NC	30
7734853	Styrene	2014/11/28	83	70 - 130	80	70 - 130	<0.50	ug/L	NC	30
7734853	Tetrachloroethene	2014/11/28	82	70 - 130	78	70 - 130	<0.50	ug/L	1.6	30
7734853	Toluene	2014/11/28	83	70 - 130	79	70 - 130	<0.40	ug/L	NC	30
7734853	trans-1,2-dichloroethene	2014/11/28	81	70 - 130	80	70 - 130	<1.0	ug/L	NC	30
7734853	trans-1,3-dichloropropene	2014/11/28	72	70 - 130	91	70 - 130	<1.0	ug/L	NC	30
7734853	Trichloroethene	2014/11/28	85	70 - 130	82	70 - 130	<0.50	ug/L	NC	30
7734853	Trichlorofluoromethane	2014/11/28	95	60 - 140	93	60 - 140	<4.0	ug/L	NC	30
7734853	VH C6-C10	2014/11/28			90	70 - 130	<300	ug/L	NC	30
7734853	Vinyl chloride	2014/11/28	79	60 - 140	77	60 - 140	<0.50	ug/L	NC	30

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7734853	Xylenes (Total)	2014/11/28					<0.40	ug/L	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) RDL raised due to sample matrix interference.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Success Through Science®

Maxxam Job #: B4A6528
Report Date: 2014/12/01

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Location: CON
Sampler Initials: KG

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam

Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-Free 800-563-6266 Fax:(604) 731 2386 www.maxxam.ca

Chain Of Custody Record Page 1 of 1

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#11478 TETRA TECH EBA INC.	Company Name	#28955 Tetra Tech EBA	Quotation #	B40497	Maxxam Job #	Bottle Order #:
Contact Name	Accounts Payable	Contact Name	Kristy Gabelhouse	P.O. #		B4A6528	454578
Address	14940-123 AVENUE	Address	#1 - 4376 Boban Drive	Project #	ENVIND03511-001.004	Chain Of Custody Record	Project Manager
	EDMONTON AB T5V 1B4		Nanaimo BC V9T 6A7	Project Name	CoN	C#454578-01-01	Crystal Ireland
Phone	(780) 451-2121 x Fax: (780) 454-5688 x	Phone	(250) 756-2256 Fax:	Site #			
Email	EBA.Accounts.Payable@tetratech.com	Email	Kristy.Gabelhouse@tetratech.com lora.paul@tetratech.com	Sampled By	K.Gabelhouse		

Regulatory Criteria: ☒ CSR ☐ CCME ☐ BC Water Quality ☐ Other

Special Instructions

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required

Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY ☐ 2 Day ☐ 3 Day ☐ Date Required: ____ ☐
Rush Confirmation Number: ____ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR VOC + VPH in Water	LEPH & HEPH with CSR/CCME PAH in Water	Extrac. Petroleum HC in Water by GC/FID	Chlorinated Phenols	Dissolved metals						# of Bottles	Comments
1		14MW26	Nov.20/14		GW			X									3	LF2252
2		14MW27	Nov.20/14					X									3	LF2253
3		14MW ~~[illegible]~~ 29	Nov.21/14			X		X			X						4	LF2254
4		14 MW 35	Nov.20/14				X			X							4	LF2255
5		14 MW 10	Nov.20/14				X										3	LF2256
6		MW00-07	Nov 21/14					X									3	LF2257
7		DUP4	Nov.20/14		GW				X								2	LF2258
8																		
9																		
10																		

B4A6528

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
K Gabelhouse	14/11/21	4:00pm	DARIA IVANOVA	2014/11/22	10:00		☐	5,6,6	☐ Yes ☐ No N/A

Lab Use Only

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

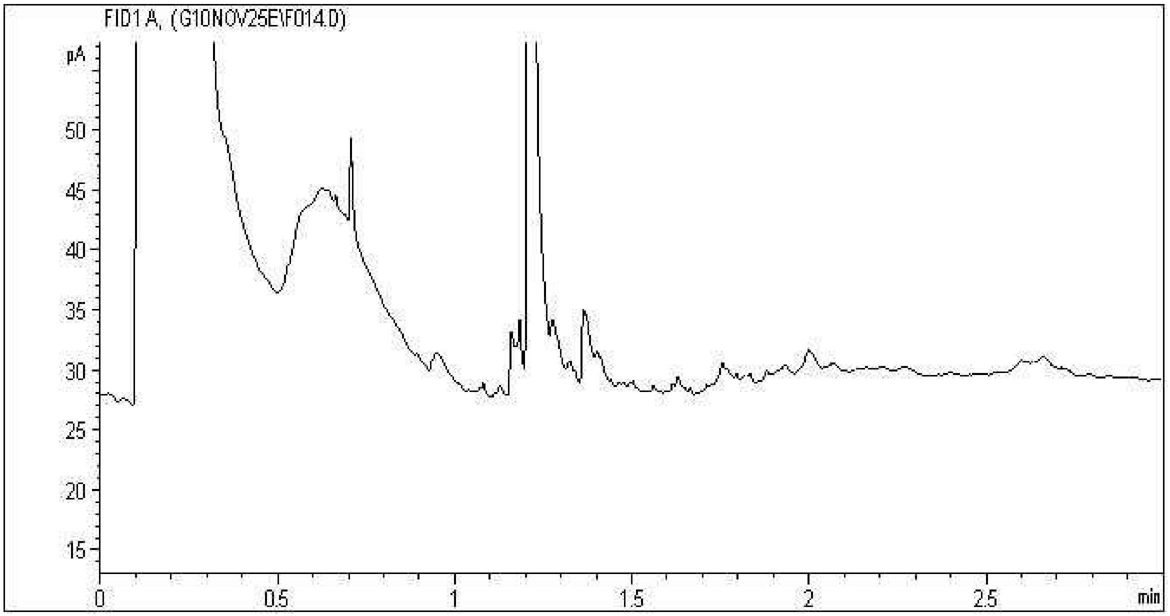
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

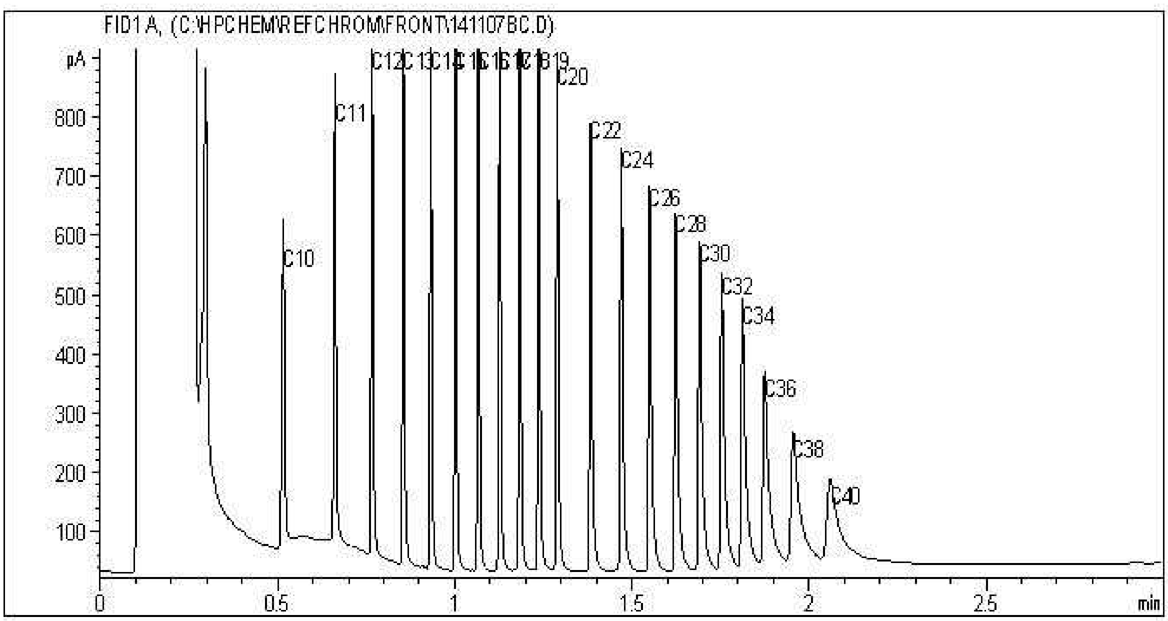
Maxxam Job #: B4A6528
Report Date: 2014/12/01
Maxxam Sample: LF2252

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Reference: CON
Client ID: 14MW26

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

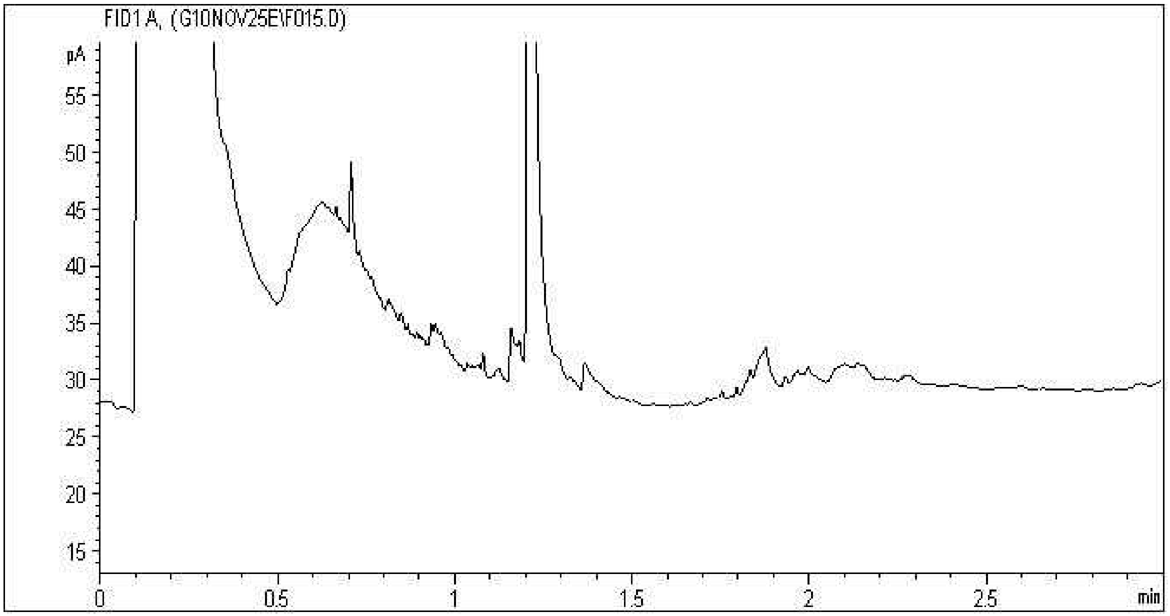
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

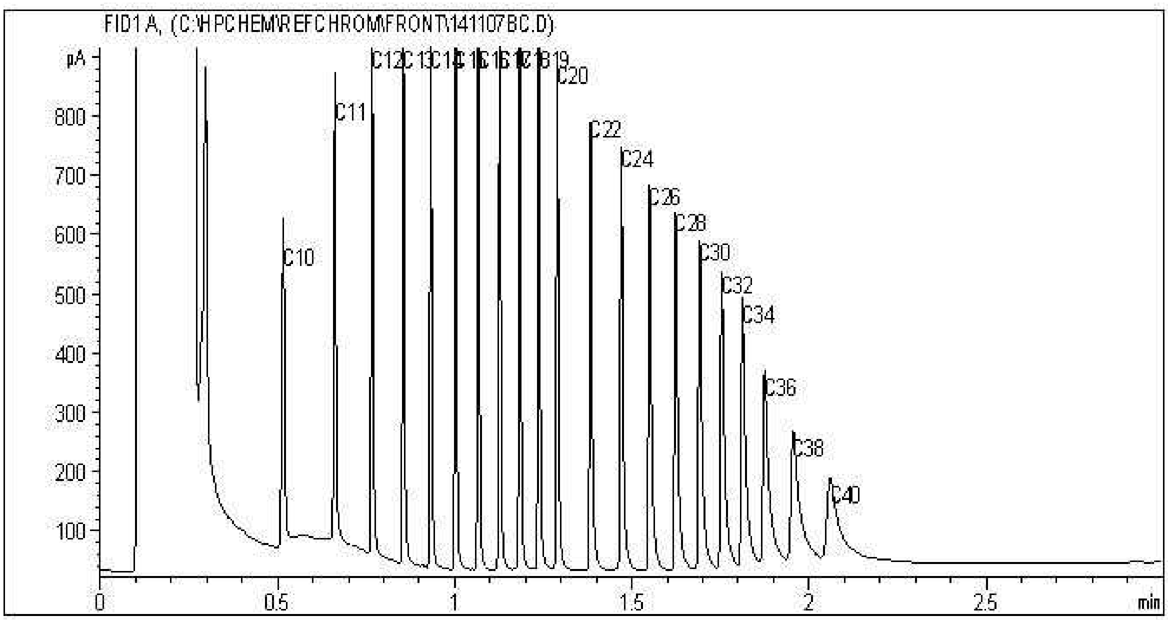
Maxxam Job #: B4A6528
Report Date: 2014/12/01
Maxxam Sample: LF2253

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Reference: CON
Client ID: 14MW27

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

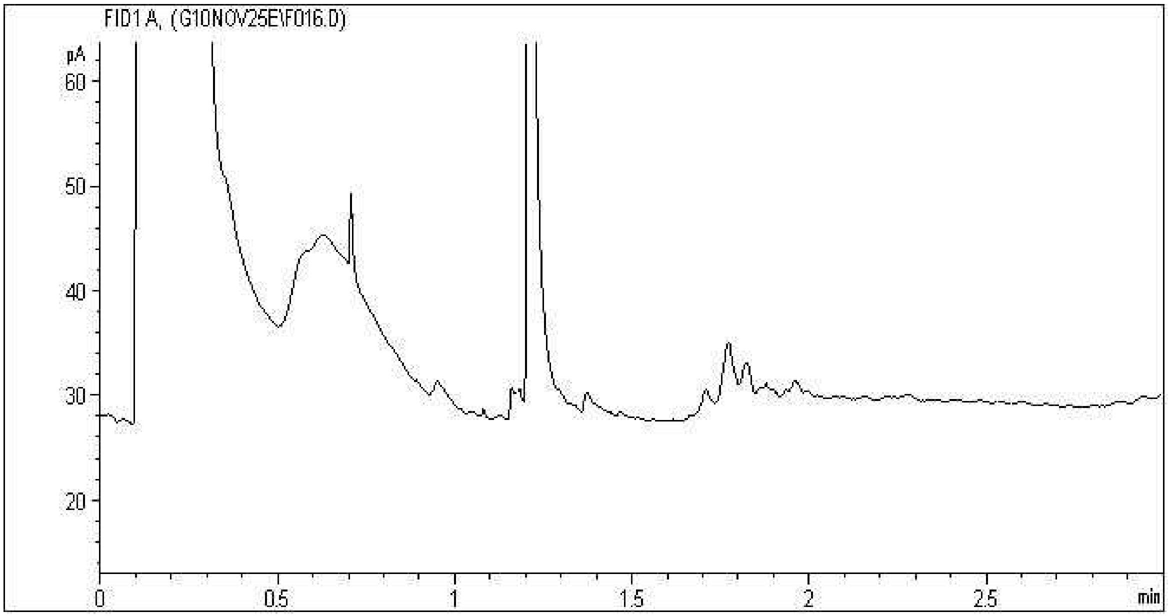
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

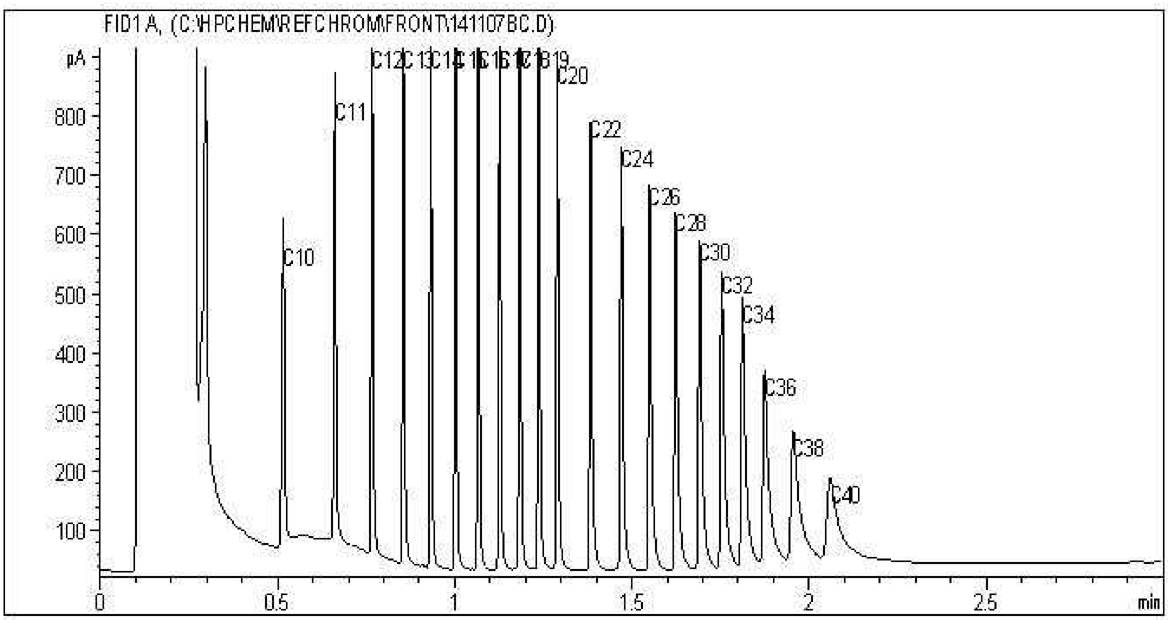
Maxxam Job #: B4A6528
Report Date: 2014/12/01
Maxxam Sample: LF2254

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Reference: CON
Client ID: 14MW29

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

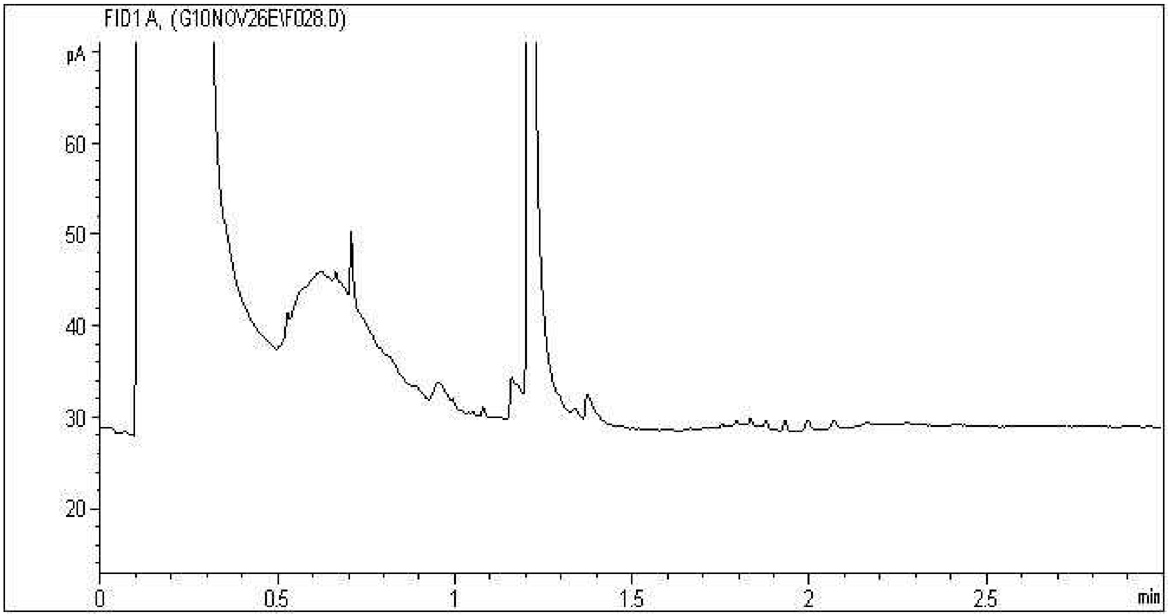
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

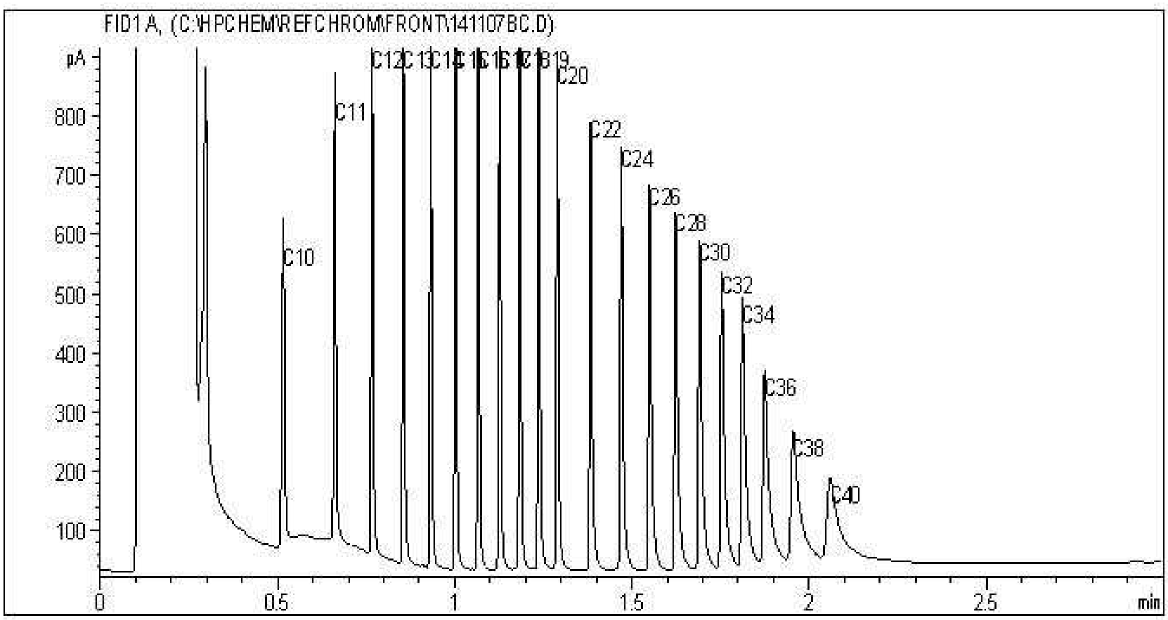
Maxxam Job #: B4A6528
Report Date: 2014/12/01
Maxxam Sample: LF2257

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Reference: CON
Client ID: MW00-07

Extrac. Pet HC when LEPH/HEPH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

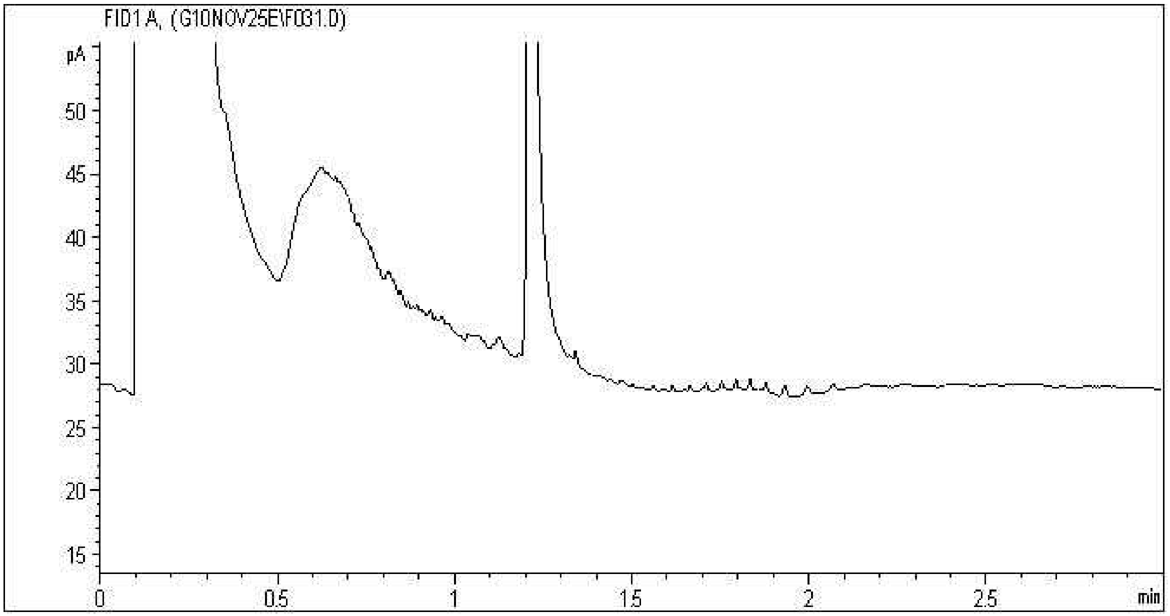
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

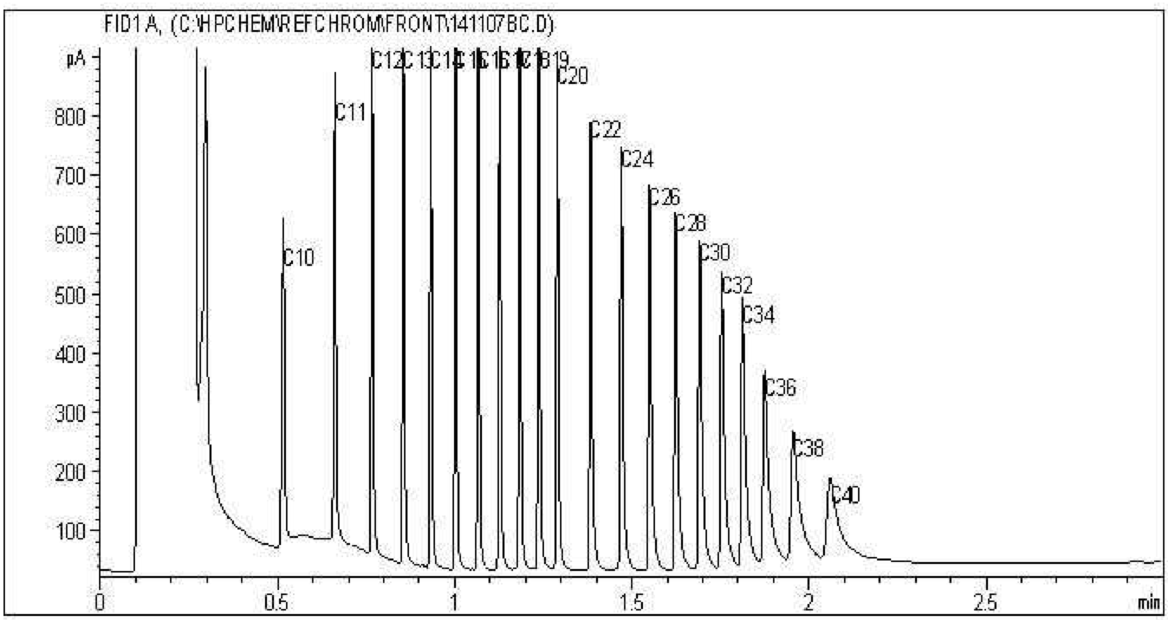
Maxxam Job #: B4A6528
Report Date: 2014/12/01
Maxxam Sample: LF2258

Tetra Tech EBA
Client Project #: ENVIND03511-001.004
Site Reference: CON
Client ID: DUP4

Extrac. Petroleum HC in Water by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: B4A5865
Your C.O.C. #: NA

Attention: Crystal Ireland
Maxxam Analytics
4606 Canada Way
Burnaby, BC
V5G 1K5

Report Date: 2014/12/03
Report #: R3244500
Version: 1

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B4M1146
Received: 2014/11/22, 11:05

Sample Matrix: AIR
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Canister Pressure (TO-15)	6	N/A	2014/11/25	BRL SOP-00304	EPA TO-15 m
Canister Pressure (TO-15)	1	N/A	2014/11/26	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (ug/m3)	5	N/A	2014/11/27	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (ug/m3)	2	N/A	2014/11/28	BRL SOP-00304	EPA TO-15 m
Volatile Compounds in Air (SUMMA) (1)	5	N/A	2014/11/25	BRL SOP-00304	EPA TO-15 m
Volatile Compounds in Air (SUMMA) (1)	2	N/A	2014/11/26	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	1	N/A	2014/11/25	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	2	N/A	2014/11/26	BRL SOP-00304	EPA TO-15 m
VPH analysis in Air (2)	2	N/A	2014/11/26	BRL SOP-00304	EPA TO-15 m
VPH analysis in Air (2)	4	N/A	2014/11/27	BRL SOP-00304	EPA TO-15 m

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.
(2) Total VOCs as toluene and dodecane

Your Project #: B4A5865
Your C.O.C. #: NA

Attention: Crystal Ireland
Maxxam Analytics
4606 Canada Way
Burnaby, BC
V5G 1K5

Report Date: 2014/12/03
Report #: R3244500
Version: 1

CERTIFICATE OF ANALYSIS

-2-

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Theresa Stephenson, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905) 817-5763

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Analytics
Maxxam Job #: B4M1146
Client Project #: B4A5865
Report Date: 2014/12/03

RESULTS OF ANALYSES OF AIR

Maxxam ID		YO5541	YO5542	YO5543	YO5544	
Sampling Date		2014/11/19	2014/11/19	2014/11/19	2014/11/19	
COC Number		NA	NA	NA	NA	
	Units	**LE7779-01R\14VP01**	**LE7780-01R\14VP02**	**LE7781-01R\14VP03**	**LE7782-01R\14VP04**	**QC Batch**
Volatile Organics						
Pressure on Receipt	psig	0	0.50	0.70	1.0	3837344

QC Batch = Quality Control Batch

Maxxam ID		YO5545		YO5546	YO5547	
Sampling Date		2014/11/19		2014/11/19	2014/11/19	
COC Number		NA		NA	NA	
	Units	**LE7783-01R\14VP05**	**QC Batch**	**LE7784-01R\14VP06**	**LE7785-01R\DUP1**	**QC Batch**
Volatile Organics						
Pressure on Receipt	psig	1.1	3837344	0.80	0.80	3840659

QC Batch = Quality Control Batch

Maxxam Job #: B4M1146
Report Date: 2014/12/03

Maxxam Analytics
Client Project #: B4A5865

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		YO5541	YO5542		YO5543		
Sampling Date		2014/11/19	2014/11/19		2014/11/19		
COC Number		NA	NA		NA		
	Units	**LE7779-01R\14VP01**	**LE7780-01R\14VP02**	**RDL**	**LE7781-01R\14VP03**	**RDL**	**QC Batch**
Volatile Organics							
1,3-Butadiene	ppbv	<2.5	<2.5	2.5	<5.0	5.0	3839144
Methyl t-butyl ether (MTBE)	ppbv	<1.0	<1.0	1.0	<2.0	2.0	3839144
1,2-Dichloroethane	ppbv	<0.50	<0.50	0.50	<1.0	1.0	3839144
Ethylene Dibromide	ppbv	<0.25	<0.25	0.25	<0.50	0.50	3839144
Benzene	ppbv	10.1	<0.90	0.90	2.4	1.8	3839144
Toluene	ppbv	17.4	3.1	1.0	4.9	2.0	3839144
Ethylbenzene	ppbv	13.3	15.0	1.0	28.2	2.0	3839144
Methylcyclohexane	ppbv	134	<2.5	2.5	8.2	5.0	3839144
p+m-Xylene	ppbv	72.9	83.9	1.9	166	3.7	3839144
o-Xylene	ppbv	42.7	47.3	1.0	89.9	2.0	3839144
1,3,5-Trimethylbenzene	ppbv	89.6	97.6	2.5	194	5.0	3839144
1,2,4-Trimethylbenzene	ppbv	462	505	2.5	1040	5.0	3839144
Cumene (Isopropylbenzene)	ppbv	7.4	8.3	2.5	14.9	5.0	3839144
Hexane	ppbv	55.3	<1.5	1.5	4.6	3.0	3839144
Decane	ppbv	432	469	5.0	1600	9.0	3839144
Naphthalene	ppbv	<2.5	<2.5	2.5	<5.0	5.0	3839144
Total Xylenes	ppbv	116	131	3.0	256	6.0	3839144
Surrogate Recovery (%)							
Bromochloromethane	%	102	105		106		3839144
D5-Chlorobenzene	%	97	99		100		3839144
Difluorobenzene	%	101	103		105		3839144

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		YO5544		YO5545			YO5546		
Sampling Date		2014/11/19		2014/11/19			2014/11/19		
COC Number		NA		NA			NA		
	Units	**LE7782-01R\14VP04**	**RDL**	**LE7783-01R\14VP05**	**RDL**	**QC Batch**	**LE7784-01R\14VP06**	**RDL**	**QC Batch**
Volatile Organics									
1,3-Butadiene	ppbv		5.0	<0.50	0.50	3839144	<160	160	3842941
Methyl t-butyl ether (MTBE)	ppbv		2.0	<0.20	0.20	3839144	<64	64	3842941
1,2-Dichloroethane	ppbv		1.0	<0.10	0.10	3839144	<32	32	3842941
Ethylene Dibromide	ppbv		0.50	<0.050	0.050	3839144	<16	16	3842941
Benzene	ppbv		1.8	0.91	0.18	3839144	<58	58	3842941
Toluene	ppbv		2.0	6.49	0.20	3839144	<160	160	3842941
Ethylbenzene	ppbv		2.0	0.37	0.20	3839144	696	64	3842941
Methylcyclohexane	ppbv		5.0	3.51	0.50	3839144	<160	160	3842941
p+m-Xylene	ppbv		3.7	1.40	0.37	3839144	3040	120	3842941
o-Xylene	ppbv		2.0	0.67	0.20	3839144	1580	64	3842941
1,3,5-Trimethylbenzene	ppbv		5.0	<0.50	0.50	3839144	1450	160	3842941
1,2,4-Trimethylbenzene	ppbv		5.0	0.66	0.50	3839144	5190	160	3842941
Cumene (Isopropylbenzene)	ppbv		5.0	<0.50	0.50	3839144	287	160	3842941
Hexane	ppbv		3.0	2.25	0.30	3839144	<110	110	3842941
Decane	ppbv		9.0	4.12	0.50	3839144	7050	160	3842941
Naphthalene	ppbv	1.30	0.50	<0.50	0.50	3839144	<160	160	3842941
Total Xylenes	ppbv			2.06	0.60	3839144	4620	190	3842941
1,1,1,2-Tetrachloroethane	ppbv			<0.50	0.50	3838212	<160	160	3840782
Surrogate Recovery (%)									
Bromochloromethane	%	86		95		3839144	108		3842941
D5-Chlorobenzene	%	85		91		3839144	99		3842941
Difluorobenzene	%	86		92		3839144	109		3842941
Bromochloromethane	%			95		3838212	108		3840782
D5-Chlorobenzene	%			91		3838212	99		3840782
Difluorobenzene	%			92		3838212	109		3840782

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B4M1146
Report Date: 2014/12/03

Maxxam Analytics
Client Project #: B4A5865

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		YO5547		
Sampling Date		2014/11/19		
COC Number		NA		
	Units	**LE7785-01R\DUP1**	**RDL**	**QC Batch**
Volatile Organics				
1,3-Butadiene	ppbv	<160	160	3842941
Methyl t-butyl ether (MTBE)	ppbv	<64	64	3842941
1,2-Dichloroethane	ppbv	<32	32	3842941
Ethylene Dibromide	ppbv	<16	16	3842941
Benzene	ppbv	<58	58	3842941
Toluene	ppbv	<160	160	3842941
Ethylbenzene	ppbv	764	64	3842941
Methylcyclohexane	ppbv	<160	160	3842941
p+m-Xylene	ppbv	3340	120	3842941
o-Xylene	ppbv	1720	64	3842941
1,3,5-Trimethylbenzene	ppbv	1570	160	3842941
1,2,4-Trimethylbenzene	ppbv	5620	160	3842941
Cumene (Isopropylbenzene)	ppbv	315	160	3842941
Hexane	ppbv	<110	110	3842941
Decane	ppbv	7650	160	3842941
Naphthalene	ppbv	<160	160	3842941
Total Xylenes	ppbv	5060	190	3842941
1,1,1,2-Tetrachloroethane	ppbv	<160	160	3840782
Surrogate Recovery (%)				
Bromochloromethane	%	109		3842941
D5-Chlorobenzene	%	98		3842941
Difluorobenzene	%	109		3842941
Bromochloromethane	%	109		3840782
D5-Chlorobenzene	%	98		3840782
Difluorobenzene	%	109		3840782

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B4M1146
Report Date: 2014/12/03

Maxxam Analytics
Client Project #: B4A5865

CALCULATED VOLATILE ORGANICS (AIR)

Maxxam ID		YO5541	YO5542		YO5543		
Sampling Date		2014/11/19	2014/11/19		2014/11/19		
COC Number		NA	NA		NA		
	Units	**LE7779-01R\14VP01**	**LE7780-01R\14VP02**	**RDL**	**LE7781-01R\14VP03**	**RDL**	**QC Batch**
Calculated Parameters							
1,3-Butadiene	ug/m3	<5.5	<5.5	5.5	<11	11	3838013
Methyl t-butyl ether (MTBE)	ug/m3	<3.6	<3.6	3.6	<7.2	7.2	3838013
1,2-Dichloroethane	ug/m3	<2.0	<2.0	2.0	<4.0	4.0	3838013
Ethylene Dibromide	ug/m3	<1.9	<1.9	1.9	<3.8	3.8	3838013
Benzene	ug/m3	32.3	<2.9	2.9	7.6	5.8	3838013
Toluene	ug/m3	65.5	11.7	3.8	18.4	7.5	3838013
Ethylbenzene	ug/m3	57.8	65.2	4.3	122	8.7	3838013
Methylcyclohexane	ug/m3	539	<10	10	33	20	3838013
p+m-Xylene	ug/m3	316	364	8.0	719	16	3838013
o-Xylene	ug/m3	185	205	4.3	390	8.7	3838013
1,3,5-Trimethylbenzene	ug/m3	441	480	12	956	25	3838013
1,2,4-Trimethylbenzene	ug/m3	2270	2480	12	5120	25	3838013
Cumene (Isopropylbenzene)	ug/m3	37	41	12	73	25	3838013
Hexane	ug/m3	195	<5.3	5.3	16	11	3838013
Decane	ug/m3	2510	2730	29	9320	52	3838013
Naphthalene	ug/m3	<13	<13	13	<26	26	3838013
Total Xylenes	ug/m3	502	570	13	1110	26	3838013

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Analytics
Client Project #: B4A5865

Maxxam Job #: B4M1146
Report Date: 2014/12/03

CALCULATED VOLATILE ORGANICS (AIR)

Maxxam ID		YO5544		YO5545		YO5546		
Sampling Date		2014/11/19		2014/11/19		2014/11/19		
COC Number		NA		NA		NA		
	Units	**LE7782-01R\14VP04**	**RDL**	**LE7783-01R\14VP05**	**RDL**	**LE7784-01R\14VP06**	**RDL**	**QC Batch**
Calculated Parameters								
1,3-Butadiene	ug/m3		11	<1.1	1.1	<350	350	3838013
Methyl t-butyl ether (MTBE)	ug/m3		7.2	<0.72	0.72	<230	230	3838013
1,2-Dichloroethane	ug/m3		4.0	<0.40	0.40	<130	130	3838013
Ethylene Dibromide	ug/m3		3.8	<0.38	0.38	<120	120	3838013
Benzene	ug/m3		5.8	2.90	0.58	<180	180	3838013
Toluene	ug/m3		7.5	24.4	0.75	<600	600	3838013
Ethylbenzene	ug/m3		8.7	1.60	0.87	3020	280	3838013
Methylcyclohexane	ug/m3		20	14.1	2.0	<640	640	3838013
p+m-Xylene	ug/m3		16	6.1	1.6	13200	510	3838013
o-Xylene	ug/m3		8.7	2.90	0.87	6860	280	3838013
1,3,5-Trimethylbenzene	ug/m3		25	<2.5	2.5	7130	790	3838013
1,2,4-Trimethylbenzene	ug/m3		25	3.2	2.5	25500	790	3838013
Cumene (Isopropylbenzene)	ug/m3		25	<2.5	2.5	1410	790	3838013
Hexane	ug/m3		11	7.9	1.1	<390	390	3838013
Decane	ug/m3		52	24.0	2.9	41000	930	3838013
Naphthalene	ug/m3	6.8	2.6	<2.6	2.6	<840	840	3838013
Total Xylenes	ug/m3			9.0	2.6	20100	830	3838013
1,1,1,2-Tetrachloroethane	ug/m3			<3.4	3.4	<1100	1100	3838013

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

CALCULATED VOLATILE ORGANICS (AIR)

Maxxam ID		YO5547		
Sampling Date		2014/11/19		
COC Number		NA		
	Units	**LE7785-01R\DUP1**	**RDL**	**QC Batch**
Calculated Parameters				
1,3-Butadiene	ug/m3	<350	350	3838013
Methyl t-butyl ether (MTBE)	ug/m3	<230	230	3838013
1,2-Dichloroethane	ug/m3	<130	130	3838013
Ethylene Dibromide	ug/m3	<120	120	3838013
Benzene	ug/m3	<180	180	3838013
Toluene	ug/m3	<600	600	3838013
Ethylbenzene	ug/m3	3320	280	3838013
Methylcyclohexane	ug/m3	<640	640	3838013
p+m-Xylene	ug/m3	14500	510	3838013
o-Xylene	ug/m3	7490	280	3838013
1,3,5-Trimethylbenzene	ug/m3	7700	790	3838013
1,2,4-Trimethylbenzene	ug/m3	27600	790	3838013
Cumene (Isopropylbenzene)	ug/m3	1550	790	3838013
Hexane	ug/m3	<390	390	3838013
Decane	ug/m3	44500	930	3838013
Naphthalene	ug/m3	<840	840	3838013
Total Xylenes	ug/m3	22000	830	3838013
1,1,1,2-Tetrachloroethane	ug/m3	<1100	1100	3838013

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B4M1146
Report Date: 2014/12/03

Maxxam Analytics
Client Project #: B4A5865

VOLATILE ORGANIC HYDROCARBONS BY GC/MS (AIR)

Maxxam ID		YO5541	YO5542		YO5543		
Sampling Date		2014/11/19	2014/11/19		2014/11/19		
COC Number		NA	NA		NA		
	Units	**LE7779-01R\14VP01**	**LE7780-01R\14VP02**	**RDL**	**LE7781-01R\14VP03**	**RDL**	**QC Batch**
Volatile Organics							
VPHv (C6-C13)	ug/m3	41900	43400	100	124000	200	3839535
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	105	106		113		3839535
Bromochloromethane	%	104	106		109		3839535
D5-Chlorobenzene	%	95	99		109		3839535

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam ID		YO5545			YO5546	YO5547		
Sampling Date		2014/11/19			2014/11/19	2014/11/19		
COC Number		NA			NA	NA		
	Units	**LE7783-01R\14VP05**	**RDL**	**QC Batch**	**LE7784-01R\14VP06**	**LE7785-01R\DUP1**	**RDL**	**QC Batch**
Volatile Organics								
VPHv (C6-C13)	ug/m3	1120	10	3839535	959000	1040000	3000	3843047
Surrogate Recovery (%)								
1,4-Difluorobenzene	%	99		3839535	109	109		3843047
Bromochloromethane	%	101		3839535	108	109		3843047
D5-Chlorobenzene	%	93		3839535	99	98		3843047

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

GENERAL COMMENTS

WS: 3842941
Increased DL for hexane due to possible background.

Sample YO5541-01: Sample was analyzed at a 5X dilution. Decane and VPH were analyzed at a 10X dilution. The DL's were adjusted accordingly.

Sample YO5542-01: Sample was analyzed at a 5X dilution. Decane and VPH were analyzed at a 10X dilution. The DL's were adjusted accordingly.

Sample YO5543-01: Sample was analyzed at an 10X dilution. Decane and VPH were analyzed at a 18X dilution. The DL's were adjusted accordingly.

Sample YO5546-01: Sample was analyzed at a 320X dilution due to the presence of hydrocarbons. DLs adjusted accordingly. Increased DL for toluene due to possible background.

Sample YO5547-01: Sample was analyzed at a 320X dilution due to the presence of hydrocarbons. DLs adjusted accordingly. Increased DL for toluene due to possible background.

Results relate only to the items tested.

Maxxam Analytics
Attention: Crystal Ireland
Client Project #: B4A5865
P.O. #:
Site Location:

Quality Assurance Report

Maxxam Job Number: GB4M1146

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3838212 NB2	Spiked Blank	Bromochloromethane	2014/11/25		100	%	60 - 140
		D5-Chlorobenzene	2014/11/25		100	%	60 - 140
		Difluorobenzene	2014/11/25		100	%	60 - 140
	Method Blank	Bromochloromethane	2014/11/25		103	%	60 - 140
		D5-Chlorobenzene	2014/11/25		102	%	60 - 140
		Difluorobenzene	2014/11/25		104	%	60 - 140
		1,1,1,2-Tetrachloroethane	2014/11/25	<0.50		ppbv	
3839144 NB2	Spiked Blank	Bromochloromethane	2014/11/25		100	%	60 - 140
		D5-Chlorobenzene	2014/11/25		100	%	60 - 140
		Difluorobenzene	2014/11/25		100	%	60 - 140
		1,3-Butadiene	2014/11/25		94	%	70 - 130
		Methyl t-butyl ether (MTBE)	2014/11/25		92	%	70 - 130
		1,2-Dichloroethane	2014/11/25		93	%	70 - 130
		Ethylene Dibromide	2014/11/25		96	%	70 - 130
		Benzene	2014/11/25		96	%	70 - 130
		Toluene	2014/11/25		99	%	70 - 130
		Ethylbenzene	2014/11/25		98	%	70 - 130
		p+m-Xylene	2014/11/25		96	%	70 - 130
		o-Xylene	2014/11/25		102	%	70 - 130
		1,3,5-Trimethylbenzene	2014/11/25		90	%	70 - 130
		1,2,4-Trimethylbenzene	2014/11/25		94	%	70 - 130
		Hexane	2014/11/25		96	%	70 - 130
		Total Xylenes	2014/11/25		98	%	70 - 130
	Method Blank	Bromochloromethane	2014/11/25		103	%	60 - 140
		D5-Chlorobenzene	2014/11/25		102	%	60 - 140
		Difluorobenzene	2014/11/25		104	%	60 - 140
		1,3-Butadiene	2014/11/25	<0.50		ppbv	
		Methyl t-butyl ether (MTBE)	2014/11/25	<0.20		ppbv	
		1,2-Dichloroethane	2014/11/25	<0.10		ppbv	
		Ethylene Dibromide	2014/11/25	<0.050		ppbv	
		Benzene	2014/11/25	<0.18		ppbv	
		Toluene	2014/11/25	<0.20		ppbv	
		Ethylbenzene	2014/11/25	<0.20		ppbv	
		Methylcyclohexane	2014/11/25	<0.50		ppbv	
		p+m-Xylene	2014/11/25	<0.37		ppbv	
		o-Xylene	2014/11/25	<0.20		ppbv	
		1,3,5-Trimethylbenzene	2014/11/25	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/11/25	<0.50		ppbv	
		Cumene (Isopropylbenzene)	2014/11/25	<0.50		ppbv	
		Hexane	2014/11/25	<0.30		ppbv	
		Decane	2014/11/25	<0.50		ppbv	
		Naphthalene	2014/11/25	<0.50		ppbv	
		Total Xylenes	2014/11/25	<0.60		ppbv	
3839535 NB2	Method Blank	1,4-Difluorobenzene	2014/11/27		108	%	60 - 140
		Bromochloromethane	2014/11/27		105	%	60 - 140
		D5-Chlorobenzene	2014/11/27		103	%	60 - 140
		VPHv (C6-C13)	2014/11/27	<10		ug/m3	
	RPD	VPHv (C6-C13)	2014/11/27	NC		%	25
3840782 NB2	Spiked Blank	Bromochloromethane	2014/11/26		101	%	60 - 140
		D5-Chlorobenzene	2014/11/26		100	%	60 - 140
		Difluorobenzene	2014/11/26		102	%	60 - 140
	Method Blank	Bromochloromethane	2014/11/26		113	%	60 - 140
		D5-Chlorobenzene	2014/11/26		107	%	60 - 140
		Difluorobenzene	2014/11/26		114	%	60 - 140
		1,1,1,2-Tetrachloroethane	2014/11/26	<0.50		ppbv	

Maxxam Analytics
Attention: Crystal Ireland
Client Project #: B4A5865
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: GB4M1146

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3842941 NB2	Spiked Blank	Bromochloromethane	2014/11/26		101	%	60 - 140
		D5-Chlorobenzene	2014/11/26		100	%	60 - 140
		Difluorobenzene	2014/11/26		102	%	60 - 140
		1,3-Butadiene	2014/11/26		96	%	70 - 130
		Methyl t-butyl ether (MTBE)	2014/11/26		94	%	70 - 130
		1,2-Dichloroethane	2014/11/26		97	%	70 - 130
		Ethylene Dibromide	2014/11/26		105	%	70 - 130
		Benzene	2014/11/26		102	%	70 - 130
		Toluene	2014/11/26		107	%	70 - 130
		Ethylbenzene	2014/11/26		108	%	70 - 130
		p+m-Xylene	2014/11/26		106	%	70 - 130
		o-Xylene	2014/11/26		113	%	70 - 130
		1,3,5-Trimethylbenzene	2014/11/26		100	%	70 - 130
		1,2,4-Trimethylbenzene	2014/11/26		105	%	70 - 130
		Hexane	2014/11/26		99	%	70 - 130
		Total Xylenes	2014/11/26		109	%	70 - 130
	Method Blank	Bromochloromethane	2014/11/26		113	%	60 - 140
		D5-Chlorobenzene	2014/11/26		107	%	60 - 140
		Difluorobenzene	2014/11/26		114	%	60 - 140
		1,3-Butadiene	2014/11/26	<0.50		ppbv	
		Methyl t-butyl ether (MTBE)	2014/11/26	<0.20		ppbv	
		1,2-Dichloroethane	2014/11/26	<0.10		ppbv	
		Ethylene Dibromide	2014/11/26	<0.050		ppbv	
		Benzene	2014/11/26	<0.18		ppbv	
		Toluene	2014/11/26	<0.20		ppbv	
		Ethylbenzene	2014/11/26	<0.20		ppbv	
		Methylcyclohexane	2014/11/26	<0.50		ppbv	
		p+m-Xylene	2014/11/26	<0.37		ppbv	
		o-Xylene	2014/11/26	<0.20		ppbv	
		1,3,5-Trimethylbenzene	2014/11/26	<0.50		ppbv	
		1,2,4-Trimethylbenzene	2014/11/26	<0.50		ppbv	
		Cumene (Isopropylbenzene)	2014/11/26	<0.50		ppbv	
		Hexane	2014/11/26	<0.30		ppbv	
		Decane	2014/11/26	<0.50		ppbv	
		Naphthalene	2014/11/26	<0.50		ppbv	
		Total Xylenes	2014/11/26	<0.60		ppbv	
3843047 NB2	Method Blank	1,4-Difluorobenzene	2014/11/26		115	%	60 - 140
		Bromochloromethane	2014/11/26		114	%	60 - 140
		D5-Chlorobenzene	2014/11/26		101	%	60 - 140
		VPHv (C6-C13)	2014/11/26	<10		ug/m3	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Validation Signature Page

Maxxam Job #: B4M1146

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Maureen Smith

Maureen Smith, Supervisor, Volatiles

==

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Analytics , .
4606 Canada Way
Burnaby, British Columbia, V5G 1K5
Phone: (604) 734 7276
Fax: (604) 731 2386

AIR

Maxxam

SUBCONTRACTING REQUEST FORM

TETRA TECH EBA INC. - EDMONTON
Maxxam PM Sherlyne Sim

To: Maxxam Ontario (From Burnaby)

Job# B4A5865

☐ Yes ☑ No International Sample/BioHazard (if yes, add copy of Movement Cert., heat treat is required prior to disposal)
☐ Yes ☑ No Special Protocol (if yes, Protocol ____________)

Sample ID	Matrix	Test(s) Required	Container	Date Sampled	Date Required
LE7779-01R \ 14VP01	AIR	VOC Ind Pkg (Solv) Sch11 Summa SubC	1(ESUM)	2014/11/19	2014/12/05
LE7780-01R \ 14VP02	AIR	VOC Ind Pkg (Solv) Sch11 Summa SubC	1(ESUM)	2014/11/19	2014/12/05
LE7781-01R \ 14VP03	AIR	VOC Ind Pkg (Solv) Sch11 Summa SubC	1(ESUM)	2014/11/19	2014/12/05
LE7782-01R \ 14VP04	AIR	VOC Ind Pkg (Solv) Sch11 Summa SubC	1(ESUM)	2014/11/19	2014/12/05
LE7783-01R \ 14VP05	AIR	VOC Ind Pkg (Solv) Sch11 Summa SubC	1(ESUM)	2014/11/19	2014/12/05
LE7784-01R \ 14VP06	AIR	VOC Ind Pkg (Solv) Sch11 Summa SubC	1(ESUM)	2014/11/19	2014/12/05
LE7785-01R \ DUP 1	AIR	VOC Ind Pkg (Solv) Sch11 Summa SubC	1(ESUM)	2014/11/19	2014/12/05

	Temp. 1	Temp. 2	Temp. 3			
Cooler #1	NA	NA	NA	Custody Seal Present	YES ✓	NO
				Custody Seal Intact	YES ✓	NO
				Ice Present Upon Receipt	YES	NO ✓
Cooler #2				Custody Seal Present	YES	NO
				Custody Seal Intact	YES	NO
				Ice Present Upon Receipt	YES	NO
Cooler #3				Custody Seal Present	YES	NO
				Custody Seal Intact	YES	NO
				Ice Present Upon Receipt	YES	NO

Receiving Maxxam Location: Maxxam Ontario (From Burnaby) JOB #

Relinquished by (Sign) [signature] (Print) KEN ROBILLO Date and Time 2014/11/21 C 15

Received by (Sign) [signature] (Print) HARMAN GREWAL Date and Time 2014/11/22 11:05

Continued...

Success Through Science®

Your Project #: ENVIND03511-01.004
Site#: 1 PORT DRIVE DSI
Site Location: NANAIMO, BC
Your C.O.C. #: G096015, G096016

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/12/05
Report #: R1698818
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B4A4188
Received: 2014/11/15, 10:10

Sample Matrix: Soil
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Phenols in Soil by GCMS	8	2014/11/20	2014/11/22	BBY8SOP-00025	EPA 8270d R4
Elements by ICPMS (total)	2	2014/11/19	2014/11/19	BBY7SOP-00001	EPA 6020a R1 m
Metals - SPLP	1	2014/12/02	2014/12/05	BBY7SOP-00002	EPA 6020A R1 m
Moisture	8	N/A	2014/11/19	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	1	N/A	2014/11/20	BBY8SOP-00017	OMOE E3139 3.1 m
PAH in Soil by GC/MS (SIM)	2	2014/11/18	2014/11/20	BBY8SOP-00022	EPA 8270d R4 m
Total Chlorinated Phenols Soil Calc.	8	2014/11/18	2014/11/24	BBY8SOP-00025	EPA 8270d R4
pH (2:1 DI Water Extract)	8	2014/11/19	2014/11/19	BBY6SOP-00028	BCMOE BCLM Mar2005 m
VOCs, VH, F1, LH in Soil - Field Pres.	2	N/A	2014/11/20	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	2	N/A	2014/11/20	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B4A4188
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		LD6065	LD6068	LD6072	LD6073	LD6076	LD6078	
Sampling Date		2014/11/14	2014/11/14	2014/11/14	2014/11/14	2014/11/14	2014/11/14	
COC Number		G096015	G096015	G096015	G096015	G096015	G096016	
	Units	**14BH34-01**	**14BH34-04**	**14BH35-02**	**14BH35-03**	**14BH35-06**	**14BH36-1**	**QC Batch**
Physical Properties								
Soluble (2:1) pH	pH	8.62	8.46	8.63	8.60	7.93	8.63	7723848

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Maxxam Job #: B4A4188
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

PHYSICAL TESTING (SOIL)

Maxxam ID		LD6065		LD6066	LD6068	LD6072	LD6072	LD6073		
Sampling Date		2014/11/14		2014/11/14	2014/11/14	2014/11/14	2014/11/14	2014/11/14		
COC Number		G096015		G096015	G096015	G096015	G096015	G096015		
	Units	**14BH34-01**	**QC Batch**	**14BH34-02**	**14BH34-04**	**14BH35-02**	**14BH35-02 Lab-Dup**	**14BH35-03**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	7.3	7723070	10	22	6.3	6.4	6.4	0.30	7722998

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam ID		LD6076		LD6078		LD6082	LD6083		
Sampling Date		2014/11/14		2014/11/14		2014/11/14	2014/11/14		
COC Number		G096015		G096016		G096016	G096016		
	Units	**14BH35-06**	**QC Batch**	**14BH36-1**	**QC Batch**	**14VPO5-1**	**14VPO5-2**	**RDL**	**QC Batch**
Physical Properties									
Moisture	%	27	7722998	7.4	7723880	14	7.1	0.30	7722998

RDL = Reportable Detection Limit

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Maxxam Job #: B4A4188
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		LD6066		LD6073		
Sampling Date		2014/11/14		2014/11/14		
COC Number		G096015		G096015		
	Units	**14BH34-02**	**QC Batch**	**14BH35-03**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Naphthalene	mg/kg	<0.050	7725085	<0.050	0.050	7725903
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	93	7725085	100		7725903
D8-ACENAPHTHYLENE (sur.)	%	89	7725085	88		7725903
D8-NAPHTHALENE (sur.)	%	89	7725085	88		7725903
TERPHENYL-D14 (sur.)	%	95	7725085	99		7725903
RDL = Reportable Detection Limit						

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Maxxam Job #: B4A4188
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

TOTAL CHLORINATED PHENOLS IN SOIL (SOIL)

Maxxam ID		LD6065	LD6068	LD6072	LD6073		LD6076		
Sampling Date		2014/11/14	2014/11/14	2014/11/14	2014/11/14		2014/11/14		
COC Number		G096015	G096015	G096015	G096015		G096015		
	Units	**14BH34-01**	**14BH34-04**	**14BH35-02**	**14BH35-03**	**RDL**	**14BH35-06**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS									
Total Monochlorophenols	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025	0.025	7723407
2-chlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
Total Dichlorophenols	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.077	0.077	7723407
3 & 4-chlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
Total Trichlorophenols	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025	0.025	7723407
Total Tetrachlorophenols	mg/kg	<0.0050	<0.0050	0.037	0.045	0.0050	<0.025	0.025	7723407
Total Chlorophenols	mg/kg	0.014	<0.0050	0.090	0.097	0.0050	<0.077	0.077	7723407
2,4 + 2,5-Dichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
2,3-Dichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
2,6-dichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
3,5-Dichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
3,4-Dichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.077 (2)	0.077	7726724
2,4,5-trichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
2,4,6-trichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
2,3,5-trichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
2,3,6-Trichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
2,3,4-trichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
3,4,5-Trichlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
2,3,4,6-tetrachlorophenol	mg/kg	<0.0050	<0.0050	0.037	0.045	0.0050	<0.025 (1)	0.025	7726724
2,3,4,5-tetrachlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
2,3,5,6-tetrachlorophenol	mg/kg	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	<0.025 (1)	0.025	7726724
Pentachlorophenol	mg/kg	0.014	<0.0050	0.053	0.052	0.0050	<0.025 (1)	0.025	7726724
Surrogate Recovery (%)									
2,4,6-TRIBROMOPHENOL (sur.)	%	96	93	98	93		82		7726724
2-FLUOROPHENOL (sur.)	%	81	80	76	81		65		7726724

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution as a result of sample matrix inteference.
(2) RDL raised due to sample matrix interference.

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Maxxam Job #: B4A4188
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

TOTAL CHLORINATED PHENOLS IN SOIL (SOIL)

Maxxam ID		LD6078		LD6082		LD6083	LD6083		
Sampling Date		2014/11/14		2014/11/14		2014/11/14	2014/11/14		
COC Number		G096016		G096016		G096016	G096016		
	Units	14BH36-1	RDL	14VPO5-1	RDL	14VPO5-2	14VPO5-2 Lab-Dup	RDL	QC Batch
SEMI-VOLATILE ORGANICS									
Total Monochlorophenols	mg/kg	<0.0050	0.0050	<0.010	0.010	<0.0050		0.0050	7723407
2-chlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
Total Dichlorophenols	mg/kg	<0.0050	0.0050	<0.010	0.010	<0.0050		0.0050	7723407
3 & 4-chlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
Total Trichlorophenols	mg/kg	<0.0050	0.0050	<0.010	0.010	<0.0050		0.0050	7723407
Total Tetrachlorophenols	mg/kg	<0.0050	0.0050	<0.010	0.010	<0.0050		0.0050	7723407
Total Chlorophenols	mg/kg	<0.0050	0.0050	0.010	0.010	<0.0050		0.0050	7723407
2,4 + 2,5-Dichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,3-Dichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,6-dichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
3,5-Dichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
3,4-Dichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,4,5-trichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,4,6-trichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,3,5-trichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,3,6-Trichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,3,4-trichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
3,4,5-Trichlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,3,4,6-tetrachlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,3,4,5-tetrachlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
2,3,5,6-tetrachlorophenol	mg/kg	<0.0050	0.0050	<0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
Pentachlorophenol	mg/kg	<0.0050	0.0050	0.010 (1)	0.010	<0.0050	<0.0050	0.0050	7726724
Surrogate Recovery (%)									
2,4,6-TRIBROMOPHENOL (sur.)	%	95		94		93	94		7726724
2-FLUOROPHENOL (sur.)	%	82		80		76	76		7726724

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Detection limits raised due to dilution as a result of sample matrix inteference.

Maxxam Job #: B4A4188
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		LD6082	LD6083		
Sampling Date		2014/11/14	2014/11/14		
COC Number		G096016	G096016		
	Units	**14VPO5-1**	**14VPO5-2**	**RDL**	**QC Batch**
Physical Properties					
Soluble (2:1) pH	pH	7.53	8.35	N/A	7723848
Total Metals by ICPMS					
Total Arsenic (As)	mg/kg	22.7	3.10	0.50	7723846

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B4A4188
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

SPLP METALS (SOIL)

Maxxam ID		LD6082		
Sampling Date		2014/11/14		
COC Number		G096016		
	Units	**14VPO5-1**	**RDL**	**QC Batch**
Metals				
SPLP Arsenic (As)	mg/L	0.0023	0.0010	7744658
RDL = Reportable Detection Limit				

CSR VOC + VPH IN SOIL - FIELD PRESERVED (SOIL)

Maxxam ID		LD6066	LD6073		
Sampling Date		2014/11/14	2014/11/14		
COC Number		G096015	G096015		
	Units	**14BH34-02**	**14BH35-03**	**RDL**	**QC Batch**
Volatiles					
VPH (VH6 to 10 - BTEX)	mg/kg	<10	<10	10	7722187
1,2-dichloroethane	mg/kg	<0.025	<0.025	0.025	7721803
Benzene	mg/kg	<0.0050	0.0061	0.0050	7721803
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	<0.10	0.10	7721803
1,3-Butadiene	mg/kg	<0.10	<0.10	0.10	7721803
Toluene	mg/kg	<0.020	<0.020	0.020	7721803
1,2-dibromoethane	mg/kg	<0.025	<0.025	0.025	7721803
Ethylbenzene	mg/kg	<0.010	<0.010	0.010	7721803
m & p-Xylene	mg/kg	<0.040	<0.040	0.040	7721803
o-Xylene	mg/kg	<0.040	<0.040	0.040	7721803
Xylenes (Total)	mg/kg	<0.040	<0.040	0.040	7721803
Hexane	mg/kg	<0.50	<0.50	0.50	7721803
n-Decane	mg/kg	<2.0	<2.0	2.0	7721803
Isopropylbenzene	mg/kg	<0.20	<0.20	0.20	7721803
Methylcyclohexane	mg/kg	<0.20	<0.20	0.20	7721803
1,3,5-trimethylbenzene	mg/kg	<0.20	<0.20	0.20	7721803
1,2,4-trimethylbenzene	mg/kg	<0.20	<0.20	0.20	7721803
VH C6-C10	mg/kg	<10	<10	10	7721803
Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	92	92		7721803
4-Bromofluorobenzene (sur.)	%	99	96		7721803
D10-ETHYLBENZENE (sur.)	%	114	105		7721803
D4-1,2-Dichloroethane (sur.)	%	113	113		7721803
RDL = Reportable Detection Limit					

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.3°C

[Revision V2R 201411/28 SF] Reporting SPLP-As of sample 14VP05-1

Results relate only to the items tested.

Maxxam
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Success Through Science®

Maxxam Job #: B4A4188
Report Date: 2014/12/05

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7721803	1,4-Difluorobenzene (sur.)	2014/11/19	91	70 - 130	85	70 - 130	86	%				
7721803	4-Bromofluorobenzene (sur.)	2014/11/19	102	70 - 130	104	70 - 130	96	%				
7721803	D10-ETHYLBENZENE (sur.)	2014/11/19	103	50 - 130	82	50 - 130	93	%				
7721803	D4-1,2-Dichloroethane (sur.)	2014/11/19	79	70 - 130	116	70 - 130	108	%				
7725085	D10-ANTHRACENE (sur.)	2014/11/19	95	60 - 130	90	60 - 130	102	%				
7725085	D8-ACENAPHTHYLENE (sur.)	2014/11/19	89	50 - 130	89	50 - 130	97	%				
7725085	D8-NAPHTHALENE (sur.)	2014/11/19	91	50 - 130	91	50 - 130	98	%				
7725085	TERPHENYL-D14 (sur.)	2014/11/19	98	60 - 130	94	60 - 130	107	%				
7725903	D10-ANTHRACENE (sur.)	2014/11/20	99	60 - 130	99	60 - 130	102	%				
7725903	D8-ACENAPHTHYLENE (sur.)	2014/11/20	87	50 - 130	91	50 - 130	90	%				
7725903	D8-NAPHTHALENE (sur.)	2014/11/20	87	50 - 130	89	50 - 130	89	%				
7725903	TERPHENYL-D14 (sur.)	2014/11/20	98	60 - 130	100	60 - 130	101	%				
7726724	2,4,6-TRIBROMOPHENOL (sur.)	2014/11/21	94	19 - 122	96	19 - 122	95	%				
7726724	2-FLUOROPHENOL (sur.)	2014/11/21	80	25 - 121	69	25 - 121	84	%				
7721803	1,2,4-trimethylbenzene	2014/11/19	92	60 - 140	95	60 - 140	<0.20	mg/kg				
7721803	1,2-dibromoethane	2014/11/20	118	60 - 140	91	60 - 140	<0.025	mg/kg	NC	40		
7721803	1,2-dichloroethane	2014/11/20	105	60 - 140	108	60 - 140	<0.025	mg/kg	NC	40		
7721803	1,3,5-trimethylbenzene	2014/11/19	96	60 - 140	100	60 - 140	<0.20	mg/kg				
7721803	1,3-Butadiene	2014/11/19	0	N/A			<0.10	mg/kg				
7721803	Benzene	2014/11/20	100	60 - 140	96	60 - 140	<0.0050	mg/kg	NC	40		
7721803	Ethylbenzene	2014/11/20	105	60 - 140	110	60 - 140	<0.010	mg/kg	NC	40		
7721803	Hexane	2014/11/19	0	N/A			<0.50	mg/kg				
7721803	Isopropylbenzene	2014/11/19	86	60 - 140	85	60 - 140	<0.20	mg/kg				
7721803	m & p-Xylene	2014/11/20	97	60 - 140	103	60 - 140	<0.040	mg/kg	NC	40		
7721803	Methylcyclohexane	2014/11/19	2.1	N/A			<0.20	mg/kg				
7721803	Methyl-tert-butylether (MTBE)	2014/11/20	0	N/A			<0.10	mg/kg	NC	40		
7721803	n-Decane	2014/11/19					<2.0	mg/kg				
7721803	o-Xylene	2014/11/20	94	60 - 140	93	60 - 140	<0.040	mg/kg	NC	40		
7721803	Toluene	2014/11/20	100	60 - 140	101	60 - 140	<0.020	mg/kg	NC	40		
7721803	VH C6-C10	2014/11/20			100	60 - 140	<10	mg/kg	NC	40		
7721803	Xylenes (Total)	2014/11/20					<0.040	mg/kg	NC	40		
7722998	Moisture	2014/11/19					<0.30	%	1.6	20		

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Maxxam Job #: B4A4188
Report Date: 2014/12/05

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7723070	Moisture	2014/11/19					<0.30	%	0.82	20		
7723846	Total Arsenic (As)	2014/11/19	86	75 - 125	97	75 - 125	<0.50	mg/kg			96	70 - 130
7723848	Soluble (2:1) pH	2014/11/19			100	97 - 103			0.27	N/A		
7723880	Moisture	2014/11/20					<0.30	%	2.4	20		
7725085	Naphthalene	2014/11/19	87	50 - 130	89	50 - 130	<0.050	mg/kg	NC	50		
7725903	Naphthalene	2014/11/21	83	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
7726724	2,3,4,5-tetrachlorophenol	2014/11/22	108	14 - 176	111	14 - 176	<0.0050	mg/kg	NC	50		
7726724	2,3,4,6-tetrachlorophenol	2014/11/22	123	14 - 176	112	14 - 176	<0.0050	mg/kg	NC	50		
7726724	2,3,4-trichlorophenol	2014/11/22	115	37 - 144	108	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,3,5,6-tetrachlorophenol	2014/11/22	112	14 - 176	109	14 - 176	<0.0050	mg/kg	NC	50		
7726724	2,3,5-trichlorophenol	2014/11/22	110	37 - 144	103	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,3,6-Trichlorophenol	2014/11/22	115	37 - 144	106	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,3-Dichlorophenol	2014/11/22	99	39 - 135	91	39 - 135	<0.0050	mg/kg	NC	50		
7726724	2,4 + 2,5-Dichlorophenol	2014/11/22	107	39 - 135	95	39 - 135	<0.0050	mg/kg	NC	50		
7726724	2,4,5-trichlorophenol	2014/11/22	117	37 - 144	107	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,4,6-trichlorophenol	2014/11/22	104	37 - 144	103	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,6-dichlorophenol	2014/11/22	108	39 - 135	96	39 - 135	<0.0050	mg/kg	NC	50		
7726724	2-chlorophenol	2014/11/22	104	27 - 123	89	27 - 123	<0.0050	mg/kg	NC	50		
7726724	3 & 4-chlorophenol	2014/11/22	105	27 - 123	95	27 - 123	<0.0050	mg/kg	NC	50		
7726724	3,4,5-Trichlorophenol	2014/11/22	105	37 - 144	117	37 - 144	<0.0050	mg/kg	NC	50		
7726724	3,4-Dichlorophenol	2014/11/22	108	39 - 135	103	39 - 135	<0.0050	mg/kg	NC	50		
7726724	3,5-Dichlorophenol	2014/11/22	103	39 - 135	98	39 - 135	<0.0050	mg/kg	NC	50		
7726724	Pentachlorophenol	2014/11/22	104	14 - 176	124	14 - 176	<0.0050	mg/kg	NC	50		

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Maxxam Job #: B4A4188
Report Date: 2014/12/05

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7744658	SPLP Arsenic (As)	2014/12/05	89	75 - 125	97	75 - 125	<0.0010	mg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B4A4188
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO, BC
Sampler Initials: MG

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam

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Maxxam Job#: B4A4188

CHAIN OF CUSTODY RECORD

Page: 2 of 2

G 096016

B4A4188

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC
Contact Name: Lora Paul / Kristy Gabelhouse
Address: Nanaimo PC:
Phone / Fax#: Ph: 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com, Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: 1 Port Drive DSI
Location: Nanaimo BC
Sampled By: Mike Gallo

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (N/Y), Field Filtered?, Field Acidified?, Totals Metals Field Acidified? (N/Y), Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH35-7	LD6077	SOIL	Nov14/14	X
2	14BH36-1	LD6078	↓	↓	↓
3	14BH36-2	LD6079	↓	↓	↓
4	14BH36-3	LD6080	↓	↓	↓
5	14BH36-4	LD6081	↓	↓	↓
6	14VP05-1	LD6082	↓	↓	↓
7	14VP05-2	LD6083	↓	↓	↓
8	14VP05-3	—	↓	↓	↓
9	DUP. E	LD6084	↓	↓	↓
10	DUP. F	LD6085	↓	↓	↓
11	14BH33-7	LD6086	SOIL	Nov13/14	↓
12					

Samples are from a Drinking Water Source? YES / NO

Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
M Gallo	Nov14/14		JUNATHAN NE ROY	2014/11/15	10:00

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C): 3, 3, 4

Custody Seal Intact on Cooler? N/A Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

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Maxxam Job#: B4A 4188

CHAIN OF CUSTODY RECORD

Page: 1 of 2

G 096015

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 Boban Drive
Nanaimo BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: 1 Port Drive DSI
Location: NANAIMO, BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

[X] CSR
[ ] CCME
[ ] BC Water Quality
[ ] Other
[ ] DRINKING WATER

[X] Regular Turn Around Time (TAT) (5 days for most tests)
[ ] RUSH (Please contact the lab)
[ ] 1 Day [ ] 2 Day [ ] 3 Day
Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

Analysis columns: BTEX/VPH, MTBE, VOCs/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SVOC, Dissolved Metals (Field Filtered? Y/N), Total Metals (Field Acidified? Y/N), Total Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD [X]

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH34-01	LD6065	SOIL	Nov 14/14	X
2	14BH34-02	LD6066	↓	↓	↓
3	14BH34-03	LD6067			
4	14BH34-04	LD6068			
5	14BH34-05	LD6069			
6	14BH34-06	LD6070			
7	14BH35-01	LD6071			
8	14BH35-02	LD6072			
9	14BH35-03	LD6073			
10	14BH35-04	LD6074			
11	14BH35-05	LD6075			
12	14BH35-06	LD6076	↓	↓	↓

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive
M. Gallo	Nov 14/14		JWAHNNF Roy	2014/11/15	10:00	[ ]

Laboratory Use Only

Temperature on Receipt (°C): 3, 3, 4

Custody Seal Intact on Cooler? N/A Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

COC-1049 (09/10)

Maxxam International Corporation o/a Maxxam Analytics

White: Maxxam Yellow: Client

B4A4188

Maxxam

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Maxxam Job#:

CHAIN OF CUSTODY RECORD

Page: 1 of 2

G 096015

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC.
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 Boban Drive
Nanaimo BC PC V9T 6A7
Phone / Fax#: Ph (250) 756 2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: 1 Port Drive DSI
Location: NANAIMO, BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day

Date Required

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

Printed analysis columns: BTEX/VPH, MTBE, VPH, TEH, EPH, LEPH/HEPH, PAH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N, Field Acidified? Y/N), Total Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Hetero, Asbestos, HOLD

VPH: X VPH ONLY

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	VPH	Chlorinated Phenols	Gasoline/Diesel Pkg	HOLD
1	14BH34-01		SOIL	Nov14/14		X		
2	14BH34-02		↓	↓	X		X	
3	14BH34-03							
4	14BH34-04					X		
5	14BH34-05							
6	14BH34-06							
7	14BH35-01							
8	14BH35-02					X		
9	14BH35-03				X	X	X	
10	14BH35-04							
11	14BH35-05							
12	14BH35-06		↓	↓		X		↓

Samples are from a Drinking Water Source? YES NO
Does source supply multiple households? YES NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
M. Gallo	Nov 14/14				

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C)

Custody Seal Intact on Cooler? Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (01/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#:

CHAIN OF CUSTODY RECORD

Page: 2 of 2

G 096016

Invoice To: Require Report? Yes ☑ No ☐

Company Name: TETRA TECH EBA INC
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA INC
Contact Name: Lorri Paul / Kristy Gabelhouse
Address: Nanaimo PC:
Phone / Fax#: Ph: [illegible] 756 2256 Fax:
E-mail: Lorri.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: 1 Port Drive DE
Location: Nanaimo BC
Sampled By: Mike Grills

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☐ CCME
- ☐ BC Water Quality
- ☐ Other
- DRINKING WATER

- ☒ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab)
- ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ Ship Sample Bottles (please specify) ☐

ANALYSIS REQUESTED

BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y / N), (Field Acidified? Y / N), Total Metals (Field Acidified? Y / N), Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform: Total & E.coli, Fecal, Asbestos, Chlorinated Phenols, Arsenic, HOLD

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	Chlorinated Phenols	Arsenic	HOLD
1	14BH35-7		SOIL	Nov14/14			☒
2	14BH36-1				X		
3	14BH36-2						
4	14BH36-3						
5	14BH36-4						
6	14VP05-1				X	X	
7	14VP05-2				X	X	
8	14VP05-3						
9	DUP E						
10	DUP F						
11	11BH33-7		SOIL	Nov13/14			
12							

Samples are from a Drinking Water Source? YES ☐ NO ☐

Does source supply multiple households? YES ☐ NO ☐

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
[signature]	Nov14/14					☐		Yes ☐ No ☐

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC 1020 (04/10)

Maxxam International Corporation o/a Maxxam Analytics

Your Project #: ENVIND03511-01.004
Site#: 1 PORT DRIVE DSI
Site Location: NANAIMO BC

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Your C.O.C. #: G096011, G096012, G096013, G096014

Report Date: 2014/12/05
Report #: R1698819
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B4A4134
Received: 2014/11/14, 07:55

Sample Matrix: Soil
Samples Received: 24

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Phenols in Soil by GCMS	3	2014/11/20	2014/11/22	BBY8SOP-00025	EPA 8270d R4
Glycols in Soil	1	2014/11/21	2014/11/21	BBY5SOP-00001	EPA 8015c R3 m
Elements by ICPMS (total)	18	2014/11/19	2014/11/19	BBY7SOP-00001	EPA 6020a R1 m
Metals - SPLP	1	2014/12/02	2014/12/05	BBY7SOP-00002	EPA 6020A R1 m
Moisture	11	N/A	2014/11/19	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	2	N/A	2014/11/20	BBY8SOP-00017	OMOE E3139 3.1 m
PAH in Soil by GC/MS (SIM)	1	2014/11/18	2014/11/19	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	1	2014/11/18	2014/11/20	BBY8SOP-00022	EPA 8270d R4 m
PAH in Soil by GC/MS (SIM)	2	2014/11/18	2014/11/21	BBY8SOP-00022	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	1	N/A	2014/11/20	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	2	N/A	2014/11/21	BBY WI-00033	Auto Calc
Total Chlorinated Phenols Soil Calc.	3	2014/11/18	2014/11/24	BBY8SOP-00025	EPA 8270d R4
pH (2:1 DI Water Extract)	18	2014/11/19	2014/11/19	BBY6SOP-00028	BCMOE BCLM Mar2005 m
EPH less PAH in Soil By GC/FID	1	N/A	2014/11/20	BBY WI-00033	Auto Calc
EPH less PAH in Soil By GC/FID	1	N/A	2014/11/21	BBY WI-00033	Auto Calc
BC Hydrocarbons in Soil by GC/FID	3	2014/11/18	2014/11/19	BBY8SOP-00029	BCMOE EPH s 07/99 m
BC Hydrocarbons in Soil by GC/FID	6	2014/11/18	2014/11/20	BBY8SOP-00029	BCMOE EPH s 07/99 m
VOCs, VH, F1, LH in Soil - Field Pres.	1	N/A	2014/11/20	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	1	N/A	2014/11/20	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Your Project #: ENVIND03511-01.004
Site#: 1 PORT DRIVE DSI
Site Location: NANAIMO BC

Attention:Lora J Paul

Tetra Tech EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Your C.O.C. #: G096011, G096012, G096013, G096014

Report Date: 2014/12/05
Report #: R1698819
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B4A4134
Received: 2014/11/14, 07:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604)638-5016
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

GLYCOLS BY GC-FID (SOIL)

Maxxam ID		LD5759		
Sampling Date		2014/11/13		
COC Number		G096012		
	Units	14BH28-2	RDL	QC Batch
Glycols				
Extractable (Water) Ethylene Glycol	mg/kg	<10	10	7728442
Extractable (Water) Diethylene Glycol	mg/kg	<10	10	7728442
Extractable (Water) Triethylene Glycol	mg/kg	<10	10	7728442
Extractable (Water) Tetraethylene Glycol	mg/kg	<10	10	7728442
Extractable (Water) Propylene Glycol	mg/kg	<10	10	7728442
Surrogate Recovery (%)				
Extractable (Water) SULFOLANE (sur.)	%	83		7728442
RDL = Reportable Detection Limit				

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Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

PHYSICAL TESTING (SOIL)

Maxxam ID		LD5745	LD5746	LD5752	LD5753	LD5754		LD5756		
Sampling Date		2014/11/12	2014/11/12	2014/11/12	2014/11/12	2014/11/12		2014/11/13		
COC Number		G096011	G096011	G096011	G096011	G096012		G096012		
	Units	**14BH26-4**	**14BH26-5**	**14BH27-4**	**14BH27-5**	**DUP. A**	**QC Batch**	**DUP. C**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	17	16	32	32	30	7722998	10	0.30	7723880
RDL = Reportable Detection Limit										

Maxxam ID		LD5757	LD5759	LD5761	LD5766	LD5770		LD5773		
Sampling Date		2014/11/12	2014/11/13	2014/11/13	2014/11/13	2014/11/13		2014/11/13		
COC Number		G096012	G096012	G096012	G096013	G096013		G096013		
	Units	**14BH27-6**	**14BH28-2**	**14BH28-4**	**14BH29-3**	**14BH30-2**	**QC Batch**	**14BH31-1**	**RDL**	**QC Batch**
Physical Properties										
Moisture	%	35	18	11	8.0	15	7722998	10	0.30	7723880
RDL = Reportable Detection Limit										

Maxxam ID		LD5779		
Sampling Date		2014/11/13		
COC Number		G096014		
	Units	**14BH32-2**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	6.6	0.30	7722998
RDL = Reportable Detection Limit				

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Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		LD5759		
Sampling Date		2014/11/13		
COC Number		G096012		
	Units	**14BH28-2**	**RDL**	**QC Batch**
Polycyclic Aromatics				
Naphthalene	mg/kg	3.0	0.050	7724203
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	69		7724203
D8-ACENAPHTHYLENE (sur.)	%	71		7724203
D8-NAPHTHALENE (sur.)	%	74		7724203
TERPHENYL-D14 (sur.)	%	81		7724203
RDL = Reportable Detection Limit				

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

TOTAL PETROLEUM HYDROCARBONS (SOIL)

Maxxam ID		LD5745	LD5746	LD5752	LD5753	LD5754	LD5757		
Sampling Date		2014/11/12	2014/11/12	2014/11/12	2014/11/12	2014/11/12	2014/11/12		
COC Number		G096011	G096011	G096011	G096011	G096012	G096012		
	Units	**14BH26-4**	**14BH26-5**	**14BH27-4**	**14BH27-5**	**DUP. A**	**14BH27-6**	**RDL**	**QC Batch**
Hydrocarbons									
EPH (C10-C19)	mg/kg	1210	1060	1240	533	1280	105	100	7725897
EPH (C19-C32)	mg/kg	1240	1120	1130	409	1070	111	100	7725897
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	92	94	103	102	102	114		7725897
RDL = Reportable Detection Limit									

Maxxam ID		LD5759		
Sampling Date		2014/11/13		
COC Number		G096012		
	Units	**14BH28-2**	**RDL**	**QC Batch**
Hydrocarbons				
EPH (C10-C19)	mg/kg	341	100	7724193
EPH (C19-C32)	mg/kg	435	100	7724193
Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	105		7724193
RDL = Reportable Detection Limit				

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Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

TOTAL CHLORINATED PHENOLS IN SOIL (SOIL)

Maxxam ID		LD5756	LD5773	LD5779		
Sampling Date		2014/11/13	2014/11/13	2014/11/13		
COC Number		G096012	G096013	G096014		
	Units	**DUP. C**	**14BH31-1**	**14BH32-2**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS						
Total Monochlorophenols	mg/kg	<0.025	<0.025	<0.025	0.025	7723407
2-chlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
Total Dichlorophenols	mg/kg	<0.025	<0.025	<0.025	0.025	7723407
3 & 4-chlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
Total Trichlorophenols	mg/kg	<0.025	<0.025	<0.025	0.025	7723407
Total Tetrachlorophenols	mg/kg	<0.025	<0.025	<0.025	0.025	7723407
Total Chlorophenols	mg/kg	<0.025	<0.025	<0.025	0.025	7723407
2,4 + 2,5-Dichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,3-Dichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,6-dichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
3,5-Dichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
3,4-Dichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,4,5-trichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,4,6-trichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,3,5-trichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,3,6-Trichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,3,4-trichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
3,4,5-Trichlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,3,4,6-tetrachlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,3,4,5-tetrachlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
2,3,5,6-tetrachlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
Pentachlorophenol	mg/kg	<0.025 (1)	<0.025 (1)	<0.025 (1)	0.025	7726724
Surrogate Recovery (%)						
2,4,6-TRIBROMOPHENOL (sur.)	%	100	89	93		7726724
2-FLUOROPHENOL (sur.)	%	82	75	77		7726724

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution as a result of sample matrix inteference.

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Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		LD5766		LD5770		
Sampling Date		2014/11/13		2014/11/13		
COC Number		G096013		G096013		
	Units	**14BH29-3**	**RDL**	**14BH30-2**	**RDL**	**QC Batch**
Polycyclic Aromatics						
Naphthalene	mg/kg	1.4	0.050	9.6	0.050	7725085
2-Methylnaphthalene	mg/kg	1.8	0.050	13 (1)	0.25	7725085
Acenaphthylene	mg/kg	<0.050	0.050	<0.061 (2)	0.061	7725085
Acenaphthene	mg/kg	<0.050	0.050	<0.099 (2)	0.099	7725085
Fluorene	mg/kg	<0.050	0.050	<0.089 (2)	0.089	7725085
Phenanthrene	mg/kg	0.34	0.050	2.1	0.050	7725085
Anthracene	mg/kg	0.054	0.050	0.36	0.050	7725085
Fluoranthene	mg/kg	0.059	0.050	0.29	0.050	7725085
Pyrene	mg/kg	0.072	0.050	0.31	0.050	7725085
Benzo(a)anthracene	mg/kg	0.052	0.050	0.17	0.050	7725085
Chrysene	mg/kg	0.055	0.050	0.14	0.050	7725085
Benzo(b&j)fluoranthene	mg/kg	<0.050	0.050	0.057	0.050	7725085
Benzo(b)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7725085
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	<0.050	0.050	7725085
Benzo(a)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7725085
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	<0.050	0.050	7725085
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	<0.050	0.050	7725085
Benzo(g,h,i)perylene	mg/kg	<0.050	0.050	<0.18 (2)	0.18	7725085
Low Molecular Weight PAH`s	mg/kg	3.6	0.050	25	0.25	7721521
High Molecular Weight PAH`s	mg/kg	0.24	0.050	0.96	0.18	7721521
Total PAH	mg/kg	3.9	0.050	26	0.25	7721521
Calculated Parameters						
LEPH (C10-C19 less PAH)	mg/kg	<100	100	1210	100	7721522
HEPH (C19-C32 less PAH)	mg/kg	131	100	1340	100	7721522
Hydrocarbons						
EPH (C10-C19)	mg/kg	<100	100	1220	100	7725098
EPH (C19-C32)	mg/kg	132	100	1340	100	7725098
Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	94		50 (3)		7725085
D8-ACENAPHTHYLENE (sur.)	%	90		54		7725085
D8-NAPHTHALENE (sur.)	%	91		69		7725085

RDL = Reportable Detection Limit
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) RDL raised due to sample matrix interference.

(3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

LEPH & HEPH FOR CSR IN SOIL (SOIL)

Maxxam ID		LD5766		LD5770		
Sampling Date		2014/11/13		2014/11/13		
COC Number		G096013		G096013		
	Units	**14BH29-3**	**RDL**	**14BH30-2**	**RDL**	**QC Batch**
TERPHENYL-D14 (sur.)	%	96		61		7725085
O-TERPHENYL (sur.)	%	111		90		7725098
RDL = Reportable Detection Limit						

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		LD5748		LD5756	LD5759		LD5761	LD5764		
Sampling Date		2014/11/12		2014/11/13	2014/11/13		2014/11/13	2014/11/13		
COC Number		G096011		G096012	G096012		G096012	G096012		
	Units	14BH26-7	QC Batch	DUP. C	14BH28-2	QC Batch	14BH28-4	14BH29-1	RDL	QC Batch
Physical Properties										
Soluble (2:1) pH	pH	7.79	7723845	7.53	7.18	7723848	7.72	7.22	N/A	7723845
Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg			17000	20900	7723846	18200	12500	100	7723841
Total Antimony (Sb)	mg/kg			0.95	0.76	7723846	0.56	1.93	0.10	7723841
Total Arsenic (As)	mg/kg			8.32	4.52	7723846	8.71	7.06	0.50	7723841
Total Barium (Ba)	mg/kg			116	493	7723846	93.9	191	0.10	7723841
Total Beryllium (Be)	mg/kg			0.47	0.57	7723846	0.48	0.43	0.40	7723841
Total Bismuth (Bi)	mg/kg			0.11	<0.10	7723846	0.12	0.10	0.10	7723841
Total Cadmium (Cd)	mg/kg			0.393	0.326	7723846	0.238	0.296	0.050	7723841
Total Calcium (Ca)	mg/kg			15600	28200	7723846	4830	13600	100	7723841
Total Chromium (Cr)	mg/kg	93.1	7723841	102	39.2	7723846	92.9	48.7	1.0	7723841
Total Cobalt (Co)	mg/kg			22.3	8.27	7723846	24.2	11.4	0.30	7723841
Total Copper (Cu)	mg/kg			79.7	50.5	7723846	60.2	69.7	0.50	7723841
Total Iron (Fe)	mg/kg			26500	17700	7723846	39100	26500	100	7723841
Total Lead (Pb)	mg/kg			14.3	6.61	7723846	12.6	36.7	0.10	7723841
Total Lithium (Li)	mg/kg			24.2	26.2	7723846	31.7	22.2	5.0	7723841
Total Magnesium (Mg)	mg/kg			8770	4590	7723846	10200	4620	100	7723841
Total Manganese (Mn)	mg/kg			386	290	7723846	615	406	0.20	7723841
Total Mercury (Hg)	mg/kg			0.520	0.098	7723846	0.175	0.369	0.050	7723841
Total Molybdenum (Mo)	mg/kg			3.37	2.58	7723846	4.27	2.62	0.10	7723841
Total Nickel (Ni)	mg/kg			171	73.1	7723846	150	89.2	0.80	7723841
Total Phosphorus (P)	mg/kg			280	862	7723846	391	347	10	7723841
Total Potassium (K)	mg/kg			847	1230	7723846	1460	891	100	7723841
Total Selenium (Se)	mg/kg			1.17	<0.50	7723846	0.68	0.72	0.50	7723841
Total Silver (Ag)	mg/kg			0.162	0.087	7723846	0.119	0.116	0.050	7723841
Total Sodium (Na)	mg/kg			494	831	7723846	1530	384	100	7723841
Total Strontium (Sr)	mg/kg			141	677	7723846	108	208	0.10	7723841
Total Thallium (Tl)	mg/kg			0.150	<0.050	7723846	0.088	0.159	0.050	7723841
Total Tin (Sn)	mg/kg			1.43	0.68	7723846	1.09	3.05	0.10	7723841
Total Titanium (Ti)	mg/kg			239	944	7723846	272	587	1.0	7723841
Total Uranium (U)	mg/kg			0.399	0.682	7723846	1.04	0.484	0.050	7723841
Total Vanadium (V)	mg/kg			81.0	59.3	7723846	69.9	55.5	2.0	7723841
Total Zinc (Zn)	mg/kg			100	14.5	7723846	70.9	45.6	1.0	7723841
Total Zirconium (Zr)	mg/kg			7.00	15.0	7723846	6.33	6.90	0.50	7723841

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		LD5766	LD5770		LD5773		LD5776	LD5778		
Sampling Date		2014/11/13	2014/11/13		2014/11/13		2014/11/13	2014/11/13		
COC Number		G096013	G096013		G096013		G096013	G096014		
	Units	**14BH29-3**	**14BH30-2**	**QC Batch**	**14BH31-1**	**QC Batch**	**14BH31-4**	**14BH32-1**	**RDL**	**QC Batch**
Physical Properties										
Soluble (2:1) pH	pH	8.10	7.05	7723845	7.48	7723848	7.37	7.77	N/A	7723845
Total Metals by ICPMS										
Total Aluminum (Al)	mg/kg	22300	13600	7723841	17800	7723846	10600		100	7723841
Total Antimony (Sb)	mg/kg	0.48	0.56	7723841	2.35	7723846	0.12		0.10	7723841
Total Arsenic (As)	mg/kg	13.3	5.79	7723841	9.52	7723846	2.85		0.50	7723841
Total Barium (Ba)	mg/kg	126	110	7723841	129	7723846	43.7		0.10	7723841
Total Beryllium (Be)	mg/kg	0.61	0.48	7723841	0.51	7723846	<0.40		0.40	7723841
Total Bismuth (Bi)	mg/kg	0.14	0.10	7723841	0.11	7723846	<0.10		0.10	7723841
Total Cadmium (Cd)	mg/kg	0.234	0.160	7723841	0.352	7723846	0.132	0.308	0.050	7723841
Total Calcium (Ca)	mg/kg	5560	2550	7723841	23000	7723846	5910		100	7723841
Total Chromium (Cr)	mg/kg	73.0	81.0	7723841	109	7723846	15.2		1.0	7723841
Total Cobalt (Co)	mg/kg	26.6	22.2	7723841	24.5	7723846	5.08		0.30	7723841
Total Copper (Cu)	mg/kg	51.2	54.7	7723841	84.4	7723846	18.1		0.50	7723841
Total Iron (Fe)	mg/kg	44800	31400	7723841	28000	7723846	13300		100	7723841
Total Lead (Pb)	mg/kg	11.3	12.1	7723841	23.6	7723846	1.77		0.10	7723841
Total Lithium (Li)	mg/kg	38.0	17.3	7723841	24.4	7723846	16.1		5.0	7723841
Total Magnesium (Mg)	mg/kg	12400	8360	7723841	9070	7723846	4520		100	7723841
Total Manganese (Mn)	mg/kg	1480	412	7723841	451	7723846	185		0.20	7723841
Total Mercury (Hg)	mg/kg	0.553	0.236	7723841	0.568	7723846	<0.050		0.050	7723841
Total Molybdenum (Mo)	mg/kg	2.99	4.27	7723841	3.69	7723846	0.48		0.10	7723841
Total Nickel (Ni)	mg/kg	131	122	7723841	182	7723846	15.7		0.80	7723841
Total Phosphorus (P)	mg/kg	741	430	7723841	301	7723846	463		10	7723841
Total Potassium (K)	mg/kg	1800	1160	7723841	905	7723846	574		100	7723841
Total Selenium (Se)	mg/kg	<0.50	0.53	7723841	1.13	7723846	<0.50		0.50	7723841
Total Silver (Ag)	mg/kg	0.084	0.102	7723841	0.309	7723846	<0.050		0.050	7723841
Total Sodium (Na)	mg/kg	2140	2730	7723841	516	7723846	804		100	7723841
Total Strontium (Sr)	mg/kg	73.1	175	7723841	161	7723846	45.4		0.10	7723841
Total Thallium (Tl)	mg/kg	0.093	0.066	7723841	0.164	7723846	0.100		0.050	7723841
Total Tin (Sn)	mg/kg	0.73	0.77	7723841	4.16	7723846	0.20		0.10	7723841
Total Titanium (Ti)	mg/kg	230	179	7723841	278	7723846	1010		1.0	7723841
Total Uranium (U)	mg/kg	0.576	1.23	7723841	0.415	7723846	0.372		0.050	7723841
Total Vanadium (V)	mg/kg	73.2	56.0	7723841	87.6	7723846	37.1		2.0	7723841
Total Zinc (Zn)	mg/kg	93.5	63.6	7723841	108	7723846	28.4	60.0	1.0	7723841
Total Zirconium (Zr)	mg/kg	6.09	3.61	7723841	7.48	7723846	3.57		0.50	7723841

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

CSR/CCME METALS IN SOIL (SOIL)

Maxxam ID		LD5779	LD5780		LD5782	LD5784		LD5785		
Sampling Date		2014/11/13	2014/11/13		2014/11/13	2014/11/13		2014/11/13		
COC Number		G096014	G096014		G096014	G096014		G096014		
	Units	**14BH32-2**	**14BH32-3**	**QC Batch**	**14BH32-5**	**14BH33-2**	**QC Batch**	**14BH33-3**	**RDL**	**QC Batch**
Physical Properties										
Soluble (2:1) pH	pH	7.77	7.66	7723845	8.28	7.85	7723848	7.81	N/A	7723845
Total Metals by ICPMS										
Total Cadmium (Cd)	mg/kg	0.361	0.467	7723841		0.200	7723846	0.173	0.050	7723841
Total Chromium (Cr)	mg/kg		44.6	7723841	17.8		7723846		1.0	
Total Zinc (Zn)	mg/kg	172	69.6	7723841		39.8	7723846	40.2	1.0	7723841

RDL = Reportable Detection Limit
N/A = Not Applicable

Maxxam ID		LD5787	LD5787		LD5788	LD5789		
Sampling Date		2014/11/13	2014/11/13		2014/11/13	2014/11/13		
COC Number		G096014	G096014		G096014	G096014		
	Units	**14BH33-5**	**14BH33-5 Lab-Dup**	**QC Batch**	**14BH33-6**	**DUP. D**	**RDL**	**QC Batch**
Physical Properties								
Soluble (2:1) pH	pH	7.49	7.51	7723848	7.62	7.90	N/A	7723845
Total Metals by ICPMS								
Total Cadmium (Cd)	mg/kg					0.164	0.050	7723841
Total Chromium (Cr)	mg/kg	91.6	91.6	7723846	63.4		1.0	7723841
Total Zinc (Zn)	mg/kg					37.8	1.0	7723841

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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Maxxam Job #: B4A4134
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Site Location: NANAIMO BC
Sampler Initials: MG

SPLP METALS (SOIL)

Maxxam ID		LD5773		
Sampling Date		2014/11/13		
COC Number		G096013		
	Units	14BH31-1	RDL	QC Batch
Metals				
SPLP Chromium (Cr)	mg/L	0.0014	0.0010	7744658
RDL = Reportable Detection Limit				

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

CSR PAH IN SOIL BY GC-MS (SOIL)

Maxxam ID		LD5761		
Sampling Date		2014/11/13		
COC Number		G096012		
	Units	**14BH28-4**	**RDL**	**QC Batch**
Polycyclic Aromatics				
Naphthalene	mg/kg	15 (1)	0.25	7725085
2-Methylnaphthalene	mg/kg	18 (1)	0.25	7725085
Acenaphthylene	mg/kg	<0.050	0.050	7725085
Acenaphthene	mg/kg	<0.12 (2)	0.12	7725085
Fluorene	mg/kg	<0.16 (2)	0.16	7725085
Phenanthrene	mg/kg	2.1	0.050	7725085
Anthracene	mg/kg	0.49	0.050	7725085
Fluoranthene	mg/kg	0.32	0.050	7725085
Pyrene	mg/kg	0.37	0.050	7725085
Benzo(a)anthracene	mg/kg	0.24	0.050	7725085
Chrysene	mg/kg	0.19	0.050	7725085
Benzo(b&j)fluoranthene	mg/kg	0.090	0.050	7725085
Benzo(b)fluoranthene	mg/kg	0.051	0.050	7725085
Benzo(k)fluoranthene	mg/kg	<0.050	0.050	7725085
Benzo(a)pyrene	mg/kg	0.076	0.050	7725085
Indeno(1,2,3-cd)pyrene	mg/kg	<0.050	0.050	7725085
Dibenz(a,h)anthracene	mg/kg	<0.050	0.050	7725085
Benzo(g,h,i)perylene	mg/kg	<0.17 (2)	0.17	7725085
Low Molecular Weight PAH`s	mg/kg	36	0.25	7721521
High Molecular Weight PAH`s	mg/kg	1.3	0.17	7721521
Total PAH	mg/kg	37	0.25	7721521
Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	67		7725085
D8-ACENAPHTHYLENE (sur.)	%	66		7725085
D8-NAPHTHALENE (sur.)	%	79		7725085
TERPHENYL-D14 (sur.)	%	74		7725085

RDL = Reportable Detection Limit

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) RDL raised due to sample matrix interference.

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Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

CSR VOC + VPH IN SOIL - FIELD PRESERVED (SOIL)

Maxxam ID		LD5759		
Sampling Date		2014/11/13		
COC Number		G096012		
	Units	**14BH28-2**	**RDL**	**QC Batch**
Volatiles				
VPH (VH6 to 10 - BTEX)	mg/kg	60	10	7722187
1,2-dichloroethane	mg/kg	<0.025	0.025	7721803
Benzene	mg/kg	1.6	0.0050	7721803
Methyl-tert-butylether (MTBE)	mg/kg	<0.10	0.10	7721803
1,3-Butadiene	mg/kg	<0.10	0.10	7721803
Toluene	mg/kg	4.5	0.020	7721803
1,2-dibromoethane	mg/kg	<0.025	0.025	7721803
Ethylbenzene	mg/kg	0.80	0.010	7721803
m & p-Xylene	mg/kg	5.1	0.040	7721803
o-Xylene	mg/kg	3.8	0.040	7721803
Xylenes (Total)	mg/kg	8.9	0.040	7721803
Hexane	mg/kg	1.6	0.50	7721803
n-Decane	mg/kg	<2.6 (1)	2.6	7721803
Isopropylbenzene	mg/kg	0.49	0.20	7721803
Methylcyclohexane	mg/kg	6.4	0.20	7721803
1,3,5-trimethylbenzene	mg/kg	0.69	0.20	7721803
1,2,4-trimethylbenzene	mg/kg	3.2	0.20	7721803
VH C6-C10	mg/kg	76	10	7721803
Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	90		7721803
4-Bromofluorobenzene (sur.)	%	101		7721803
D10-ETHYLBENZENE (sur.)	%	99		7721803
D4-1,2-Dichloroethane (sur.)	%	109		7721803

RDL = Reportable Detection Limit
(1) RDL raised due to background artifacts detected in analysis

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C
Package 2	3.0°C

[Revision V2R 2014/11/28 SF] Added SPLP-Cr analysis to BH31-1

Results relate only to the items tested.

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Maxxam Job #: B4A4134
Report Date: 2014/12/05

QUALITY ASSURANCE REPORT

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7721803	1,4-Difluorobenzene (sur.)	2014/11/19	91	70 - 130	85	70 - 130	86	%				
7721803	4-Bromofluorobenzene (sur.)	2014/11/19	102	70 - 130	104	70 - 130	96	%				
7721803	D10-ETHYLBENZENE (sur.)	2014/11/19	103	50 - 130	82	50 - 130	93	%				
7721803	D4-1,2-Dichloroethane (sur.)	2014/11/19	79	70 - 130	116	70 - 130	108	%				
7724193	O-TERPHENYL (sur.)	2014/11/19	106	50 - 130	109	50 - 130	107	%				
7724203	D10-ANTHRACENE (sur.)	2014/11/19	82	60 - 130	99	60 - 130	98	%				
7724203	D8-ACENAPHTHYLENE (sur.)	2014/11/19	79	50 - 130	88	50 - 130	86	%				
7724203	D8-NAPHTHALENE (sur.)	2014/11/19	76	50 - 130	86	50 - 130	86	%				
7724203	TERPHENYL-D14 (sur.)	2014/11/19	83	60 - 130	101	60 - 130	98	%				
7725085	D10-ANTHRACENE (sur.)	2014/11/19	95	60 - 130	90	60 - 130	102	%				
7725085	D8-ACENAPHTHYLENE (sur.)	2014/11/19	89	50 - 130	89	50 - 130	97	%				
7725085	D8-NAPHTHALENE (sur.)	2014/11/19	91	50 - 130	91	50 - 130	98	%				
7725085	TERPHENYL-D14 (sur.)	2014/11/19	98	60 - 130	94	60 - 130	107	%				
7725098	O-TERPHENYL (sur.)	2014/11/19	100	50 - 130	113	50 - 130	110	%				
7725897	O-TERPHENYL (sur.)	2014/11/20	110	50 - 130	101	50 - 130	116	%				
7726724	2,4,6-TRIBROMOPHENOL (sur.)	2014/11/21	94	19 - 122	96	19 - 122	95	%				
7726724	2-FLUOROPHENOL (sur.)	2014/11/21	80	25 - 121	69	25 - 121	84	%				
7728442	Extractable (Water) SULFOLANE (sur.)	2014/11/21	99	60 - 140	83	60 - 140	108	%				
7721803	1,2,4-trimethylbenzene	2014/11/19	92	60 - 140	95	60 - 140	<0.20	mg/kg				
7721803	1,2-dibromoethane	2014/11/20	118	60 - 140	91	60 - 140	<0.025	mg/kg	NC	40		
7721803	1,2-dichloroethane	2014/11/20	105	60 - 140	108	60 - 140	<0.025	mg/kg	NC	40		
7721803	1,3,5-trimethylbenzene	2014/11/19	96	60 - 140	100	60 - 140	<0.20	mg/kg				
7721803	1,3-Butadiene	2014/11/19	0	N/A			<0.10	mg/kg				
7721803	Benzene	2014/11/20	100	60 - 140	96	60 - 140	<0.0050	mg/kg	NC	40		
7721803	Ethylbenzene	2014/11/20	105	60 - 140	110	60 - 140	<0.010	mg/kg	NC	40		
7721803	Hexane	2014/11/19	0	N/A			<0.50	mg/kg				
7721803	Isopropylbenzene	2014/11/19	86	60 - 140	85	60 - 140	<0.20	mg/kg				
7721803	m & p-Xylene	2014/11/20	97	60 - 140	103	60 - 140	<0.040	mg/kg	NC	40		
7721803	Methylcyclohexane	2014/11/19	2.1	N/A			<0.20	mg/kg				
7721803	Methyl-tert-butylether (MTBE)	2014/11/20	0	N/A			<0.10	mg/kg	NC	40		
7721803	n-Decane	2014/11/19					<2.0	mg/kg				
7721803	o-Xylene	2014/11/20	94	60 - 140	93	60 - 140	<0.040	mg/kg	NC	40		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7721803	Toluene	2014/11/20	100	60 - 140	101	60 - 140	<0.020	mg/kg	NC	40		
7721803	VH C6-C10	2014/11/20			100	60 - 140	<10	mg/kg	NC	40		
7721803	Xylenes (Total)	2014/11/20					<0.040	mg/kg	NC	40		
7722998	Moisture	2014/11/19					<0.30	%	1.6	20		
7723841	Total Aluminum (Al)	2014/11/19					<100	mg/kg			98	70 - 130
7723841	Total Antimony (Sb)	2014/11/19	97	75 - 125	100	75 - 125	<0.10	mg/kg			100	70 - 130
7723841	Total Arsenic (As)	2014/11/19	96	75 - 125	96	75 - 125	<0.50	mg/kg			97	70 - 130
7723841	Total Barium (Ba)	2014/11/19	NC	75 - 125	100	75 - 125	<0.10	mg/kg	0.35	35	104	70 - 130
7723841	Total Beryllium (Be)	2014/11/19	84	75 - 125	98	75 - 125	<0.40	mg/kg				
7723841	Total Bismuth (Bi)	2014/11/19					<0.10	mg/kg				
7723841	Total Cadmium (Cd)	2014/11/19	95	75 - 125	104	75 - 125	<0.050	mg/kg			102	70 - 130
7723841	Total Calcium (Ca)	2014/11/19					<100	mg/kg			93	70 - 130
7723841	Total Chromium (Cr)	2014/11/19	94	75 - 125	101	75 - 125	<1.0	mg/kg			101	70 - 130
7723841	Total Cobalt (Co)	2014/11/19	91	75 - 125	101	75 - 125	<0.30	mg/kg			92	70 - 130
7723841	Total Copper (Cu)	2014/11/19	88	75 - 125	103	75 - 125	<0.50	mg/kg			96	70 - 130
7723841	Total Iron (Fe)	2014/11/19					<100	mg/kg			91	70 - 130
7723841	Total Lead (Pb)	2014/11/19	92	75 - 125	102	75 - 125	<0.10	mg/kg			100	70 - 130
7723841	Total Lithium (Li)	2014/11/19	91	75 - 125	98	75 - 125	<5.0	mg/kg				
7723841	Total Magnesium (Mg)	2014/11/19					<100	mg/kg			90	70 - 130
7723841	Total Manganese (Mn)	2014/11/19	NC	75 - 125	101	75 - 125	<0.20	mg/kg			99	70 - 130
7723841	Total Mercury (Hg)	2014/11/19	93	75 - 125	98	75 - 125	<0.050	mg/kg			104	70 - 130
7723841	Total Molybdenum (Mo)	2014/11/19	108	75 - 125	99	75 - 125	<0.10	mg/kg			110	70 - 130
7723841	Total Nickel (Ni)	2014/11/19	96	75 - 125	100	75 - 125	<0.80	mg/kg			96	70 - 130
7723841	Total Phosphorus (P)	2014/11/19					<10	mg/kg			93	70 - 130
7723841	Total Potassium (K)	2014/11/19					<100	mg/kg				
7723841	Total Selenium (Se)	2014/11/19	98	75 - 125	102	75 - 125	<0.50	mg/kg				
7723841	Total Silver (Ag)	2014/11/19	93	75 - 125	101	75 - 125	<0.050	mg/kg				
7723841	Total Sodium (Na)	2014/11/19					<100	mg/kg				
7723841	Total Strontium (Sr)	2014/11/19	NC	75 - 125	95	75 - 125	<0.10	mg/kg			102	70 - 130
7723841	Total Thallium (Tl)	2014/11/19	98	75 - 125	101	75 - 125	<0.050	mg/kg			94	70 - 130
7723841	Total Tin (Sn)	2014/11/19	93	75 - 125	96	75 - 125	<0.10	mg/kg				
7723841	Total Titanium (Ti)	2014/11/19	77	75 - 125	95	75 - 125	<1.0	mg/kg			100	70 - 130

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7723841	Total Uranium (U)	2014/11/19	102	75 - 125	97	75 - 125	<0.050	mg/kg			106	70 - 130
7723841	Total Vanadium (V)	2014/11/19	94	75 - 125	98	75 - 125	<2.0	mg/kg			98	70 - 130
7723841	Total Zinc (Zn)	2014/11/19	84	75 - 125	107	75 - 125	<1.0	mg/kg			91	70 - 130
7723841	Total Zirconium (Zr)	2014/11/19					<0.50	mg/kg				
7723845	Soluble (2:1) pH	2014/11/19			100	97 - 103			0.27	N/A		
7723846	Total Aluminum (Al)	2014/11/19					<100	mg/kg			99	70 - 130
7723846	Total Antimony (Sb)	2014/11/19	78	75 - 125	95	75 - 125	<0.10	mg/kg			106	70 - 130
7723846	Total Arsenic (As)	2014/11/19	86	75 - 125	97	75 - 125	<0.50	mg/kg			96	70 - 130
7723846	Total Barium (Ba)	2014/11/19	NC	75 - 125	102	75 - 125	<0.10	mg/kg			98	70 - 130
7723846	Total Beryllium (Be)	2014/11/19	96	75 - 125	97	75 - 125	<0.40	mg/kg				
7723846	Total Bismuth (Bi)	2014/11/19					<0.10	mg/kg				
7723846	Total Cadmium (Cd)	2014/11/19	96	75 - 125	104	75 - 125	<0.050	mg/kg			98	70 - 130
7723846	Total Calcium (Ca)	2014/11/19					<100	mg/kg			90	70 - 130
7723846	Total Chromium (Cr)	2014/11/19	NC	75 - 125	101	75 - 125	<1.0	mg/kg	0.019	30	101	70 - 130
7723846	Total Cobalt (Co)	2014/11/19	NC	75 - 125	103	75 - 125	<0.30	mg/kg			91	70 - 130
7723846	Total Copper (Cu)	2014/11/19	NC	75 - 125	103	75 - 125	<0.50	mg/kg			91	70 - 130
7723846	Total Iron (Fe)	2014/11/19					<100	mg/kg			90	70 - 130
7723846	Total Lead (Pb)	2014/11/19	NC	75 - 125	102	75 - 125	<0.10	mg/kg			99	70 - 130
7723846	Total Lithium (Li)	2014/11/19	NC	75 - 125	102	75 - 125	<5.0	mg/kg				
7723846	Total Magnesium (Mg)	2014/11/19					<100	mg/kg			89	70 - 130
7723846	Total Manganese (Mn)	2014/11/19	NC	75 - 125	103	75 - 125	<0.20	mg/kg			97	70 - 130
7723846	Total Mercury (Hg)	2014/11/19	80	75 - 125	100	75 - 125	<0.050	mg/kg			99	70 - 130
7723846	Total Molybdenum (Mo)	2014/11/19	NC	75 - 125	95	75 - 125	<0.10	mg/kg			110	70 - 130
7723846	Total Nickel (Ni)	2014/11/19	NC	75 - 125	101	75 - 125	<0.80	mg/kg			94	70 - 130
7723846	Total Phosphorus (P)	2014/11/19					<10	mg/kg			89	70 - 130
7723846	Total Potassium (K)	2014/11/19					<100	mg/kg				
7723846	Total Selenium (Se)	2014/11/19	94	75 - 125	103	75 - 125	<0.50	mg/kg				
7723846	Total Silver (Ag)	2014/11/19	95	75 - 125	102	75 - 125	<0.050	mg/kg				
7723846	Total Sodium (Na)	2014/11/19					<100	mg/kg				
7723846	Total Strontium (Sr)	2014/11/19	NC	75 - 125	96	75 - 125	<0.10	mg/kg			100	70 - 130
7723846	Total Thallium (Tl)	2014/11/19	83	75 - 125	99	75 - 125	<0.050	mg/kg			91	70 - 130
7723846	Total Tin (Sn)	2014/11/19	87	75 - 125	92	75 - 125	<0.10	mg/kg				

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Maxxam Job #: B4A4134
Report Date: 2014/12/05

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7723846	Total Titanium (Ti)	2014/11/19	NC	75 - 125	92	75 - 125	<1.0	mg/kg			102	70 - 130
7723846	Total Uranium (U)	2014/11/19	95	75 - 125	98	75 - 125	<0.050	mg/kg			96	70 - 130
7723846	Total Vanadium (V)	2014/11/19	NC	75 - 125	98	75 - 125	<2.0	mg/kg			100	70 - 130
7723846	Total Zinc (Zn)	2014/11/19	NC	75 - 125	104	75 - 125	<1.0	mg/kg			90	70 - 130
7723846	Total Zirconium (Zr)	2014/11/19					<0.50	mg/kg				
7723848	Soluble (2:1) pH	2014/11/19			100	97 - 103			0.27	N/A		
7723880	Moisture	2014/11/20					<0.30	%	2.4	20		
7724193	EPH (C10-C19)	2014/11/19	95	50 - 130	90	50 - 130	<100	mg/kg	NC	40		
7724193	EPH (C19-C32)	2014/11/19	111	50 - 130	98	50 - 130	<100	mg/kg	NC	40		
7724203	Naphthalene	2014/11/19	74	50 - 130	85	50 - 130	<0.050	mg/kg	NC	50		
7725085	2-Methylnaphthalene	2014/11/19	85	50 - 130	88	50 - 130	<0.050	mg/kg	NC	50		
7725085	Acenaphthene	2014/11/19	88	50 - 130	90	50 - 130	<0.050	mg/kg	NC	50		
7725085	Acenaphthylene	2014/11/19	83	50 - 130	86	50 - 130	<0.050	mg/kg	NC	50		
7725085	Anthracene	2014/11/19	90	60 - 130	92	60 - 130	<0.050	mg/kg	NC	50		
7725085	Benzo(a)anthracene	2014/11/19	80	60 - 130	82	60 - 130	<0.050	mg/kg	NC	50		
7725085	Benzo(a)pyrene	2014/11/19	84	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
7725085	Benzo(b&j)fluoranthene	2014/11/19	91	60 - 130	84	60 - 130	<0.050	mg/kg	NC	50		
7725085	Benzo(b)fluoranthene	2014/11/19					<0.050	mg/kg	NC	50		
7725085	Benzo(g,h,i)perylene	2014/11/19	80	60 - 130	74	60 - 130	<0.050	mg/kg	NC	50		
7725085	Benzo(k)fluoranthene	2014/11/19	90	60 - 130	97	60 - 130	<0.050	mg/kg	NC	50		
7725085	Chrysene	2014/11/19	83	60 - 130	83	60 - 130	<0.050	mg/kg	NC	50		
7725085	Dibenz(a,h)anthracene	2014/11/19	77	60 - 130	70	60 - 130	<0.050	mg/kg	NC	50		
7725085	Fluoranthene	2014/11/19	90	60 - 130	89	60 - 130	<0.050	mg/kg	NC	50		
7725085	Fluorene	2014/11/19	86	50 - 130	90	50 - 130	<0.050	mg/kg	NC	50		
7725085	Indeno(1,2,3-cd)pyrene	2014/11/19	84	60 - 130	76	60 - 130	<0.050	mg/kg	NC	50		
7725085	Naphthalene	2014/11/19	87	50 - 130	89	50 - 130	<0.050	mg/kg	NC	50		
7725085	Phenanthrene	2014/11/19	89	60 - 130	87	60 - 130	<0.050	mg/kg	NC	50		
7725085	Pyrene	2014/11/19	93	60 - 130	93	60 - 130	<0.050	mg/kg	NC	50		
7725098	EPH (C10-C19)	2014/11/19	92	50 - 130	94	50 - 130	<100	mg/kg	NC	40		
7725098	EPH (C19-C32)	2014/11/19	95	50 - 130	100	50 - 130	<100	mg/kg	NC	40		
7725897	EPH (C10-C19)	2014/11/20	104	50 - 130	92	50 - 130	<100	mg/kg	NC	40		
7725897	EPH (C19-C32)	2014/11/20	105	50 - 130	95	50 - 130	<100	mg/kg	NC	40		

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

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Maxxam Job #: B4A4134
Report Date: 2014/12/05

QUALITY ASSURANCE REPORT(CONT'D)

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7726724	2,3,4,5-tetrachlorophenol	2014/11/22	108	14 - 176	111	14 - 176	<0.0050	mg/kg	NC	50		
7726724	2,3,4,6-tetrachlorophenol	2014/11/22	123	14 - 176	112	14 - 176	<0.0050	mg/kg	NC	50		
7726724	2,3,4-trichlorophenol	2014/11/22	115	37 - 144	108	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,3,5,6-tetrachlorophenol	2014/11/22	112	14 - 176	109	14 - 176	<0.0050	mg/kg	NC	50		
7726724	2,3,5-trichlorophenol	2014/11/22	110	37 - 144	103	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,3,6-Trichlorophenol	2014/11/22	115	37 - 144	106	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,3-Dichlorophenol	2014/11/22	99	39 - 135	91	39 - 135	<0.0050	mg/kg	NC	50		
7726724	2,4 + 2,5-Dichlorophenol	2014/11/22	107	39 - 135	95	39 - 135	<0.0050	mg/kg	NC	50		
7726724	2,4,5-trichlorophenol	2014/11/22	117	37 - 144	107	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,4,6-trichlorophenol	2014/11/22	104	37 - 144	103	37 - 144	<0.0050	mg/kg	NC	50		
7726724	2,6-dichlorophenol	2014/11/22	108	39 - 135	96	39 - 135	<0.0050	mg/kg	NC	50		
7726724	2-chlorophenol	2014/11/22	104	27 - 123	89	27 - 123	<0.0050	mg/kg	NC	50		
7726724	3 & 4-chlorophenol	2014/11/22	105	27 - 123	95	27 - 123	<0.0050	mg/kg	NC	50		
7726724	3,4,5-Trichlorophenol	2014/11/22	105	37 - 144	117	37 - 144	<0.0050	mg/kg	NC	50		
7726724	3,4-Dichlorophenol	2014/11/22	108	39 - 135	103	39 - 135	<0.0050	mg/kg	NC	50		
7726724	3,5-Dichlorophenol	2014/11/22	103	39 - 135	98	39 - 135	<0.0050	mg/kg	NC	50		
7726724	Pentachlorophenol	2014/11/22	104	14 - 176	124	14 - 176	<0.0050	mg/kg	NC	50		
7728442	Extractable (Water) Diethylene Glycol	2014/11/21	78	30 - 130	79	30 - 130	<10	mg/kg	NC	40		
7728442	Extractable (Water) Ethylene Glycol	2014/11/21	76	30 - 130	86	30 - 130	<10	mg/kg	NC	40		
7728442	Extractable (Water) Propylene Glycol	2014/11/21	62	30 - 130	78	30 - 130	<10	mg/kg	NC	40		
7728442	Extractable (Water) Tetraethylene Glycol	2014/11/21	56	30 - 130	96	30 - 130	<10	mg/kg	NC	40		
7728442	Extractable (Water) Triethylene Glycol	2014/11/21	45	30 - 130	76	30 - 130	<10	mg/kg	NC	40		

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QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
7744658	SPLP Chromium (Cr)	2014/12/05	82	75 - 125	85	75 - 125	<0.0010	mg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B4A4134
Report Date: 2014/12/05

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: NANAIMO BC
Sampler Initials: MG

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam

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Maxxam Job#: B4A4134

CHAIN OF CUSTODY RECORD

Page: 2 of 4

G 096012

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA
Contact Name: Lora Paul / Kristy Gabelhouse
Address: 1-4376 Boban Dr.
Nanaimo BC PC:
Phone / Fax#: Ph: 756-2256 Fax:
E-mail: Lora.Paul@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: 1 Port Drive DSI
Location: NANAIMO
Sampled By: Mike Gallo

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GC/MS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? N/Y, Field Acidified? N/Y), Totals Metals Field Acidified? N/Y, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	DUP. A	LD5754	SOIL	NOV 12/14	X
2	DUP. B	LD5755	SOIL	NOV 13/14	↓
3	DUP. C	LD5756	SOIL	NOV 13/14	↓
4	~~[illegible]~~ 14BH27-6	LD5757	SOIL	NOV 12/14	↓
5	14BH28-1	LD5758	SOIL	NOV 13/14	↓
6	14BH28-2	LD5759	↓	↓	↓
7	14BH28-3	LD5760	↓	↓	↓
8	14BH28-4	LD5761	↓	↓	↓
9	14BH28-5	LD5762	↓	↓	↓
10	14BH28-6	LD5763	↓	↓	↓
11	14BH29-1	LD5764	↓	↓	↓
12	14BH29-2	LD5765	↓	↓	↓

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
M Gallo	Nov 13/14	5:30	Laurel Berthier	2014/11/14	07:55

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C): 2,3,3 / 3,3,3

Custody Seal Intact on Cooler? NA Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

B4A4134

Maxxam

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Maxxam Job#: B4A 4134

CHAIN OF CUSTODY RECORD

Page: 1 of 4

G 096011

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DR.
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph (250) 756-2256 Fax:
E-mail: Kristy.Gabelhouse@tetratech.com
Lora.Paul@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

MTBE, BTEX/VPH, VOC/VPH, TEH, EPH, LEPH/HEPH, PAH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by GCMS, Phenols by 4AAP, SWOG, MOG, TOG, Dissolved Metals (Field Filtered? N/Y), Field Acidified? N/Y, Totals Metals Field Acidified? N/Y, Ammonia, Nitrite, Nitrate, Sulphate, Fluoride, Chloride, TDS, Total Suspended Solids-TSS, pH, Alkalinity, Conductivity, BOD, COD, Fecal, Coliform, Total & E.coli, Asbestos, HOLD [X]

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH26-1	LD5742	SOIL	Nov 12/14	X
2	14BH26-2	LD5743	↓	↓	↓
3	14BH26-3	LD5744			
4	14BH26-4	LD5745			
5	14BH26-5	LD5746			
6	14BH26-6	LD5747			
7	14BH26-7	LD5748			
8	14BH27-1	LD5749			
9	14BH27-2	LD5750			
10	14BH27-3	LD5751			
11	14BH27-4	LD5752			
12	14BH27-5	LD5753	↓	↓	↓

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
M Gallo	Nov 13/14	5:30	Laura Berthier	2014/11/14	07:55

Laboratory Use Only

Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
[ ]	2,3,3 / 3,3,3	Yes [ ] No [ ] N/A

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

B4A4134

Maxxam

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Maxxam Job#: B4A4134

CHAIN OF CUSTODY RECORD

Page: 3 of 4

G 096013

B4A4134

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name:
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 14376 BUSAP DRIVE
NANAIMO PC:
Phone / Fax#: Ph (250) 756-2256 Fax:
E-mail: LORA.PAUL@tetratech.com
Kristy.Gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.001
Proj. Name: Port Drive DSI
Location: NANAIMO
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? N / Y), Metals (Field Acidified? N / Y), Totals Metals Field Acidified? (N / Y), Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH29-3	LD5766	Soil	Nov 13/14	X
2	14BH29-4	LD5767	↓	↓	↓
3	14BH29-5	LD5768	↓	↓	↓
4	14BH30-1	LD5769	↓	↓	↓
5	14BH30-2	LD5770	↓	↓	↓
6	14BH30-3	LD5771	↓	↓	↓
7	14BH30-4	LD5772	↓	↓	↓
8	14BH31-1	LD5773	↓	↓	↓
9	14BH31-2	LD5774	↓	↓	↓
10	14BH31-3	LD5775	↓	↓	↓
11	14BH31-4	LD5776	↓	↓	↓
12	14BH31-5	LD5777	↓	↓	↓

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
M. Gallo	Nov 13/14	5:30	Marie Laurel Berthier	2014/11/14	07:55

Laboratory Use Only

Time Sensitive [ ]

Temperature on Receipt (°C): 2,3,3 / 3,3,3

Custody Seal Intact on Cooler? NA Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

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Maxxam Job#: B4A 4134

CHAIN OF CUSTODY RECORD

Page: 4 of 4

G 096014

B4A4134

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: NANAIMO PC: V9T 6A7
Phone / Fax#: Ph (250) 756-2256 Fax:
E-mail LORA.PAUL@TETRATECH.COM
KRISTY.GABELHOUSE@TETRATECH.COM

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day

Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

Columns: MTBE, BTEX/VPH, VOC/VPH, TEH, EPH, LEPH/HEPH, PAH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by GCMS, Phenols by 4AAP, SWOG, MOG, TOG, Dissolved Metals (N/Y Field Filtered?), (N/Y Field Acidified?), Totals Metals (N/Y Field Acidified?), Ammonia, Nitrite, Nitrate, Sulphate, Fluoride, Chloride, TDS, Total Suspended Solids-TSS, Alkalinity, Conductivity, pH, BOD, COD, Fecal, Coliform, Total & E.coli, Asbestos, HOLD [X]

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	HOLD
1	14BH32-1	LD5778	SOIL	Nov 13/14	↓
2	14BH32-2	LD5779	↓	↓	↓
3	14BH32-3	LD5780			
4	14BH32-4	LD5781			
5	14BH32-5	LD5782			
6	14BH33-1	LD5783			
7	14BH33-2	LD5784			
8	14BH33-3	LD5785			
9	14BH33-4	LD5786			
10	14BH33-5	LD5787			
11	14BH33-6	LD5788			
12	DUP-D	LD5789	↓	↓	↓

Samples are from a Drinking Water Source? YES NO
Does source supply multiple households? YES NO

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
M. Gallo	Nov 13/14		Laurel Berthier	2014/11/14	07:55	[ ]	2,3,3 / 3,3,3	NA Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

#506 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: ____________

CHAIN OF CUSTODY RECORD

Page: 1 of 4

G 096011

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:

Company Name: TETRA TECH EBA
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address: 1-4376 BOBAN DR.
NANAIMO BC PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: Kristy.Gabelhouse@tetratech.com
Lora.Paul@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: 1 Port Drive DSI
Location: NANAIMO BC
Sampled By: MIKE GALL

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

BTEX/VPH, MTBE, VOC/VPH, EPH [X], TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by MAP, Phenols by GCMS, TOG, MOG, SWOD, Dissolved Metals, Field Filtered?, Field Acidified?, Total Metals Field Acidified?, Nitrite, Nitrate, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, Chromium, HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	EPH	Chromium	HOLD
1	14BH26-1		Soil	Nov 12/14			
2	14BH26-2						
3	14BH26-3						
4	14BH26-4				X		
5	14BH26-5				X		
6	14BH26-6						
7	14BH26-7					X	
8	14BH27-1						
9	14BH27-2						
10	14BH27-3						
11	14BH27-4				X		
12	14BH27-5				X		

Samples are from a Drinking Water Source? YES / NO

Does source supply multiple households? YES / NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
[signature]	Nov 13/14	5:30				[ ]		Yes / No

Laboratory Use Only

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1000 (06/13)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#:

CHAIN OF CUSTODY RECORD

Page: 2 of 4

G 096012

Invoice To: Require Report? Yes ☒ No ☐

Company Name: Tetra Tech EBA Inc.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail:

Report To:

Company Name: Tetra Tech EBA
Contact Name: Leon Paul / Kristy Gabelhouse
Address: 1-4376 Boban Dr
Nanaimo BC PC V9T 6A7
Phone / Fax#: Ph: 756-2256 Fax:
E-mail: leon.paul@tetratech.com
kristy.gabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03517-01.004
Proj. Name: 1 Pond Drive DS
Location: Nanaimo
Sampled By: Mike Sello

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- ☒ CSR
- ☐ CCME
- ☐ BC Water Quality
- ☐ Other
- DRINKING WATER

- ☒ Regular Turn Around Time (TAT) (5 days for most tests)
- ☐ RUSH (Please contact the lab)
- ☐ 1 Day ☐ 2 Day ☐ 3 Day
- Date Required:

Special Instructions:

Return Cooler ☐ **Ship Sample Bottles (please specify)** ☐

ANALYSIS REQUESTED

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	BTEX/VPH / MTBE	VOC/VPH	EPH / TEH ☒	PAH / LEPH/HEPH ☒	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP / Phenols by GCMS	TDS / MOG / SWOG	Dissolved Metals: Field Filtered? Y / N	Field Acidified? Y / N	Total Metals (Field Acidified?) Y / N	Nitrate / Nitrite / Ammonia	Chloride / Fluoride / Sulphate	Total Suspended Solids-TSS / TDS	pH / Conductivity / Alkalinity	BOD	COD	Coliform, Total & E.coli / Fecal	Asbestos	Gasoline/Diesel Pkg.	Glycols	Chlorinated Phenols			HOLD ☒
1	DUP A		SOIL	NOV 13/14			X																								
2	DUP B		SOIL	NOV 13/14																											
3	DUP C		SOIL	NOV 13/14													X											X			
4	14BH27-6		SOIL	NOV 13/14			X																								
5	14BH28-1		SOIL	NOV 13/14																											
6	14BH28-2						X										X									X	X				
7	14BH28-3																														
8	14BH28-4							X									X														
9	14BH28-5																														
10	14BH28-6																														
11	14BH29-1																X														
12	14BH29-2																														

Samples are from a Drinking Water Source? YES / NO
Does source supply multiple households? YES / NO

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
M. Sello	Nov 13/14	5:30				☐		Yes / No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC 1020 (01/10)

Maxxam International Corporation o/a Maxxam Analytics

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#:

CHAIN OF CUSTODY RECORD

Page: 3 of 4

G 096013

Invoice To: Require Report? Yes ✓ No

Company Name:	TETRA TECH EBA INC
Contact Name:	
Address:	
PC:	
Phone / Fax#:	Ph: Fax:
E-mail:	

Report To:

Company Name:	
Contact Name:	LORA PAUL / KRISTY GABELHOUSE
Address:	1-4376 BOBAN DRIVE
	NANAIMO PC:
Phone / Fax#:	Ph: (250) 756-2256 Fax:
E-mail:	LORA.PAUL@tetratech.com Kristy.Gabelhouse@tetratech.com

PO #:	
Quotation #:	
Project #:	ENVIND03511-01.001
Proj. Name:	Port Drive DSI
Location:	NANAIMO
Sampled By:	MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [x] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- DRINKING WATER

- [x] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

#	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled
1	14BH29-3		Soil	Nov 13/14
2	14BH29-4			
3	14BH29-5			
4	14BH30-1			
5	14BH30-2			
6	14BH30-3			
7	14BH30-4			
8	14BH31-1			
9	14BH31-2			
10	14BH31-3			
11	14BH31-4			
12	14BH31-5			

ANALYSIS REQUESTED

#	BTEX/VPH / MTBE	VOC/VPH	EPH / TEH	PAH (X) / LEPH/HEPH (X)	CCME-PHC (Fractions 1-4 Plus BTEX)	CCME-PHC (Fractions 2-4)	CCME BTEX (Fraction 1 Plus BTEX)	PCB	Phenols by 4AAP / Phenols by CCME	TOG / MOG / SVOG	Dissolved Metals Field Filtered? Y N	Field Acidified? Y N	Total Metals Field Acidified? Y N	Nitrite / Nitrate / Ammonia	Chloride / Fluoride / Sulphate	Total Suspended Solids (TSS) / TDS	pH / Conductivity / Alkalinity	BOD	COD	Coliform, Total & E.coli / Fecal	Asbestos	Chlorinated Phenols						HOLD (X)
1				X									X															
2																												
3																												
4																												
5				X									X															
6																												
7																												
8													X									X						
9																												
10																												
11													X															
12																												

Samples are from a Drinking Water Source? YES NO

Does source supply multiple households? YES NO

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
[signature]	Nov 13/14	5:30			

Laboratory Use Only

Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
		Yes No

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1000 (05/10)

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#:

CHAIN OF CUSTODY RECORD

Page: 4 of 4

G 096014

Invoice To: Require Report? Yes [X] No [ ]

Company Name: TETRA TECH EBA INC.
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail:

Report To:

Company Name: TETRA TECH EBA
Contact Name: LORA PAUL / KRISTY GABELHOUSE
Address:
NANAIMO PC: V9T 6A7
Phone / Fax#: Ph: (250) 756-2256 Fax:
E-mail: LORA.PAUL@TETRATECH.COM
KRISTY.GABELHOUSE@TETRATECH.COM

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: 1 PORT DRIVE DSI
Location: NANAIMO BC
Sampled By: MIKE GALLO

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED

BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME PHC (Fractions 1-4 Plus BTEX), CCME PHC (Fractions 2-4), CCME BTEX, Fraction 1 Plus BTEX, PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Y/N), Field Filtered, Field Acidified, Total Metals, Field Acidified?, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids (TSS), TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform: Total & E.coli, Fecal, Albolytics, Cadmium, Chromium, Zinc, Chlorinated Phenols, HOLD [X]

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	Cadmium	Chromium	Zinc	Chlorinated Phenols	HOLD
1	14BH32-1		SOIL	Nov 13/14	X		X		
2	14BH32-2				X		X	X	
3	14BH32-3				X	X	X		
4	14BH32-4								
5	14BH32-5					X			
6	14BH33-1								
7	14BH33-2				X		X		
8	14BH33-3				X		X		
9	14BH33-4								
10	14BH33-5					X			
11	14BH33-6					X			
12	DUP. D.		↓	↓	X		X		↓

Samples are from a Drinking Water Source? YES [ ] NO [ ]
Does source supply multiple households? YES [ ] NO [ ]

Laboratory Use Only

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
M. Gallo	Nov 13/14					[ ]		Yes [ ] No [ ]

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

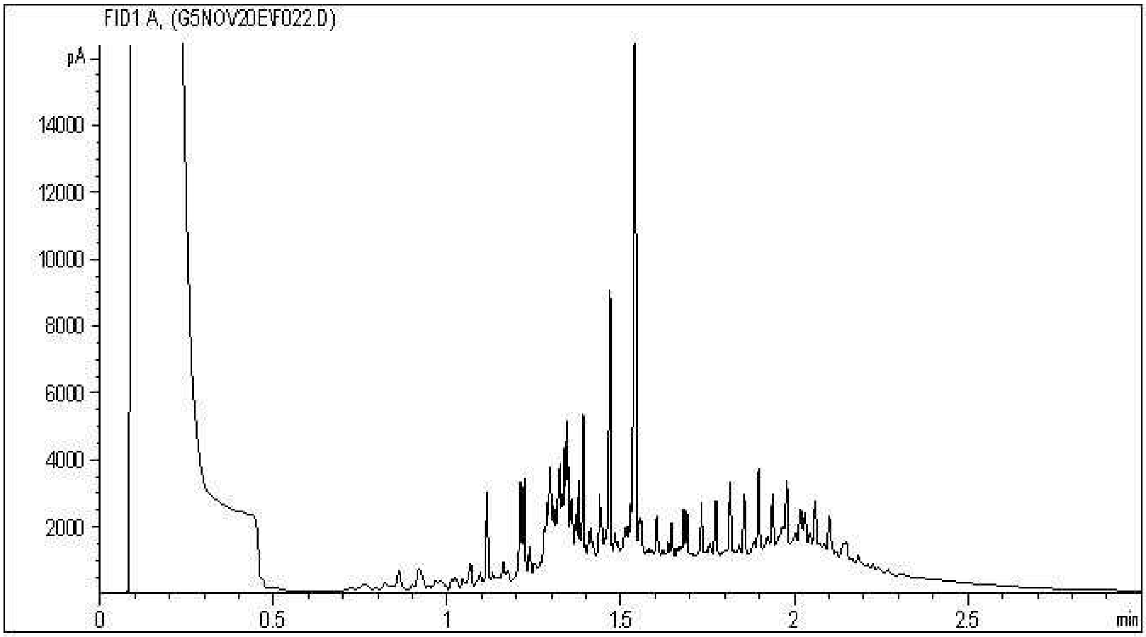
COC-1000 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

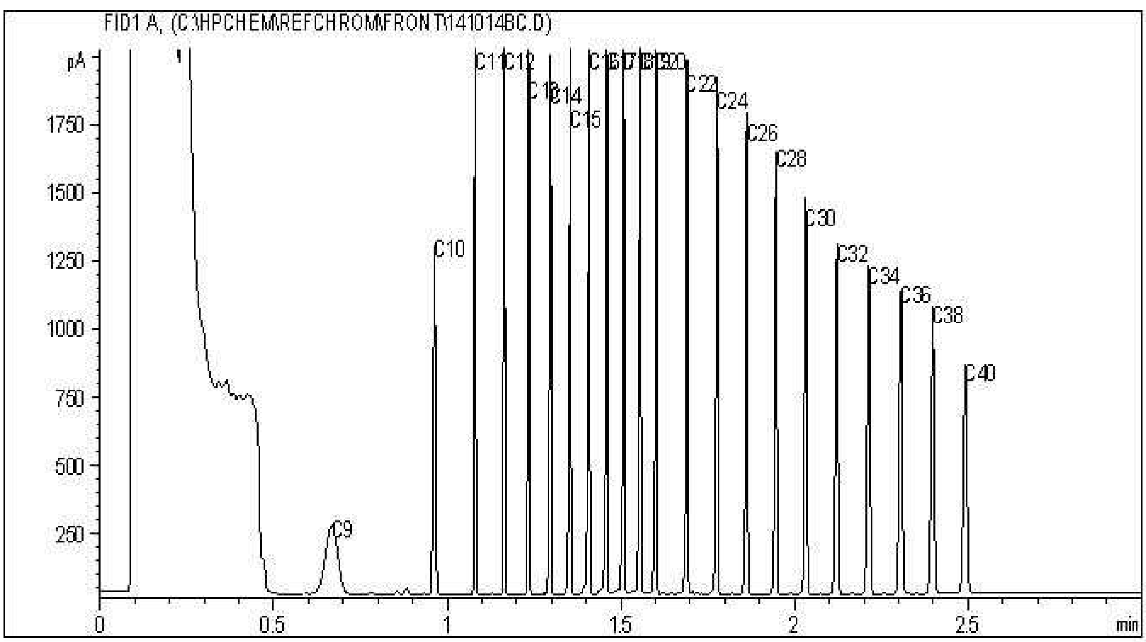
Maxxam Job #: B4A4134
Report Date: 2014/12/05
Maxxam Sample: LD5745

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Reference: NANAIMO BC
Client ID: 14BH26-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



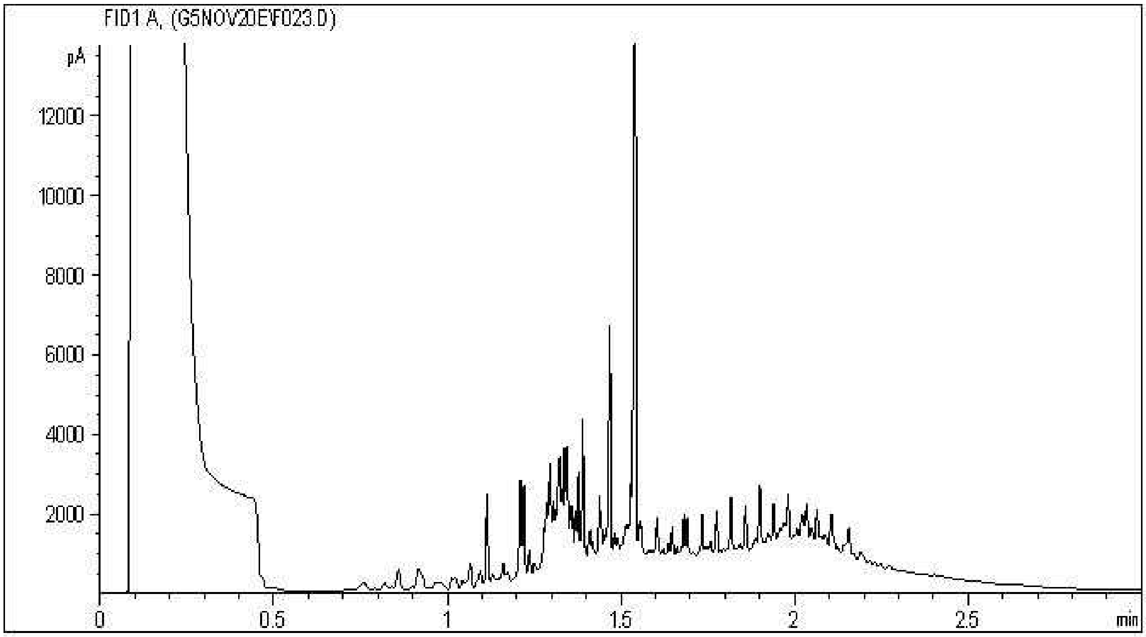
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

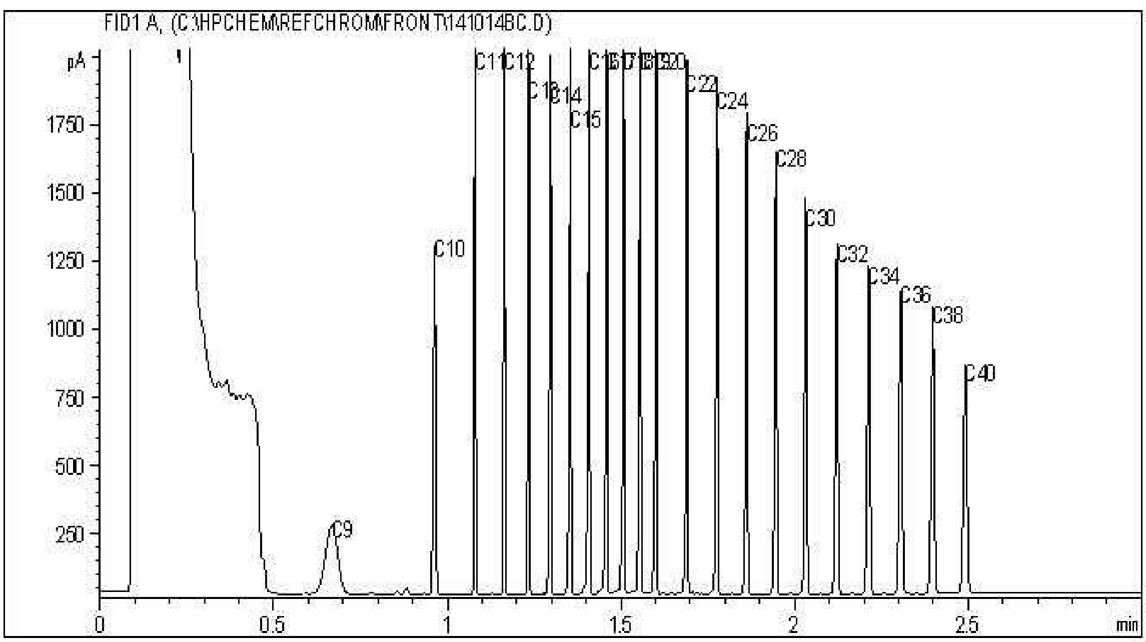
Maxxam Job #: B4A4134
Report Date: 2014/12/05
Maxxam Sample: LD5746

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Reference: NANAIMO BC
Client ID: 14BH26-5

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



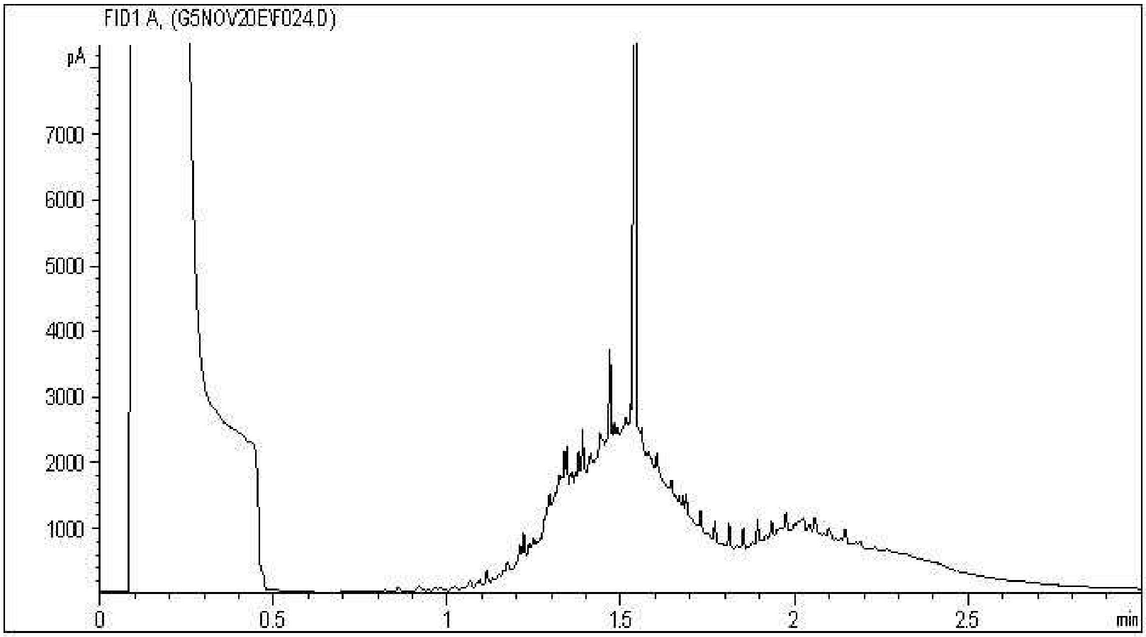
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

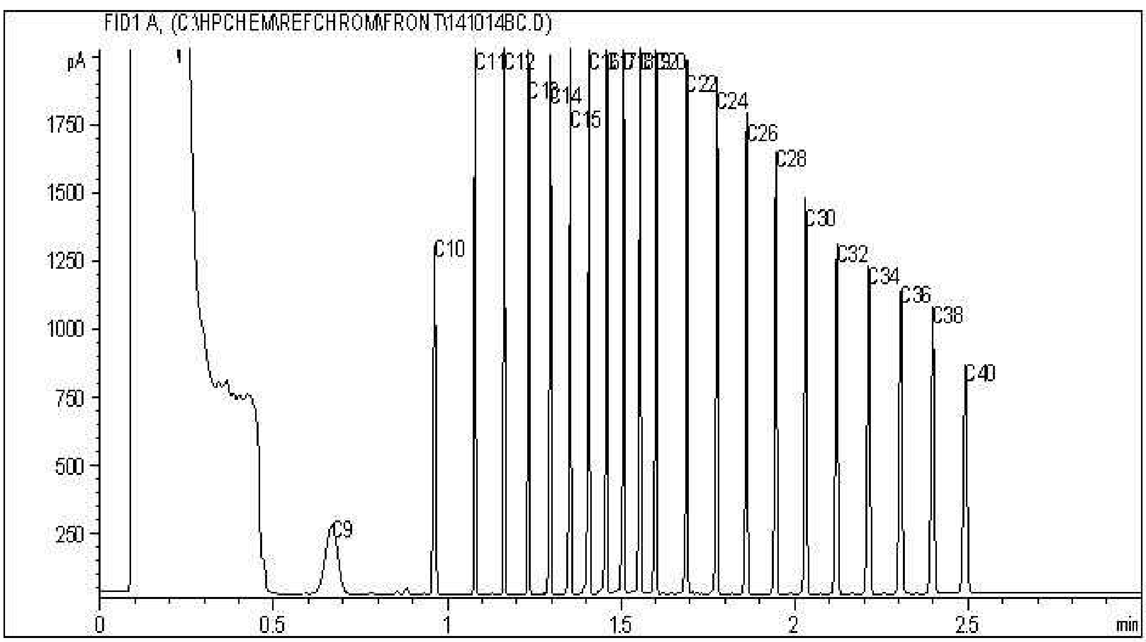
Maxxam Job #: B4A4134
Report Date: 2014/12/05
Maxxam Sample: LD5752

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Reference: NANAIMO BC
Client ID: 14BH27-4

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



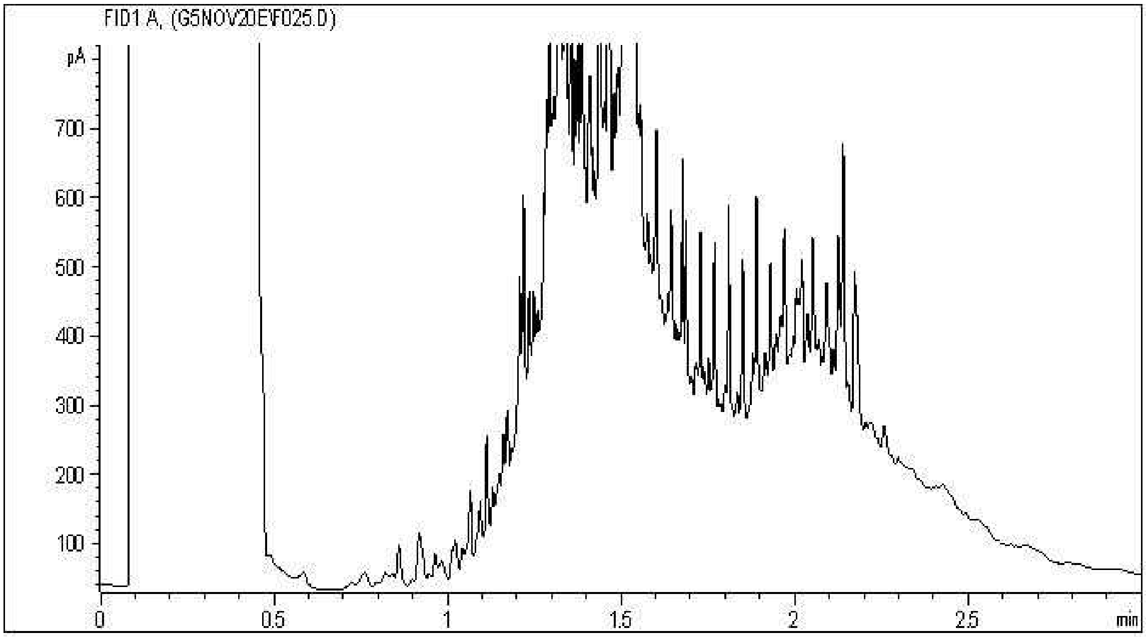
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

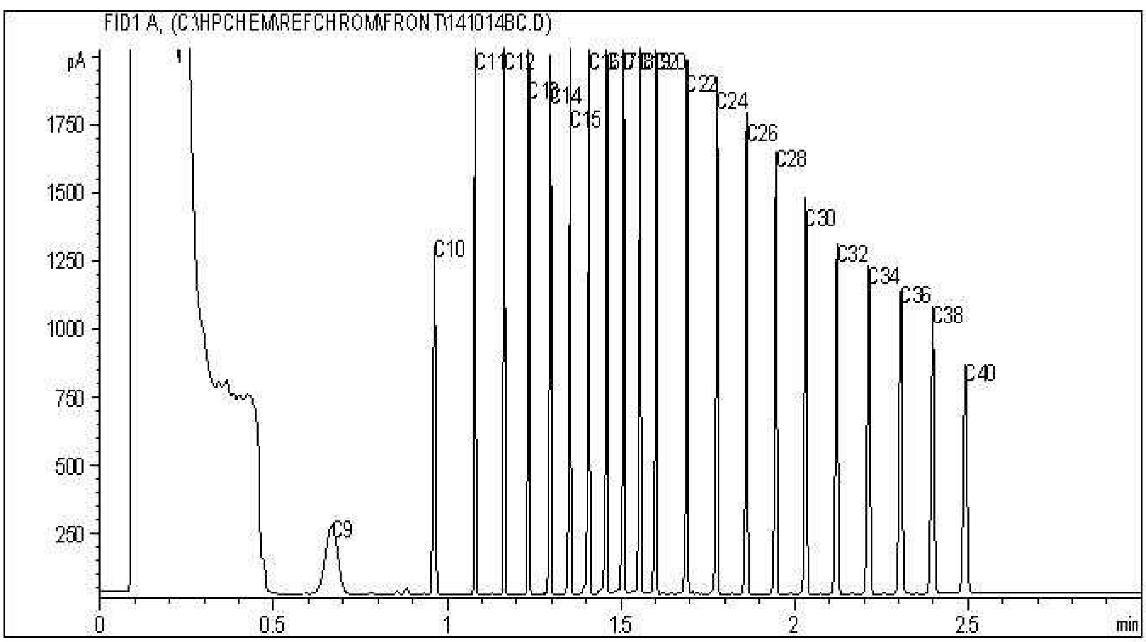
Maxxam Job #: B4A4134
Report Date: 2014/12/05
Maxxam Sample: LD5753

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Reference: NANAIMO BC
Client ID: 14BH27-5

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



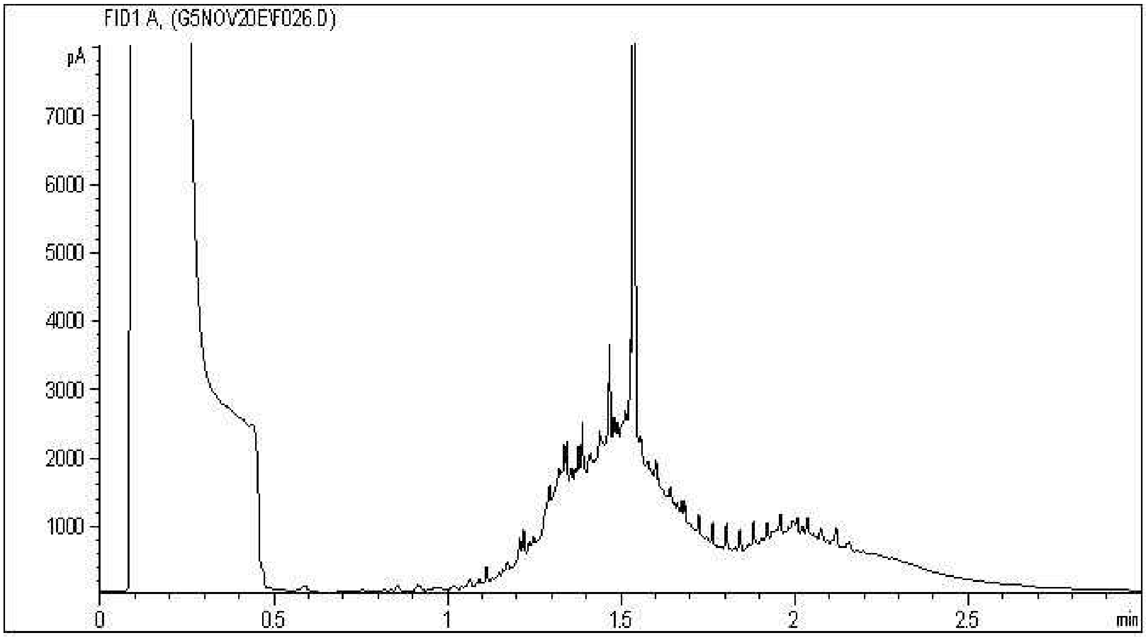
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

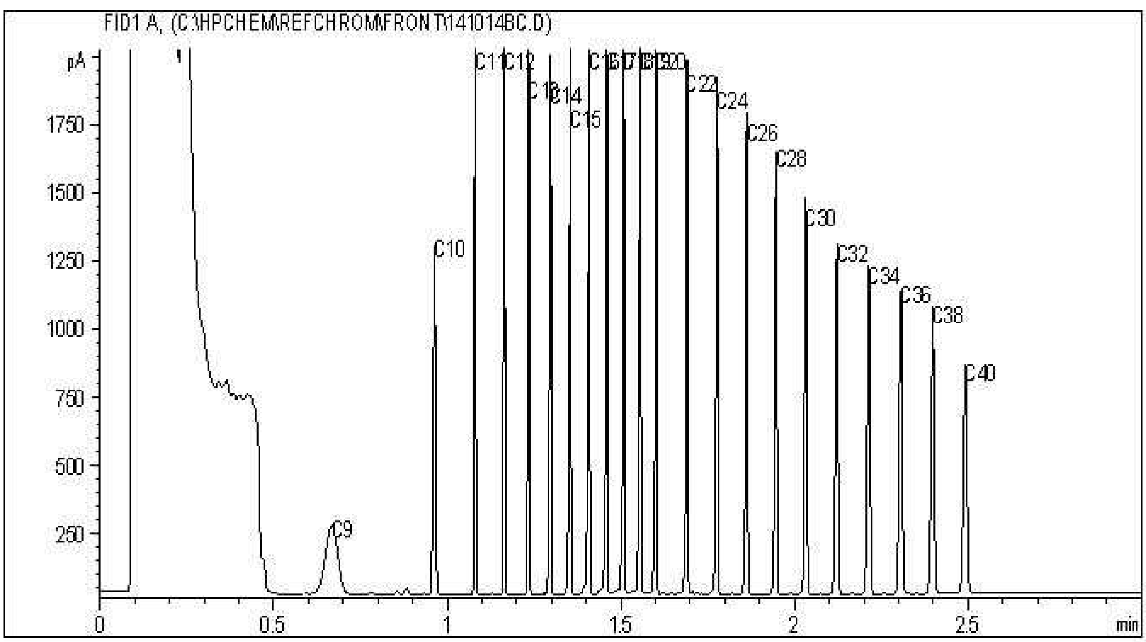
Maxxam Job #: B4A4134
Report Date: 2014/12/05
Maxxam Sample: LD5754

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Reference: NANAIMO BC
Client ID: DUP. A

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



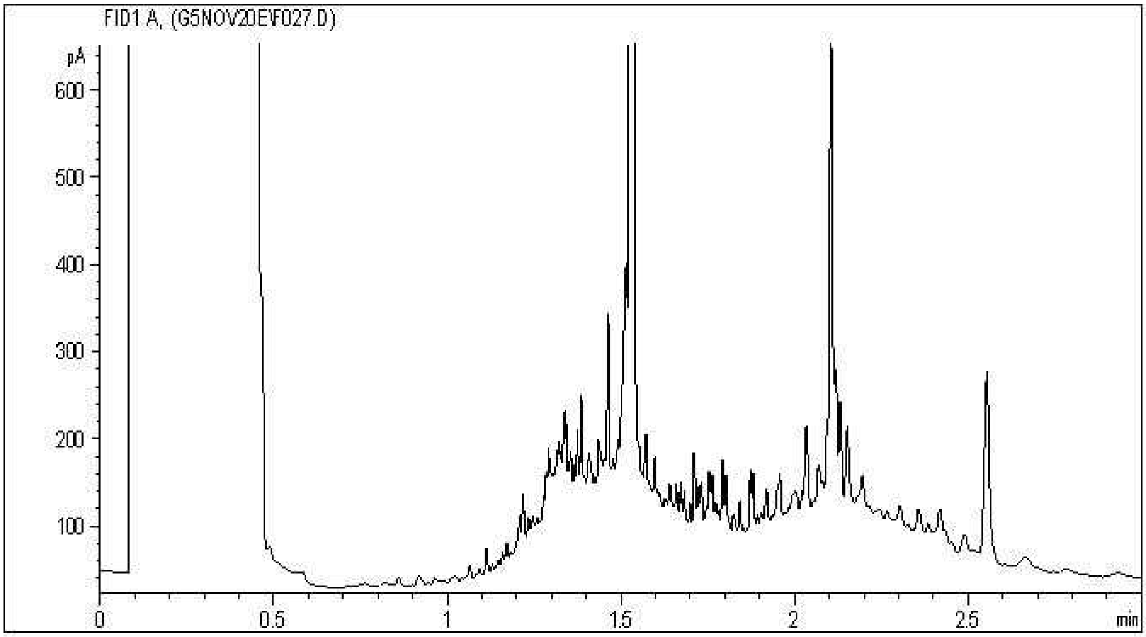
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

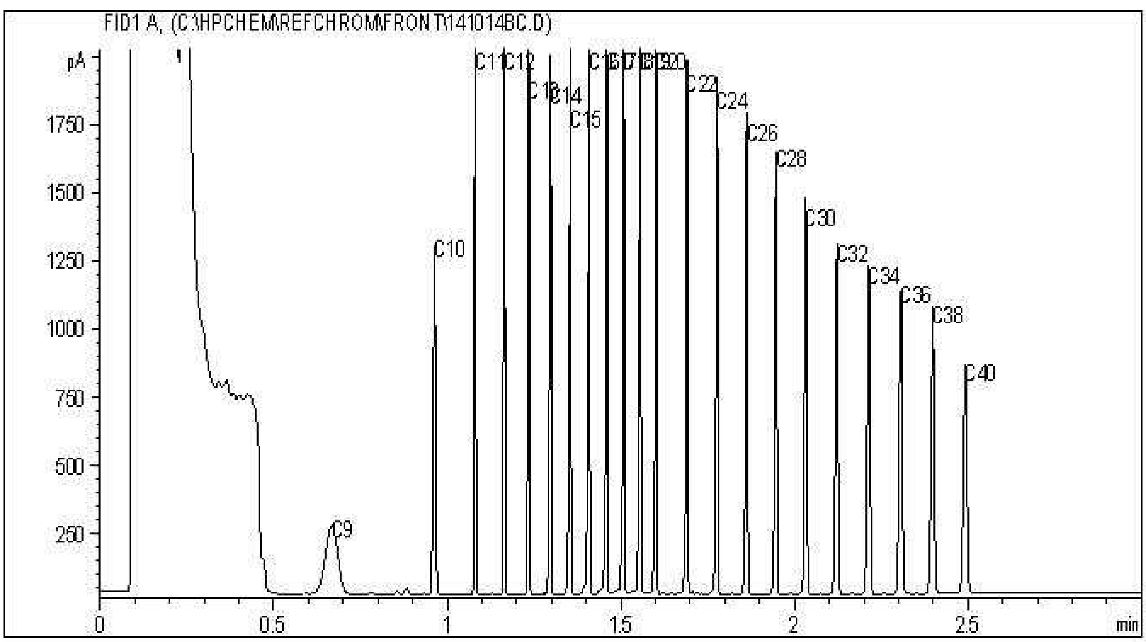
Maxxam Job #: B4A4134
Report Date: 2014/12/05
Maxxam Sample: LD5757

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Reference: NANAIMO BC
Client ID: 14BH27-6

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



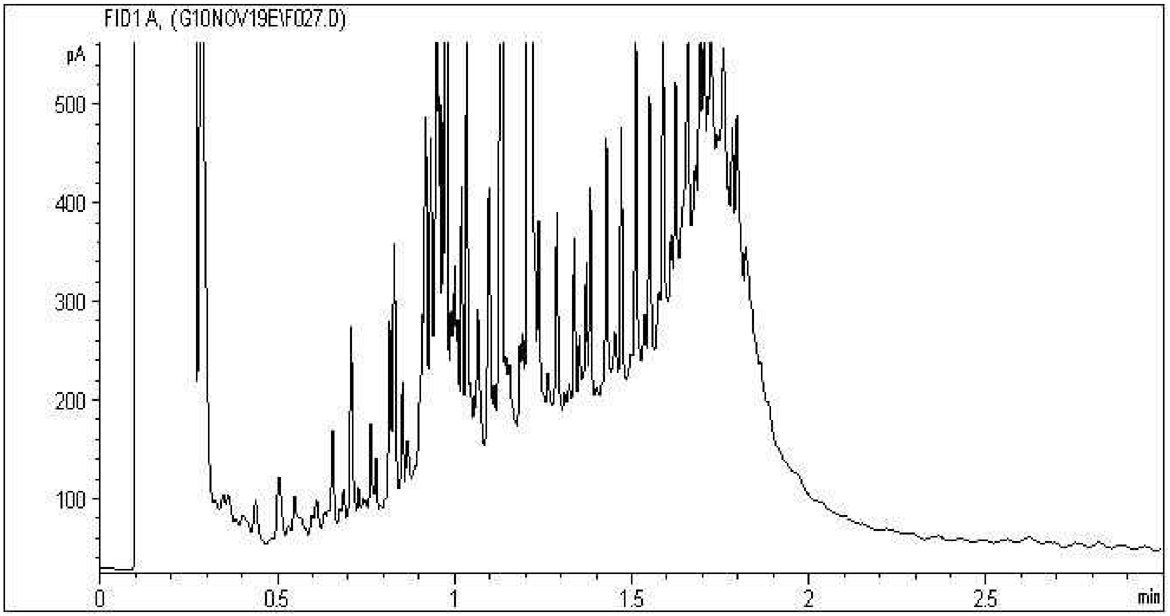
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

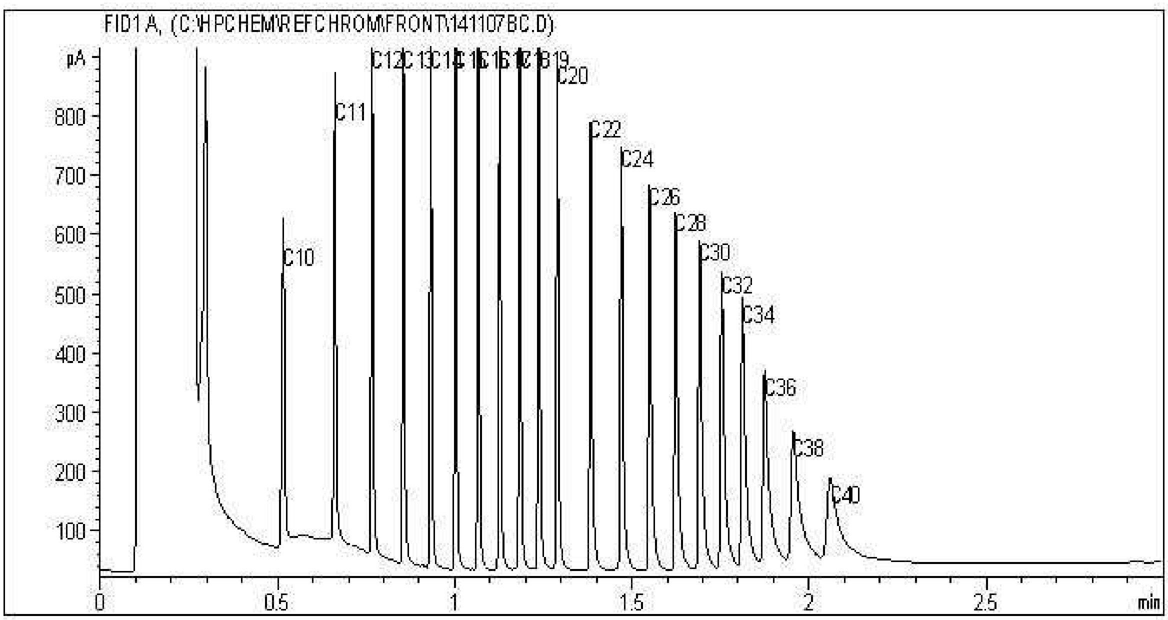
Maxxam Job #: B4A4134
Report Date: 2014/12/05
Maxxam Sample: LD5759

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Reference: NANAIMO BC
Client ID: 14BH28-2

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

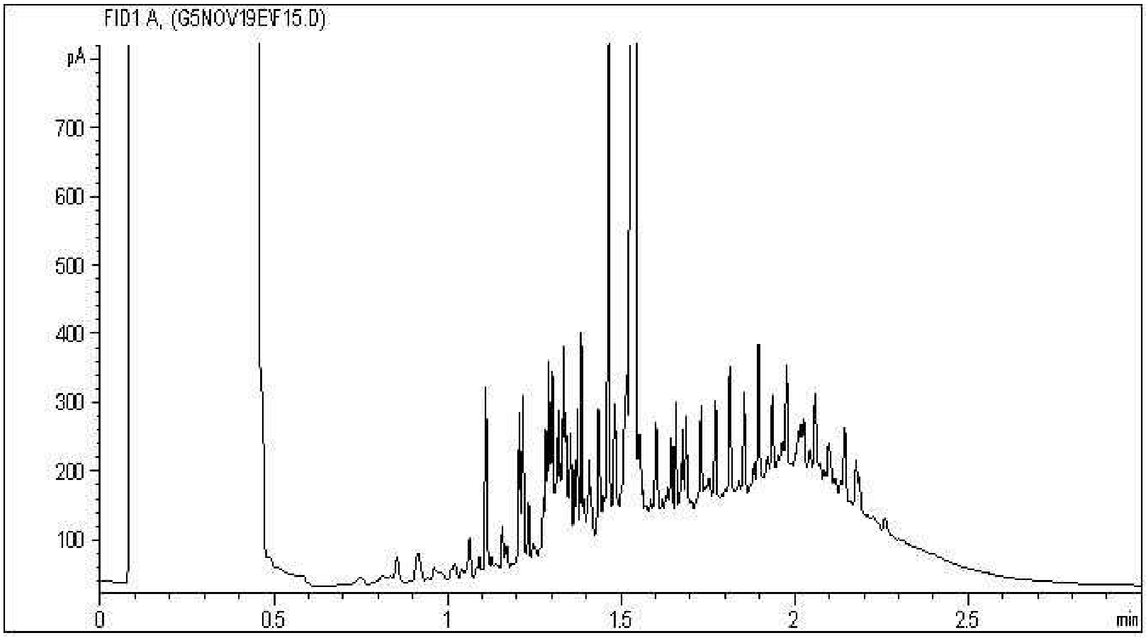
Gasoline:	C4 - C12	Diesel:	C8 - C22
Varsol:	C8 - C12	Lubricating Oils:	C20 - C40

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

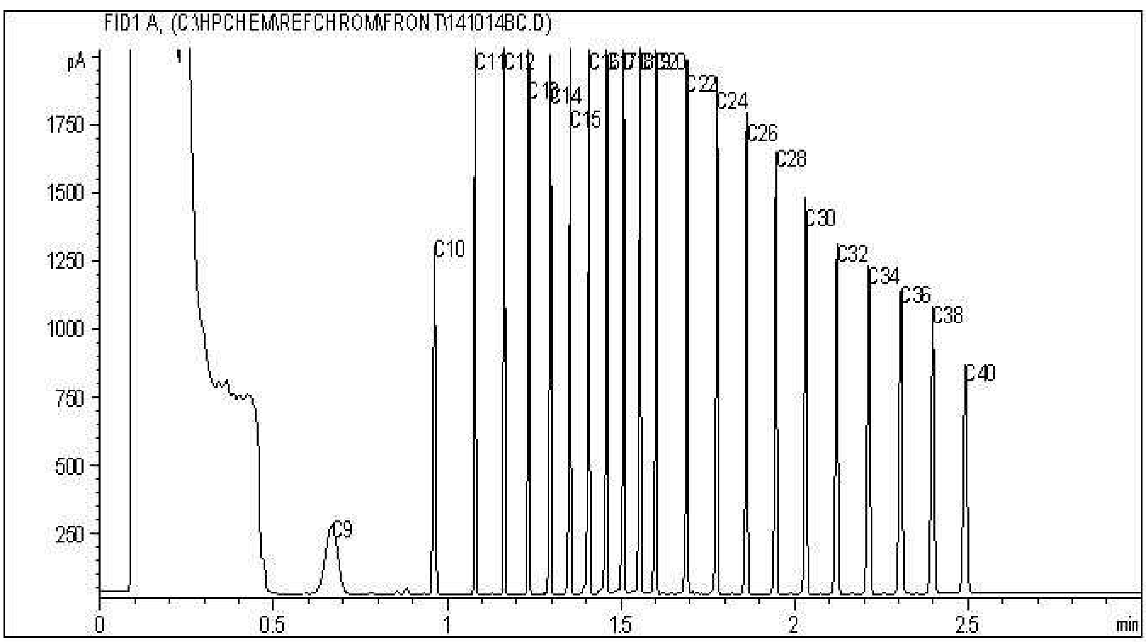
Maxxam Job #: B4A4134
Report Date: 2014/12/05
Maxxam Sample: LD5766

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Reference: NANAIMO BC
Client ID: 14BH29-3

BC Hydrocarbons in Soil by GC/FID Chromatogram



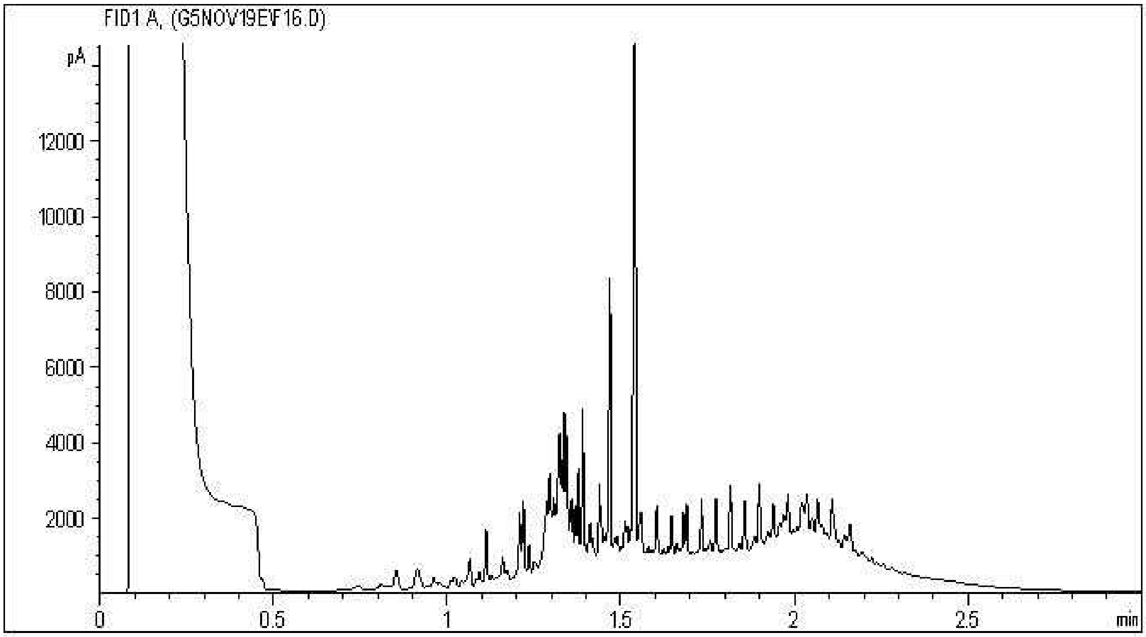
Carbon Range Distribution - Reference Chromatogram



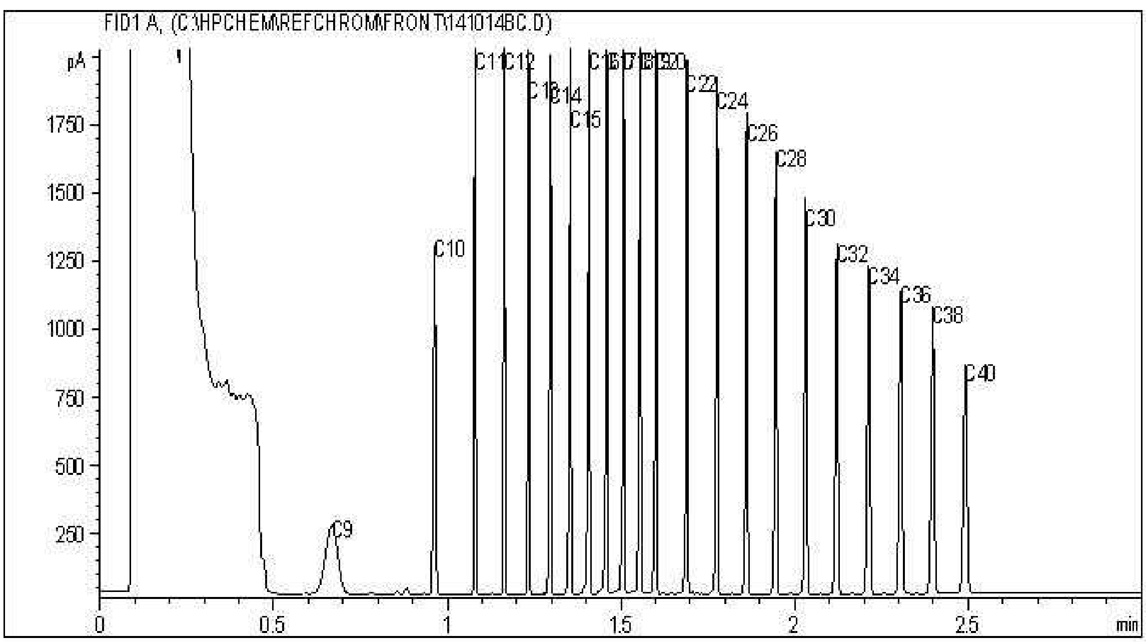
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

BC Hydrocarbons in Soil by GC/FID Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: ENVIND03511-01.004
Site Location: CITY OF NANAIMO
Your C.O.C. #: G096089

Attention: Kristy Gabelhouse
Tetra Tech EBA
NANAIMO
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2014/12/10
Report #: R1702958
Version: 2R

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B4B0948
Received: 2014/12/06, 10:30

Sample Matrix: Soil
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Moisture	1	N/A	2014/12/08	BBY8SOP-00017	OMOE E3139 3.1 m
Moisture	1	N/A	2014/12/09	BBY8SOP-00017	OMOE E3139 3.1 m
PAH in Soil by GC/MS (SIM)	2	2014/12/08	2014/12/09	BBY8SOP-00022	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	1	N/A	2014/12/09	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	1	N/A	2014/12/10	BBY WI-00033	Auto Calc
VOCs, VH, F1, LH in Soil - Field Pres.	2	N/A	2014/12/09	BBY8-SOP-00009	EPA 8260c R3 m
Volatile HC-BTEX	1	N/A	2014/12/09	BBY WI-00033	Auto Calc
Volatile HC-BTEX	1	N/A	2014/12/10	BBY WI-00033	Auto Calc

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Crystal Ireland, B.Sc., Account Specialist
Email: CIreland@maxxam.ca
Phone# (604) 638-5016

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 1

Maxxam Job #: B4B0948
Report Date: 2014/12/10

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: CITY OF NANAIMO
Sampler Initials: LP

PHYSICAL TESTING (SOIL)

Maxxam ID		LH9875	LH9876	LH9876		
Sampling Date		2014/12/04	2014/12/04	2014/12/04		
COC Number		G096089	G096089	G096089		
	UNITS	**14TP01-1**	**14TP01-2**	**14TP01-2 Lab-Dup**	**RDL**	**QC Batch**
Physical Properties						
Moisture	%	12	7.3	7.8	0.30	7746631

RDL = Reportable Detection Limit

Maxxam Job #: B4B0948
Report Date: 2014/12/10

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: CITY OF NANAIMO
Sampler Initials: LP

SEMIVOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		LH9875	LH9875		LH9876		
Sampling Date		2014/12/04	2014/12/04		2014/12/04		
COC Number		G096089	G096089		G096089		
	UNITS	**14TP01-1**	**14TP01-1 Lab-Dup**	**RDL**	**14TP01-2**	**RDL**	**QC Batch**
Polycyclic Aromatics							
Naphthalene	mg/kg	6.1	6.1	0.050	<0.050	0.050	7747734
Low Molecular Weight PAH`s	mg/kg	17		0.46	<0.050	0.050	7746365
High Molecular Weight PAH`s	mg/kg	0.74		0.050	<0.050	0.050	7746365
Total PAH	mg/kg	17		0.46	<0.050	0.050	7746365
Surrogate Recovery (%)							
D10-ANTHRACENE (sur.)	%	59 (1)	56 (1)		77		7747734
D8-ACENAPHTHYLENE (sur.)	%	65	61		78		7747734
D8-NAPHTHALENE (sur.)	%	73	70		76		7747734
TERPHENYL-D14 (sur.)	%	70	68		82		7747734

RDL = Reportable Detection Limit
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B4B0948
Report Date: 2014/12/10

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: CITY OF NANAIMO
Sampler Initials: LP

CSR VOC + VPH IN SOIL - FIELD PRESERVED (SOIL)

Maxxam ID		LH9875	LH9876	LH9876		
Sampling Date		2014/12/04	2014/12/04	2014/12/04		
COC Number		G096089	G096089	G096089		
	UNITS	**14TP01-1**	**14TP01-2**	**14TP01-2 Lab-Dup**	**RDL**	**QC Batch**
Volatiles						
VPH (VH6 to 10 - BTEX)	mg/kg	160	<10		10	7746366
Benzene	mg/kg	0.79	<0.0050	<0.0050	0.0050	7746832
Toluene	mg/kg	2.3	<0.020	<0.020	0.020	7746832
Ethylbenzene	mg/kg	0.88	<0.010	<0.010	0.010	7746832
m & p-Xylene	mg/kg	4.7	<0.040	<0.040	0.040	7746832
o-Xylene	mg/kg	4.3	<0.040	<0.040	0.040	7746832
Xylenes (Total)	mg/kg	9.0	<0.040	<0.040	0.040	7746832
n-Decane	mg/kg	4.5	<2.0	<2.0	2.0	7746832
1,3,5-trimethylbenzene	mg/kg	1.4	<0.20	<0.20	0.20	7746832
1,2,4-trimethylbenzene	mg/kg	5.2	<0.20	<0.20	0.20	7746832
VH C6-C10	mg/kg	170	<10	<10	10	7746832
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	99	82	103		7746832
4-Bromofluorobenzene (sur.)	%	104	96	100		7746832
D10-ETHYLBENZENE (sur.)	%	83	91	89		7746832
D4-1,2-Dichloroethane (sur.)	%	111	113	91		7746832

RDL = Reportable Detection Limit

Maxxam Job #: B4B0948
Report Date: 2014/12/10

Tetra Tech EBA
Client Project #: ENVIND03511-01.004
Site Location: CITY OF NANAIMO
Sampler Initials: LP

Package 1	4.3°C

Each temperature is the average of up to three cooler temperatures taken at receipt

General Comments

[Revision V2R 2014/12/10 SF] Ammended Sample IDs

Results relate only to the items tested.

Tetra Tech EBA
Attention: Kristy Gabelhouse
Client Project #: ENVIND03511-01.004
P.O. #:
Site Location: CITY OF NANAIMO

Quality Assurance Report

Maxxam Job Number: VB4B0948

QA/QC Batch Num	Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7746631	RG9	Method Blank	Moisture	2014/12/09	<0.30		%	
		RPD [LH9876-01]	Moisture	2014/12/08	6.6		%	20
7746832	JL4	Matrix Spike [LH9876-03]	1,4-Difluorobenzene (sur.)	2014/12/09		103	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/12/09		102	%	70 - 130
			D10-ETHYLBENZENE (sur.)	2014/12/09		93	%	50 - 130
			D4-1,2-Dichloroethane (sur.)	2014/12/09		101	%	70 - 130
			Benzene	2014/12/09		94	%	60 - 140
			Toluene	2014/12/09		98	%	60 - 140
			Ethylbenzene	2014/12/09		97	%	60 - 140
			m & p-Xylene	2014/12/09		95	%	60 - 140
			o-Xylene	2014/12/09		92	%	60 - 140
			1,3,5-trimethylbenzene	2014/12/09		97	%	60 - 140
			1,2,4-trimethylbenzene	2014/12/09		96	%	60 - 140
		Spiked Blank	1,4-Difluorobenzene (sur.)	2014/12/08		108	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/12/08		99	%	70 - 130
			D10-ETHYLBENZENE (sur.)	2014/12/08		63	%	50 - 130
			D4-1,2-Dichloroethane (sur.)	2014/12/08		88	%	70 - 130
			Benzene	2014/12/08		71	%	60 - 140
			Toluene	2014/12/08		73	%	60 - 140
			Ethylbenzene	2014/12/08		74	%	60 - 140
			m & p-Xylene	2014/12/08		69	%	60 - 140
			o-Xylene	2014/12/08		68	%	60 - 140
			1,3,5-trimethylbenzene	2014/12/08		72	%	60 - 140
			1,2,4-trimethylbenzene	2014/12/08		70	%	60 - 140
			VH C6-C10	2014/12/08		87	%	60 - 140
		Method Blank	1,4-Difluorobenzene (sur.)	2014/12/08		102	%	70 - 130
			4-Bromofluorobenzene (sur.)	2014/12/08		82	%	70 - 130
			D10-ETHYLBENZENE (sur.)	2014/12/08		68	%	50 - 130
			D4-1,2-Dichloroethane (sur.)	2014/12/08		92	%	70 - 130
			Benzene	2014/12/08	<0.0050		mg/kg	
			Toluene	2014/12/08	<0.020		mg/kg	
			Ethylbenzene	2014/12/08	<0.010		mg/kg	
			m & p-Xylene	2014/12/08	<0.040		mg/kg	
			o-Xylene	2014/12/08	<0.040		mg/kg	
			Xylenes (Total)	2014/12/08	<0.040		mg/kg	
			n-Decane	2014/12/08	<2.0		mg/kg	
			1,3,5-trimethylbenzene	2014/12/08	<0.20		mg/kg	
			1,2,4-trimethylbenzene	2014/12/08	<0.20		mg/kg	
			VH C6-C10	2014/12/08	<10		mg/kg	
		RPD [LH9876-03]	Benzene	2014/12/09	NC		%	40
			Toluene	2014/12/09	NC		%	40
			Ethylbenzene	2014/12/09	NC		%	40
			m & p-Xylene	2014/12/09	NC		%	40
			o-Xylene	2014/12/09	NC		%	40
			Xylenes (Total)	2014/12/09	NC		%	40
			n-Decane	2014/12/09	NC		%	40
			1,3,5-trimethylbenzene	2014/12/09	NC		%	40
			1,2,4-trimethylbenzene	2014/12/09	NC		%	40
			VH C6-C10	2014/12/09	NC		%	40
7747734	MM6	Matrix Spike [LH9875-01]	D10-ANTHRACENE (sur.)	2014/12/10		60	%	60 - 130
			D8-ACENAPHTHYLENE (sur.)	2014/12/10		65	%	50 - 130
			D8-NAPHTHALENE (sur.)	2014/12/10		74	%	50 - 130
			TERPHENYL-D14 (sur.)	2014/12/10		72	%	60 - 130

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Tetra Tech EBA
Attention: Kristy Gabelhouse
Client Project #: ENVIND03511-01.004
P.O. #:
Site Location: CITY OF NANAIMO

Quality Assurance Report (Continued)

Maxxam Job Number: VB4B0948

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	UNITS	QC Limits
7747734 MM6	Matrix Spike						
	[LH9875-01]	Naphthalene	2014/12/10		NC	%	50 - 130
	Spiked Blank	D10-ANTHRACENE (sur.)	2014/12/09		77	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/12/09		79	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/12/09		77	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/12/09		81	%	60 - 130
		Naphthalene	2014/12/09		80	%	50 - 130
	Method Blank	D10-ANTHRACENE (sur.)	2014/12/09		79	%	60 - 130
		D8-ACENAPHTHYLENE (sur.)	2014/12/09		82	%	50 - 130
		D8-NAPHTHALENE (sur.)	2014/12/09		79	%	50 - 130
		TERPHENYL-D14 (sur.)	2014/12/09		85	%	60 - 130
		Naphthalene	2014/12/09	<0.050		mg/kg	
	RPD [LH9875-01]	Naphthalene	2014/12/09	0.6		%	50

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Validation Signature Page

Maxxam Job #: B4B0948

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Rob Reinert, Data Validation Coordinator

==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B4B0948

CHAIN OF CUSTODY RECORD
Page: 1 of 1
G 096089

Invoice To: Require Report? Yes [ ] No [ ]
Company Name: Tetra Tech EBA
Contact Name: Lora Pau
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail

Report To:
Company Name: Tetra Tech EBA
Contact Name: Kristy Gabelhouse
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail lpaul@tetratech.com Kgabelhouse@tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.004
Proj. Name: City of Nanaimo
Location:
Sampled By: K.Gabelhouse / L. Pau

REGULATORY REQUIREMENTS SERVICE REQUESTED:
- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab)
- [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:
Return Cooler [ ] **Ship Sample Bottles (please specify)** [ ]

ANALYSIS REQUESTED: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N), Metals (Field Acidified? Y/N), Totals Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, Diesel Package, HOLD

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	Diesel Package	Samples are from a Drinking Water Source? YES / NO	Does source supply multiple households? YES / NO
1	14TP01-1	LH9875	Soil	Dec4/14	X		
2	14TP01-2	LH9876	"	"	X		
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							

B4B0948

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:
K.Gabelhouse	14/12/05	4:00pm	ARSULTAN ARIBA SULTAN	2014/12/06	10:30

Laboratory Use Only

Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
[ ]	2, 5, 6	Yes [ ] No [ ] N/A

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

EBA INTERNAL QA/QC FOR LABORATORY RESULTS

Project File No: ENVIND03511-01-004

Date: Dec 11/14

Project Description (report title): Env Invest & Remediation, City of Nanaimo

Table(s) that this QA checklist addresses (list table numbers): Prelim Soil Tables

Laboratory Certificates Reviewed (list certificate numbers):

Report # R1698819, R1698818

Verification completed by: Stephanie Judge Signature: SJudge	Reviewed by: Kristy Gabelhause Signature: K Gabelhause

Tasks		Issues Identified
1. Have all data in the report tables been confirmed with those in the laboratory certificates? Name of the individual who compiled the table(s): Data Mgmt. Describe how data was originally entered into the tables ☑ Electronically transferred from a spreadsheet file provided by the laboratory (Esdat) ☐ Other Describe: ______ Describe how the data verification was achieved: ☑ Spot checking of data in tables with data in lab certificates (spot checking for all analyses) at a frequency of approximately 25 % ☐ Checking all data in tables with data in lab certificates Describe any data not verified (or list 'none'): only November data done.	Y ☑ N ☐	
2. Have all samples and parameters analyzed been reported in the tables?	Y ☐ N ☑	SPLP Chromium & Arsenic, VH(6-10)
3. Are the results being compared to the correct applicable standards? Applicable Standards ______	Y ☑ N ☐	
4. Have the Standards in the report tables been compared with the published regulations (e.g. CSR) or other criteria? Minimum requirement Every standard listed in the tables to be compared to the published regulation	Y ☑ N ☐	→ standards were checked previously.
5. Have the data in the report tables been highlighted where they exceed Standards? (including non-detect results, where the detection limit is greater than the Standard) Minimum requirement Every data point listed in the tables to be compared to the Standards and highlighted where concentrations (or detection limits) are greater than the Standard	Y ☑ N ☐	→ add in "notes" ~~wh~~ different exceedances (ie bold, shaded)
6. Have Matrix Spikes been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
7. Have Laboratory Duplicates been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
8. Have Surrogate Compound Spike been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
FORMATTING		
9. Are the tables numbered correctly?	Y ☐ N ☐	Formatting not done for these tables yet
10. Are the headers and footers correct and formatted consistently?	Y ☐ N ☐	
11. Are the footnotes of the tables correct and appropriate for the table in which they follow?	Y ☐ N ☐	
12. Are the table borders formatted correctly?	Y ☐ N ☐	
13. Do the tables print correctly?	Y ☐ N ☐	

EBA INTERNAL QA/QC FOR LABORATORY RESULTS

Project File No ENVIND03511-01-004 **Date** Dec. 11/14

Project Description (report title): City of Nanaimo Env. Invest. & Rem'n

Table(s) that this QA checklist addresses (list table numbers): Prelim. GW Tables

Laboratory Certificates Reviewed (list certificate numbers):

Report # R1694493

Verification completed by: Stephanie Judge **Signature:** S Judge	**Reviewed by:** Kristy Gabelhouse **Signature:** K Gabelhouse	
Tasks		**Issues Identified**
1. Have all data in the report tables been confirmed with those in the laboratory certificates? Name of the individual who compiled the table(s): Data Mgmt. Describe how data was originally entered into the tables ☑ Electronically transferred from a spreadsheet file provided by the laboratory Esdat ☐ Other. Describe ______ Describe how the data verification was achieved ☑ Spot checking of data in tables with data in lab certificates (spot checking for all analyses) at a frequency of approximately 60% ☐ Checking all data in tables with data in lab certificates Describe any data not verified (or list 'none'): only November data done.	Y ☑ N ☐	missing some date
2. Have all samples and parameters analyzed been reported in the tables?	Y ☐ N ☑	sodium (14MW29) some VOCs (14MW10, 14MW35)
3. Are the results being compared to the correct applicable standards? Applicable Standards: AW & DW	Y ☑ N ☐	standards checked previously
4. Have the Standards in the report tables been compared with the published regulations (e.g. CSR) or other criteria? Minimum requirement: Every standard listed in the tables to be compared to the published regulation	Y ☑ N ☐	
5. Have the data in the report tables been highlighted where they exceed Standards? (including non-detect results, where the detection limit is greater than the Standard) Minimum requirement: Every data point listed in the tables to be compared to the Standards and highlighted where concentrations (or detection limits) are greater than the Standard	Y ☐ N ☑	sodium (14MW29)
6. Have Matrix Spikes been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
7. Have Laboratory Duplicates been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
8. Have Surrogate Compound Spike been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
FORMATTING		
9. Are the tables numbered correctly?	Y ☐ N ☐	formatting not done yet
10. Are the headers and footers correct and formatted consistently?	Y ☐ N ☐	
11. Are the footnotes of the tables correct and appropriate for the table in which they follow?	Y ☐ N ☐	
12. Are the table borders formatted correctly?	Y ☐ N ☐	
13. Do the tables print correctly?	Y ☐ N ☐	

EBA INTERNAL QA/QC FOR LABORATORY RESULTS

Project File No ENVIND03511-01-004 **Date:** Dec 11/14

Project Description (report title): City of Nanaimo, Env. Invest. + Rem.

Table(s) that this QA checklist addresses (list table numbers): Table V + X (CSV Tables)

Laboratory Certificates Reviewed (list certificate numbers):

R# R3244500

Verification completed by: Stephanie Judge **Signature:** SJudge	**Reviewed by:** Kristy Gabelhause **Signature:** K Gabel	
Tasks		**Issues Identified**
1. Have all data in the report tables been confirmed with those in the laboratory certificates? Name of the individual who compiled the table(s): Data Mgmt Describe how data was originally entered into the tables: ☒ Electronically transferred from a spreadsheet file provided by the laboratory Esdat ☐ Other. Describe: ________ Describe how the data verification was achieved: ☐ Spot checking of data in tables with data in lab certificates (spot checking for all analyses) at a frequency of approximately ___ % ☒ Checking all data in tables with data in lab certificates Describe any data not verified (or list "none"): didn't check calculations	Y ☒ N ☐	
2. Have all samples and parameters analyzed been reported in the tables?	Y ☐ N ☒	missing p+m xylene, o-xylene
3. Are the results being compared to the correct applicable standards? Applicable Standards: CL + IL	Y ☒ N ☐	
4. Have the Standards in the report tables been compared with the published regulations (e.g. CSR) or other criteria? Minimum requirement: Every standard listed in the tables to be compared to the published regulation	Y ☒ N ☐	
5. Have the data in the report tables been highlighted where they exceed Standards? (including non-detect results, where the detection limit is greater than the Standard) Minimum requirement: Every data point listed in the tables to be compared to the Standards and highlighted where concentrations (or detection limits) are greater than the Standard.	Y ☒ N ☐	
6. Have Matrix Spikes been analyzed during laboratory analyses of soil and groundwater samples?	Y ☒ N ☐	
7. Have Laboratory Duplicates been analyzed during laboratory analyses of soil and groundwater samples?	Y ☒ N ☐	
8. Have Surrogate Compound Spike been analyzed during laboratory analyses of soil and groundwater samples?	Y ☒ N ☐	
FORMATTING		
9. Are the tables numbered correctly?	Y ☒ N ☐	
10. Are the headers and footers correct and formatted consistently?	Y ☐ N ☒	missing project name; incorrect job #
11. Are the footnotes of the tables correct and appropriate for the table in which they follow?	Y ☐ N ☒	fix exceedances, add note. in
12. Are the table borders formatted correctly?	Y ☒ N ☐	
13. Do the tables print correctly?	Y ☒ N ☐	

Success Through Science®

Your Project #: ENVINDO 3511-01.008
Site Location: SUPPLEMENTAL DSI 1 PORT DRIVE, NANAIMO, BC
Your C.O.C. #: G085677

Attention:DARREN THOMAS

TETRA TECH EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2015/04/01
Report #: R1839009
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B525328
Received: 2015/03/30, 08:00

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Chromium, Hexavalent (soil)	1	2015/03/31	2015/04/01	BBY6SOP-00015	SM 22 3500-Cr B m
Moisture	1	N/A	2015/03/31	BBY8SOP-00017	OMOE E3139 3.1 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tabitha Rudkin, AScT, Burnaby Project Manager
Email: TRudkin@maxxam.ca
Phone# (604)638-2639
==
This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B525328
Report Date: 2015/04/01

TETRA TECH EBA
Client Project #: ENVINDO 3511-01.008
Site Location: SUPPLEMENTAL DSI 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

RESULTS OF CHEMICAL ANALYSES OF SOIL

Maxxam ID		LY8419		
Sampling Date		2015/03/26		
COC Number		G085677		
	Units	**15BH37 @ 5.1M**	**RDL**	**QC Batch**
Metals				
Hex. Chromium (Cr 6+)	mg/kg	<1.0	1.0	7852301
RDL = Reportable Detection Limit				

Maxxam Job #: B525328
Report Date: 2015/04/01

TETRA TECH EBA
Client Project #: ENVINDO 3511-01.008
Site Location: SUPPLEMENTAL DSI 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

PHYSICAL TESTING (SOIL)

Maxxam ID		LY8419		
Sampling Date		2015/03/26		
COC Number		G085677		
	Units	**15BH37 @ 5.1M**	**RDL**	**QC Batch**
Physical Properties				
Moisture	%	35	0.30	7851233
RDL = Reportable Detection Limit				

Maxxam Job #: B525328
Report Date: 2015/04/01

TETRA TECH EBA
Client Project #: ENVINDO 3511-01.008
Site Location: SUPPLEMENTAL DSI 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	13.7°C

Results relate only to the items tested.

Maxxam Job #: B525328
Report Date: 2015/04/01

QUALITY ASSURANCE REPORT

TETRA TECH EBA
Client Project #: ENVINDO 3511-01.008
Site Location: SUPPLEMENTAL DSI 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7851233	Moisture	2015/03/31					<0.30	%	0	20
7852301	Hex. Chromium (Cr 6+)	2015/04/01	100	75 - 125	102	75 - 125	<1.0	mg/kg	NC	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B525328
Report Date: 2015/04/01

TETRA TECH EBA
Client Project #: ENVINDO 3511-01.008
Site Location: SUPPLEMENTAL DSI 1 PORT DRIVE, NANAIMO, BC
Sampler Initials: DT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam

4606 Canada Way, Burnaby, BC Canada V5G 1K5 Ph: 604 734 7276 Toll Free: 1 800 665 8566 Fax: 604 731 2386

Maxxam Job#: B525328

CHAIN OF CUSTODY RECORD

Page: 1 of 1

G 085677

Invoice To: Require Report? Yes [X] No [ ]

Company Name: Tetra Tech EBA
Contact Name: Darren Thomas Lora Paul
Address: #1-4376 Boban drive
Nanaimo, BC PC: V9T 6A7
Phone / Fax#: Ph: 250-756-2256 Fax:
E-mail: Darren.Thomas@tetratech.com

Report To:

Company Name:
Contact Name:
Address:
PC:
Phone / Fax#: Ph: Fax:
E-mail: Lora.Paul@Tetratech.com

PO #:
Quotation #:
Project #: ENVIND03511-01.008
Proj. Name: Supplemental DSI
Location: 1 Port Drive, Nanaimo, BC
Sampled By: Darren Thomas

REGULATORY REQUIREMENTS SERVICE REQUESTED:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other
- [ ] DRINKING WATER

- [X] Regular Turn Around Time (TAT) (5 days for most tests)
- [ ] RUSH (Please contact the lab) [ ] 1 Day [ ] 2 Day [ ] 3 Day
- Date Required:

Special Instructions:

Return Cooler [ ] Ship Sample Bottles (please specify) [ ]

ANALYSIS REQUESTED

Analysis columns: BTEX/VPH, MTBE, VOC/VPH, EPH, TEH, PAH, LEPH/HEPH, CCME-PHC (Fractions 1-4 Plus BTEX), CCME-PHC (Fractions 2-4), CCME BTEX (Fraction 1 Plus BTEX), PCB, Phenols by 4AAP, Phenols by GCMS, TOG, MOG, SWOG, Dissolved Metals (Field Filtered? Y/N), Field Acidified? Y/N, Totals Metals Field Acidified? Y/N, Nitrate, Nitrite, Ammonia, Chloride, Fluoride, Sulphate, Total Suspended Solids-TSS, TDS, pH, Conductivity, Alkalinity, BOD, COD, Coliform, Total & E.coli, Fecal, Asbestos, Chemistry, HOLD [X]

	Sample Identification	Lab Identification	Sample Type	Date/Time Sampled	Chemistry	HOLD
1	15BH37 @ 4.3m	LY8418	Soil	March 26		X
2	" @ 5.1m	LY8419	Soil	March 26	X	
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						

B525328

Samples are from a Drinking Water Source? YES [ ] NO [X]
Does source supply multiple households? YES [ ] NO [X]

*Relinquished by:	Date (YY/MM/DD):	Time:	Received by:	Date (YY/MM/DD):	Time:	Time Sensitive	Temperature on Receipt (°C)	Custody Seal Intact on Cooler?
Darren Thomas	15/03/26	16:00	Milliauxe Berthier	2015/03/30	08:00		13, 14, 14	N/A — Yes / No

Laboratory Use Only

*IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

COC-1020 (05/10)

Maxxam International Corporation o/a Maxxam Analytics

Your Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Your C.O.C. #: 462385-02-01

Attention:DARREN THOMAS

TETRA TECH EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2015/04/09
Report #: R1842788
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B526575
Received: 2015/04/02, 07:55

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS	3	2015/04/06	2015/04/06	BBY8SOP-00010/11	EPA 8260c R3 m
Phenols in Water by GCMS	5	2015/04/06	2015/04/07	BBY8SOP-00025	EPA 8270d R4
Hardness (calculated as CaCO3)	4	N/A	2015/04/07	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved) by CVAF	4	N/A	2015/04/08	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	4	2015/04/07	2015/04/07	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	4	N/A	2015/04/07	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	4	N/A	2015/04/07	BBY7SOP-00002	EPA 6020A R1 m
PAH in Water by GC/MS (SIM)	3	2015/04/07	2015/04/07	BBY8SOP-00021	EPA 8270d R4 m
PAH in Water by GC/MS (SIM)	1	2015/04/07	2015/04/08	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	3	N/A	2015/04/08	BBY WI-00033	Auto Calc
Total LMW, HMW, Total PAH Calc	1	N/A	2015/04/09	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	4	N/A	2015/04/08	BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	3	N/A	2015/04/08	BBY WI-00033	Auto Calc
EPH less PAH in Water by GC/FID	1	N/A	2015/04/09	BBY WI-00033	Auto Calc
Volatile HC-BTEX	3	N/A	2015/04/07	BBY WI-00033	Auto Calc

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tabitha Rudkin, AScT, Burnaby Project Manager
Email: TRudkin@maxxam.ca
Phone# (604)638-2639
==
This report has been generated and distributed using a secure automated process.
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Maxxam Job #: B526575
Report Date: 2015/04/09

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Sampler Initials: KA

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		LZ4493	LZ4494	LZ4497	LZ4498	
Sampling Date		2015/04/01	2015/04/01	2015/04/01	2015/04/01	
COC Number		462385-02-01	462385-02-01	462385-02-01	462385-02-01	
	Units	**14MW02**	**14MW19**	**14MW25**	**DUP6**	**QC Batch**
Calculated Parameters						
Filter and HNO3 Preservation	N/A	FIELD	FIELD	FIELD	FIELD	ONSITE

Maxxam Job #: B526575
Report Date: 2015/04/09

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Sampler Initials: KA

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		LZ4493	LZ4494	LZ4495	LZ4496	LZ4499		
Sampling Date		2015/04/01	2015/04/01	2015/04/01	2015/04/01			
COC Number		462385-02-01	462385-02-01	462385-02-01	462385-02-01	462385-02-01		
	Units	**14MW02**	**14MW19**	**14MW16**	**14MW35**	**14MW14**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS								
2-chlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
3 & 4-chlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,4 + 2,5-Dichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,3-Dichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,6-dichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
3,5-Dichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
3,4-Dichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,4,5-trichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,4,6-trichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,3,5-trichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,3,6-Trichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,3,4-trichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
3,4,5-Trichlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,3,4,6-tetrachlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,3,4,5-tetrachlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,3,5,6-tetrachlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
2,6-Dimethylphenol	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	7856414
Pentachlorophenol	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	7856414
Surrogate Recovery (%)								
2,4,6-TRIBROMOPHENOL (sur.)	%					84		7856414
2,4-DIBROMOPHENOL	%					73		7856414
2,4,6-TRIBROMOPHENOL (sur.)	%	85	74	88	85			7856414
2,4-DIBROMOPHENOL	%	77	69	80	75			7856414
RDL = Reportable Detection Limit								

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B526575
Report Date: 2015/04/09

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Sampler Initials: KA

BCCSR BTEX/VPH IN WATER (WATER)

Maxxam ID		LZ4495	LZ4496	LZ4499		
Sampling Date		2015/04/01	2015/04/01			
COC Number		462385-02-01	462385-02-01	462385-02-01		
	Units	**14MW16**	**14MW35**	**14MW14**	**RDL**	**QC Batch**
Volatiles						
VPH (VH6 to 10 - BTEX)	ug/L	<300	<300	<300	300	7854628
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	<4.0	4.0	7856181
Benzene	ug/L	<0.40	<0.40	<0.40	0.40	7856181
Toluene	ug/L	<0.40	<0.40	<0.40	0.40	7856181
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	0.40	7856181
m & p-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	7856181
o-Xylene	ug/L	<0.40	<0.40	<0.40	0.40	7856181
Styrene	ug/L	<0.40	<0.40	<0.40	0.40	7856181
Xylenes (Total)	ug/L	<0.40	<0.40	<0.40	0.40	7856181
VH C6-C10	ug/L	<300	<300	<300	300	7856181
Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	102	103	103		7856181
4-Bromofluorobenzene (sur.)	%	99	99	99		7856181
D4-1,2-Dichloroethane (sur.)	%	103	102	102		7856181
RDL = Reportable Detection Limit						

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Maxxam Job #: B526575
Report Date: 2015/04/09

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Sampler Initials: KA

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		LZ4493	LZ4494	LZ4497		LZ4498		
Sampling Date		2015/04/01	2015/04/01	2015/04/01		2015/04/01		
COC Number		462385-02-01	462385-02-01	462385-02-01		462385-02-01		
	Units	**14MW02**	**14MW19**	**14MW25**	**QC Batch**	**DUP6**	**RDL**	**QC Batch**
Polycyclic Aromatics								
Low Molecular Weight PAH`s	ug/L	<0.24	<0.24	<0.24	7854314	<0.24	0.24	7854314
High Molecular Weight PAH`s	ug/L	<0.050	<0.050	<0.050	7854314	<0.050	0.050	7854314
Total PAH	ug/L	<0.24	<0.24	<0.24	7854314	<0.24	0.24	7854314
Naphthalene	ug/L	<0.10	<0.10	<0.10	7857162	<0.10	0.10	7857215
2-Methylnaphthalene	ug/L	<0.10	<0.10	<0.10	7857162	<0.10	0.10	7857215
Quinoline	ug/L	<0.24	<0.24	<0.24	7857162	<0.24	0.24	7857215
Acenaphthylene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Acenaphthene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Fluorene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Phenanthrene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Anthracene	ug/L	<0.010	<0.010	<0.010	7857162	<0.010	0.010	7857215
Acridine	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Fluoranthene	ug/L	<0.020	<0.020	<0.020	7857162	<0.020	0.020	7857215
Pyrene	ug/L	<0.020	<0.020	<0.020	7857162	<0.020	0.020	7857215
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010	7857162	<0.010	0.010	7857215
Chrysene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090	7857162	<0.0090	0.0090	7857215
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050	7857162	<0.050	0.050	7857215
Calculated Parameters								
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	<0.20	7854897	<0.20	0.20	7854897
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	<0.20	7854897	<0.20	0.20	7854897
Ext. Pet. Hydrocarbon								
EPH (C10-C19)	mg/L	<0.20	<0.20	<0.20	7857170	<0.20	0.20	7857226
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	7857170	<0.20	0.20	7857226
Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	99	98	99	7857170	100		7857226
D10-ANTHRACENE (sur.)	%	105	105	105	7857162	113		7857215
D8-ACENAPHTHYLENE (sur.)	%	101	99	100	7857162	109		7857215
D8-NAPHTHALENE (sur.)	%	99	92	96	7857162	108		7857215
D9-Acridine	%	98	76	93	7857162	98		7857215
TERPHENYL-D14 (sur.)	%	96	93	94	7857162	103		7857215
RDL = Reportable Detection Limit								

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Maxxam Job #: B526575
Report Date: 2015/04/09

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Sampler Initials: KA

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		LZ4493	LZ4493		LZ4494	LZ4497	LZ4498		
Sampling Date		2015/04/01	2015/04/01		2015/04/01	2015/04/01	2015/04/01		
COC Number		462385-02-01	462385-02-01		462385-02-01	462385-02-01	462385-02-01		
	Units	**14MW02**	**14MW02 Lab-Dup**	**RDL**	**14MW19**	**14MW25**	**DUP6**	**RDL**	**QC Batch**
Misc. Inorganics									
Dissolved Hardness (CaCO3)	mg/L	1210		0.50	3390	1660	1680	0.50	7854311
Elements									
Dissolved Mercury (Hg)	ug/L	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.010	7858525
Dissolved Metals by ICPMS									
Dissolved Aluminum (Al)	ug/L	3.2		3.0	13	<12	<12	12	7856529
Dissolved Antimony (Sb)	ug/L	<0.50		0.50	<2.0	<2.0	<2.0	2.0	7856529
Dissolved Arsenic (As)	ug/L	0.25		0.10	<0.40	<0.40	<0.40	0.40	7856529
Dissolved Barium (Ba)	ug/L	46.1		1.0	40.0	26.6	26.1	4.0	7856529
Dissolved Beryllium (Be)	ug/L	<0.10		0.10	<0.40	<0.40	<0.40	0.40	7856529
Dissolved Bismuth (Bi)	ug/L	<1.0		1.0	<4.0	<4.0	<4.0	4.0	7856529
Dissolved Boron (B)	ug/L	1260		50	2200	1600	1730	200	7856529
Dissolved Cadmium (Cd)	ug/L	0.012		0.010	0.113	<0.040	<0.040	0.040	7856529
Dissolved Chromium (Cr)	ug/L	<1.0		1.0	<4.0	<4.0	<4.0	4.0	7856529
Dissolved Cobalt (Co)	ug/L	<0.50		0.50	<2.0	<2.0	<2.0	2.0	7856529
Dissolved Copper (Cu)	ug/L	<0.20		0.20	0.84	0.84	0.98	0.80	7856529
Dissolved Iron (Fe)	ug/L	916		5.0	<20	<20	<20	20	7856529
Dissolved Lead (Pb)	ug/L	<0.20		0.20	<0.80	<0.80	<0.80	0.80	7856529
Dissolved Lithium (Li)	ug/L	37.6		5.0	83	62	65	20	7856529
Dissolved Manganese (Mn)	ug/L	188		1.0	55.0	5.5	5.3	4.0	7856529
Dissolved Molybdenum (Mo)	ug/L	<1.0		1.0	4.9	<4.0	<4.0	4.0	7856529
Dissolved Nickel (Ni)	ug/L	2.0		1.0	10.1	5.0	5.1	4.0	7856529
Dissolved Selenium (Se)	ug/L	<0.10		0.10	<0.40	<0.40	<0.40	0.40	7856529
Dissolved Silicon (Si)	ug/L	13600		100	4390	7230	7020	400	7856529
Dissolved Silver (Ag)	ug/L	<0.020		0.020	<0.080	<0.080	<0.080	0.080	7856529
Dissolved Strontium (Sr)	ug/L	2360		1.0	4580	2360	2330	4.0	7856529
Dissolved Thallium (Tl)	ug/L	<0.050		0.050	<0.20	<0.20	<0.20	0.20	7856529
Dissolved Tin (Sn)	ug/L	<5.0		5.0	<20	<20	<20	20	7856529
Dissolved Titanium (Ti)	ug/L	<5.0		5.0	<20	<20	<20	20	7856529
Dissolved Uranium (U)	ug/L	0.86		0.10	1.79	0.50	0.55	0.40	7856529
Dissolved Vanadium (V)	ug/L	<5.0		5.0	<20	<20	<20	20	7856529
Dissolved Zinc (Zn)	ug/L	<5.0		5.0	<20	<20	<20	20	7856529
Dissolved Zirconium (Zr)	ug/L	<0.50		0.50	<2.0	<2.0	<2.0	2.0	7856529
Dissolved Calcium (Ca)	mg/L	304		0.050	290	186	184	0.20	7854312
Dissolved Magnesium (Mg)	mg/L	110		0.050	648	290	296	0.20	7854312

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B526575
Report Date: 2015/04/09

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Sampler Initials: KA

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		LZ4493	LZ4493		LZ4494	LZ4497	LZ4498		
Sampling Date		2015/04/01	2015/04/01		2015/04/01	2015/04/01	2015/04/01		
COC Number		462385-02-01	462385-02-01		462385-02-01	462385-02-01	462385-02-01		
	Units	14MW02	14MW02 Lab-Dup	RDL	14MW19	14MW25	DUP6	RDL	QC Batch
Dissolved Potassium (K)	mg/L	31.8		0.050	192	99.0	99.8	0.20	7854312
Dissolved Sodium (Na)	mg/L	626		0.050	4560	2380	2310	0.20	7854312
Dissolved Sulphur (S)	mg/L	123		3.0	535	296	265	12	7854312

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B526575
Report Date: 2015/04/09

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Sampler Initials: KA

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.3°C
Package 2	3.7°C

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER) Comments

Sample LZ4494-03 Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference.
Sample LZ4497-02 Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference.
Sample LZ4498-02 Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference.

Results relate only to the items tested.

QUALITY ASSURANCE REPORT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7856181	1,4-Difluorobenzene (sur.)	2015/04/06	103	70 - 130	100	70 - 130	99	%		
7856181	4-Bromofluorobenzene (sur.)	2015/04/06	97	70 - 130	99	70 - 130	100	%		
7856181	D4-1,2-Dichloroethane (sur.)	2015/04/06	101	70 - 130	103	70 - 130	106	%		
7856414	2,4,6-TRIBROMOPHENOL (sur.)	2015/04/06			84	10 - 123	67	%		
7856414	2,4-DIBROMOPHENOL	2015/04/06			85	21 - 100	72	%		
7857162	D10-ANTHRACENE (sur.)	2015/04/07	98	60 - 130	110	60 - 130	114	%		
7857162	D8-ACENAPHTHYLENE (sur.)	2015/04/07	99	50 - 130	105	50 - 130	107	%		
7857162	D8-NAPHTHALENE (sur.)	2015/04/07	96	50 - 130	96	50 - 130	102	%		
7857162	D9-Acridine	2015/04/07	97	50 - 130	106	50 - 130	107	%		
7857162	TERPHENYL-D14 (sur.)	2015/04/07	91	60 - 130	104	60 - 130	106	%		
7857170	O-TERPHENYL (sur.)	2015/04/07	101	50 - 130	101	50 - 130	100	%		
7857215	D10-ANTHRACENE (sur.)	2015/04/08	112	60 - 130	115	60 - 130	115	%		
7857215	D8-ACENAPHTHYLENE (sur.)	2015/04/08	115	50 - 130	110	50 - 130	112	%		
7857215	D8-NAPHTHALENE (sur.)	2015/04/08	114	50 - 130	108	50 - 130	114	%		
7857215	D9-Acridine	2015/04/08	110	50 - 130	108	50 - 130	106	%		
7857215	TERPHENYL-D14 (sur.)	2015/04/08	111	60 - 130	109	60 - 130	108	%		
7857226	O-TERPHENYL (sur.)	2015/04/07	106	50 - 130	103	50 - 130	99	%		
7856181	Benzene	2015/04/06	109	70 - 130	107	70 - 130	<0.40	ug/L	NC	30
7856181	Ethylbenzene	2015/04/06	104	70 - 130	101	70 - 130	<0.40	ug/L	NC	30
7856181	m & p-Xylene	2015/04/06	100	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
7856181	Methyl-tert-butylether (MTBE)	2015/04/06	104	70 - 130	103	70 - 130	<4.0	ug/L		
7856181	o-Xylene	2015/04/06	102	70 - 130	100	70 - 130	<0.40	ug/L	NC	30
7856181	Styrene	2015/04/06	100	70 - 130	101	70 - 130	<0.40	ug/L		
7856181	Toluene	2015/04/06	97	70 - 130	95	70 - 130	<0.40	ug/L	7.0	30
7856181	VH C6-C10	2015/04/06			94	70 - 130	<300	ug/L		
7856181	Xylenes (Total)	2015/04/06					<0.40	ug/L	NC	30
7856414	2,3,4,5-tetrachlorophenol	2015/04/06			99	14 - 176	<0.10	ug/L		
7856414	2,3,4,6-tetrachlorophenol	2015/04/06			101	14 - 176	<0.10	ug/L		
7856414	2,3,4-trichlorophenol	2015/04/06			108	37 - 144	<0.10	ug/L		
7856414	2,3,5,6-tetrachlorophenol	2015/04/06			97	14 - 176	<0.10	ug/L		
7856414	2,3,5-trichlorophenol	2015/04/06			105	37 - 144	<0.10	ug/L		
7856414	2,3,6-Trichlorophenol	2015/04/06			108	37 - 144	<0.10	ug/L		

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7856414	2,3-Dichlorophenol	2015/04/06			94	39 - 135	<0.10	ug/L		
7856414	2,4 + 2,5-Dichlorophenol	2015/04/06			96	39 - 135	<0.10	ug/L		
7856414	2,4,5-trichlorophenol	2015/04/06			107	37 - 144	<0.10	ug/L		
7856414	2,4,6-trichlorophenol	2015/04/06			107	37 - 144	<0.10	ug/L		
7856414	2,6-dichlorophenol	2015/04/06			97	39 - 135	<0.10	ug/L		
7856414	2,6-Dimethylphenol	2015/04/06			82	32 - 119	<0.50	ug/L		
7856414	2-chlorophenol	2015/04/06			91	27 - 123	<0.10	ug/L		
7856414	3 & 4-chlorophenol	2015/04/06			85	27 - 123	<0.10	ug/L		
7856414	3,4,5-Trichlorophenol	2015/04/06			108	37 - 144	<0.10	ug/L		
7856414	3,4-Dichlorophenol	2015/04/06			95	39 - 135	<0.10	ug/L		
7856414	3,5-Dichlorophenol	2015/04/06			91	39 - 135	<0.10	ug/L		
7856414	Pentachlorophenol	2015/04/06			111	14 - 176	<0.10	ug/L		
7856529	Dissolved Aluminum (Al)	2015/04/07	99	80 - 120	106	80 - 120	<3.0	ug/L	NC	20
7856529	Dissolved Antimony (Sb)	2015/04/07	105	80 - 120	105	80 - 120	<0.50	ug/L	NC	20
7856529	Dissolved Arsenic (As)	2015/04/07	102	80 - 120	106	80 - 120	<0.10	ug/L	NC	20
7856529	Dissolved Barium (Ba)	2015/04/07	NC	80 - 120	102	80 - 120	<1.0	ug/L	4.4	20
7856529	Dissolved Beryllium (Be)	2015/04/07	102	80 - 120	101	80 - 120	<0.10	ug/L	NC	20
7856529	Dissolved Bismuth (Bi)	2015/04/07	99	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
7856529	Dissolved Boron (B)	2015/04/07					<50	ug/L	NC	20
7856529	Dissolved Cadmium (Cd)	2015/04/07	NC	80 - 120	99	80 - 120	<0.010	ug/L	1.0	20
7856529	Dissolved Chromium (Cr)	2015/04/07	101	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
7856529	Dissolved Cobalt (Co)	2015/04/07	99	80 - 120	102	80 - 120	<0.50	ug/L	NC	20
7856529	Dissolved Copper (Cu)	2015/04/07	NC	80 - 120	100	80 - 120	<0.20	ug/L	5.3	20
7856529	Dissolved Iron (Fe)	2015/04/07	NC	80 - 120	107	80 - 120	<5.0	ug/L	0.41	20
7856529	Dissolved Lead (Pb)	2015/04/07	96	80 - 120	97	80 - 120	<0.20	ug/L	NC	20
7856529	Dissolved Lithium (Li)	2015/04/07	NC	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7856529	Dissolved Manganese (Mn)	2015/04/07	NC	80 - 120	100	80 - 120	<1.0	ug/L	4.1	20
7856529	Dissolved Molybdenum (Mo)	2015/04/07	NC	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
7856529	Dissolved Nickel (Ni)	2015/04/07	101	80 - 120	102	80 - 120	<1.0	ug/L	NC	20
7856529	Dissolved Selenium (Se)	2015/04/07	95	80 - 120	102	80 - 120	<0.10	ug/L	NC	20
7856529	Dissolved Silicon (Si)	2015/04/07					<100	ug/L	2.3	20
7856529	Dissolved Silver (Ag)	2015/04/07	96	80 - 120	98	80 - 120	<0.020	ug/L	NC	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7856529	Dissolved Strontium (Sr)	2015/04/07	NC	80 - 120	97	80 - 120	<1.0	ug/L	5.3	20
7856529	Dissolved Thallium (Tl)	2015/04/07	87	80 - 120	98	80 - 120	<0.050	ug/L	NC	20
7856529	Dissolved Tin (Sn)	2015/04/07	94	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
7856529	Dissolved Titanium (Ti)	2015/04/07	99	80 - 120	110	80 - 120	<5.0	ug/L	NC	20
7856529	Dissolved Uranium (U)	2015/04/07	94	80 - 120	94	80 - 120	<0.10	ug/L	2.1	20
7856529	Dissolved Vanadium (V)	2015/04/07	105	80 - 120	100	80 - 120	<5.0	ug/L	NC	20
7856529	Dissolved Zinc (Zn)	2015/04/07	NC	80 - 120	97	80 - 120	<5.0	ug/L	3.7	20
7856529	Dissolved Zirconium (Zr)	2015/04/07					<0.50	ug/L	NC	20
7857162	2-Methylnaphthalene	2015/04/08	91	50 - 130	91	50 - 130	<0.10	ug/L	1.3 (1)	40
7857162	Acenaphthene	2015/04/08	94	50 - 130	97	50 - 130	<0.050	ug/L	NC	40
7857162	Acenaphthylene	2015/04/08	93	50 - 130	95	50 - 130	<0.050	ug/L	NC	40
7857162	Acridine	2015/04/08	91	50 - 130	94	50 - 130	<0.050	ug/L	NC	40
7857162	Anthracene	2015/04/08	95	60 - 130	102	60 - 130	<0.010	ug/L	NC	40
7857162	Benzo(a)anthracene	2015/04/08	83	60 - 130	85	60 - 130	<0.010	ug/L	NC	40
7857162	Benzo(a)pyrene	2015/04/08	88	60 - 130	89	60 - 130	<0.0090	ug/L	NC	40
7857162	Benzo(b&j)fluoranthene	2015/04/08	87	60 - 130	89	60 - 130	<0.050	ug/L	NC	40
7857162	Benzo(g,h,i)perylene	2015/04/08	90	60 - 130	91	60 - 130	<0.050	ug/L	NC	40
7857162	Benzo(k)fluoranthene	2015/04/08	87	60 - 130	89	60 - 130	<0.050	ug/L	NC	40
7857162	Chrysene	2015/04/08	87	60 - 130	89	60 - 130	<0.050	ug/L	NC	40
7857162	Dibenz(a,h)anthracene	2015/04/08	90	60 - 130	92	60 - 130	<0.050	ug/L	NC	40
7857162	Fluoranthene	2015/04/08	84	60 - 130	88	60 - 130	<0.020	ug/L	NC	40
7857162	Fluorene	2015/04/08	85	50 - 130	86	50 - 130	<0.050	ug/L	1.6	40
7857162	Indeno(1,2,3-cd)pyrene	2015/04/08	93	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
7857162	Naphthalene	2015/04/08	87	50 - 130	84	50 - 130	<0.10	ug/L	21 (1)	40
7857162	Phenanthrene	2015/04/08	85	60 - 130	89	60 - 130	<0.050	ug/L	NC	40
7857162	Pyrene	2015/04/08	86	60 - 130	89	60 - 130	<0.020	ug/L	NC	40
7857162	Quinoline	2015/04/08	102	50 - 130	104	50 - 130	<0.24	ug/L	NC	40
7857170	EPH (C10-C19)	2015/04/07	111	50 - 130	117	50 - 130	<0.20	mg/L	NC	30
7857170	EPH (C19-C32)	2015/04/07	108	50 - 130	113	50 - 130	<0.20	mg/L	NC	30
7857215	2-Methylnaphthalene	2015/04/08	NC	50 - 130	95	50 - 130	<0.10	ug/L	5.6 (2)	40
7857215	Acenaphthene	2015/04/08	NC	50 - 130	100	50 - 130	<0.050	ug/L	5.9 (2)	40
7857215	Acenaphthylene	2015/04/08	NC	50 - 130	100	50 - 130	<0.050	ug/L	NC (2)	40

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7857215	Acridine	2015/04/08	95	50 - 130	100	50 - 130	<0.050	ug/L	NC (2)	40
7857215	Anthracene	2015/04/08	NC	60 - 130	107	60 - 130	<0.010	ug/L	4.1 (2)	40
7857215	Benzo(a)anthracene	2015/04/08	NC	60 - 130	94	60 - 130	<0.010	ug/L	NC (2)	40
7857215	Benzo(a)pyrene	2015/04/08	NC	60 - 130	97	60 - 130	<0.0090	ug/L	NC (2)	40
7857215	Benzo(b&j)fluoranthene	2015/04/08	NC	60 - 130	100	60 - 130	<0.050	ug/L	NC (2)	40
7857215	Benzo(g,h,i)perylene	2015/04/08	NC	60 - 130	98	60 - 130	<0.050	ug/L	NC (2)	40
7857215	Benzo(k)fluoranthene	2015/04/08	82	60 - 130	94	60 - 130	<0.050	ug/L	NC (2)	40
7857215	Chrysene	2015/04/08	NC	60 - 130	100	60 - 130	<0.050	ug/L	NC (2)	40
7857215	Dibenz(a,h)anthracene	2015/04/08	69	60 - 130	97	60 - 130	<0.050	ug/L	NC (2)	40
7857215	Fluoranthene	2015/04/08	NC	60 - 130	93	60 - 130	<0.020	ug/L	NC (2)	40
7857215	Fluorene	2015/04/08	NC	50 - 130	91	50 - 130	<0.050	ug/L	5.2 (2)	40
7857215	Indeno(1,2,3-cd)pyrene	2015/04/08	65	60 - 130	100	60 - 130	<0.050	ug/L	NC (2)	40
7857215	Naphthalene	2015/04/08	NC	50 - 130	96	50 - 130	<0.10	ug/L	3.8 (1)	40
7857215	Phenanthrene	2015/04/08	NC	60 - 130	98	60 - 130	<0.050	ug/L	6.1 (2)	40
7857215	Pyrene	2015/04/08	NC	60 - 130	95	60 - 130	<0.020	ug/L	NC (2)	40
7857215	Quinoline	2015/04/08	111	50 - 130	101	50 - 130	<0.24	ug/L	NC (2)	40
7857226	EPH (C10-C19)	2015/04/07	NC	50 - 130	116	50 - 130	<0.20	mg/L	3.2	30
7857226	EPH (C19-C32)	2015/04/07	NC	50 - 130	113	50 - 130	<0.20	mg/L	NC	30
7858525	Dissolved Mercury (Hg)	2015/04/08	87	80 - 120	93	80 - 120	<0.010	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

(2) Detection limits raised due to dilution as a result of sample matrix interference.

Maxxam Job #: B526575
Report Date: 2015/04/09

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 Port Drive, Nanaimo, BC
Sampler Initials: KA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-Free:800-563-6266 Fax:(604) 731 2386 www.maxxam.ca

Chain Of Custody Record

Page 2 of 3

INVOICE TO:		Report Information		Project Information	
Company Name	#11478 TETRA TECH EBA INC.	Company Name	#28955 TETRA TECH EBA	Quotation #	B40497
Contact Name	ACCOUNTS PAYABLE	Contact Name	DARREN THOMAS	P.O. #	
Address	14940-123 AVENUE	Address	#1 - 4376 Boban Drive	Project #	ENVIND03511-01.008
	EDMONTON AB T5V 1B4		Nanaimo BC V9T 6A7	Project Name	
Phone	(780) 451-2121 x Fax (780) 454-5688 x	Phone	(250) 756-2256 Fax	Site	
Email	EBA.Accounts.Payable@tetratech.com	Email	Darren.Thomas@tetratech.com lora.paul@tetratech.com	Sampled By	K. Gabelhouse

Laboratory Use Only	
Maxxam Job #	Bottle Order #:
B526575	462385
Chain Of Custody Record	Project Manager
C#462385-02-01	Tabitha Rudkin

Regulatory Criteria:

- [x] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other

Special Instructions

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: ______ [ ]
Rush Confirmation Number: ______ (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	LEPH/HEPH/PAH	Dissolved Metals with CV Hg	Chlorinated Phenols	BTEX/VPH	Total Metals with CV Hg	Glycols					# of Bottles	Comments
1	LZ4493	14MW~~#~~ 02	April 1/15		GW	X	X	X	X								6	
2	LZ4494	14MW~~18~~ 19	"		"	X	X	X	X								6	
3		~~14MW14~~																
4	MISSING	14MW15	"		"				X	X							4	
5	LZ4495	14MW16	"		"				X	X							4	
6	LZ4496	14MW35	"		"				X	X							4	
7	LZ4497	14MW25	"		"	X	X	X									5	
8	LZ4498	~~14MW24~~ DUP6	"		"	X	X	X									5	
9		~~14MW23~~																
10		14MW29																B526575

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
K. Gabelhouse	15/04/01		Mullauren Berthier	2015/04/02	07:55	

Lab Use Only		
Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	4,5,4 / 4,4,3	NA [ ] Yes [ ] No

White: Maxxam Yellow: Client

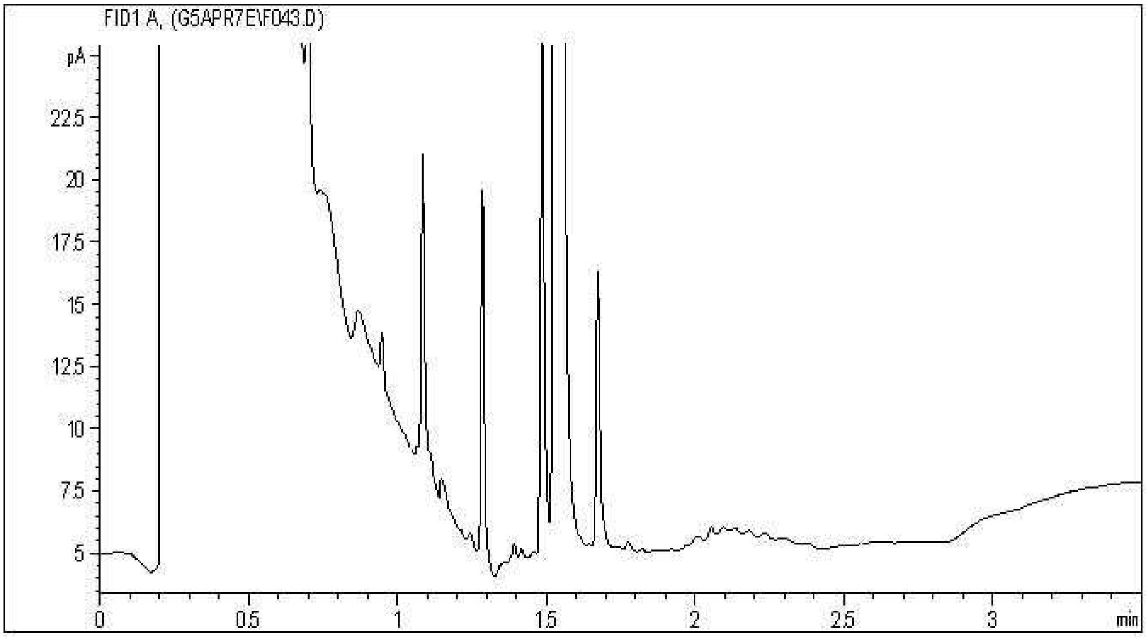
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

Maxxam Analytics International Corporation o/a Maxxam Analytics

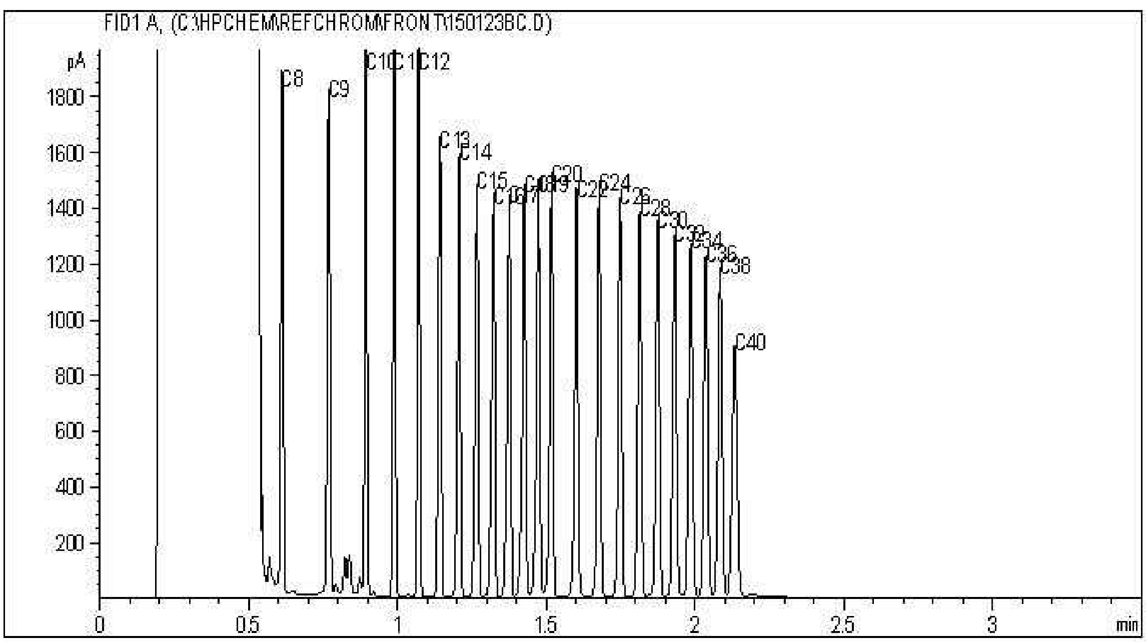
Maxxam Job #: B526575
Report Date: 2015/04/09
Maxxam Sample: LZ4493

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 Port Drive, Nanaimo, BC
Client ID: 14MW02

EPH in Water when PAH required Chromatogram



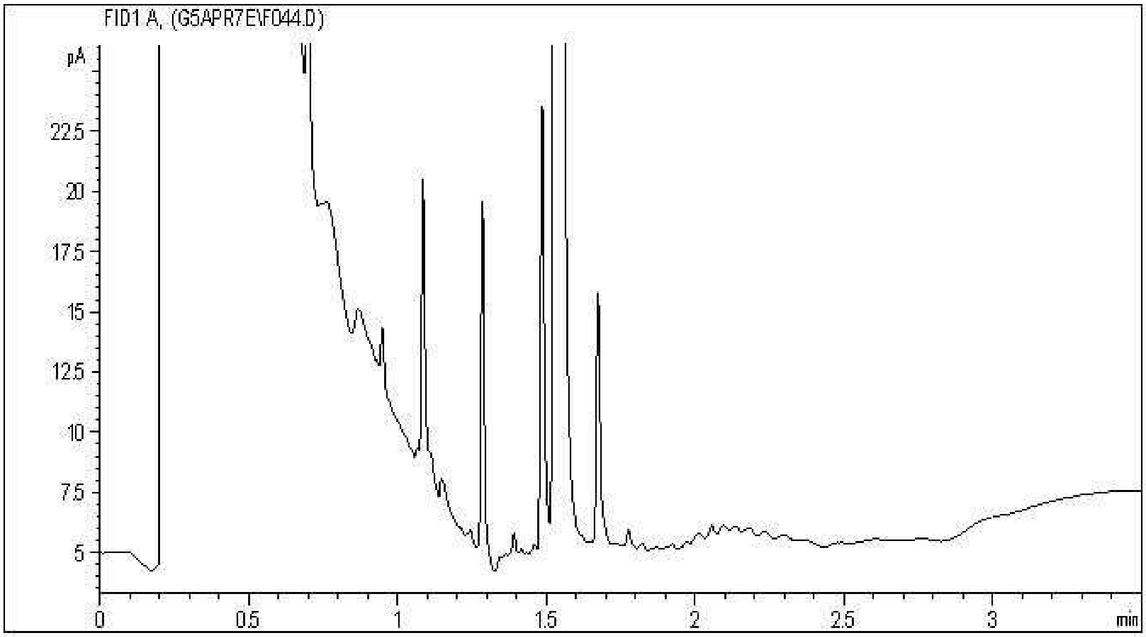
Carbon Range Distribution - Reference Chromatogram



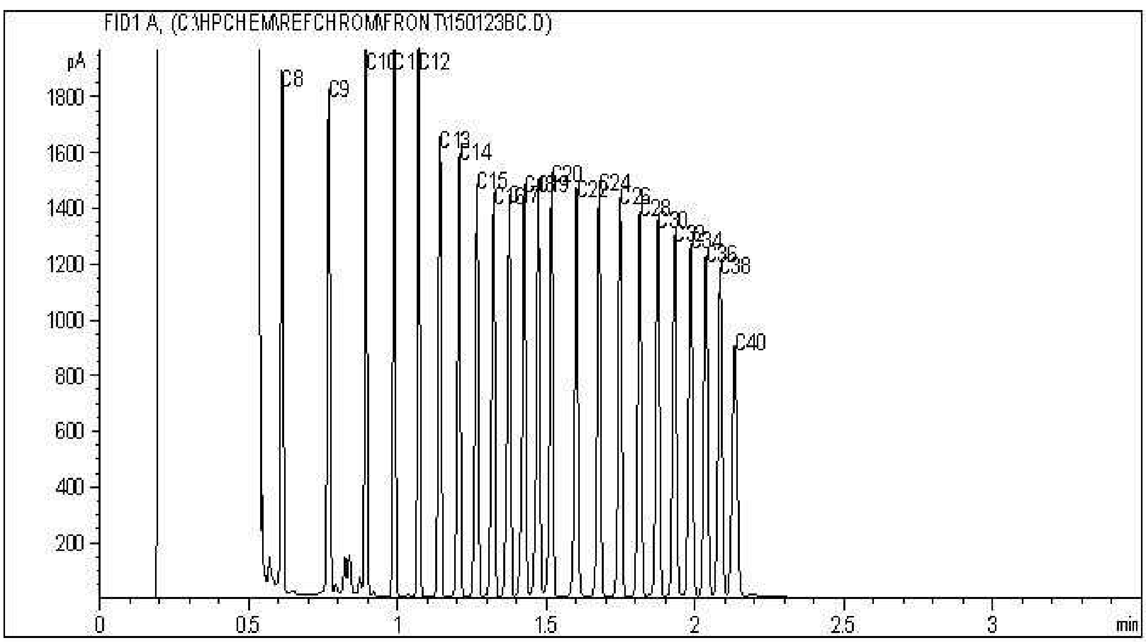
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



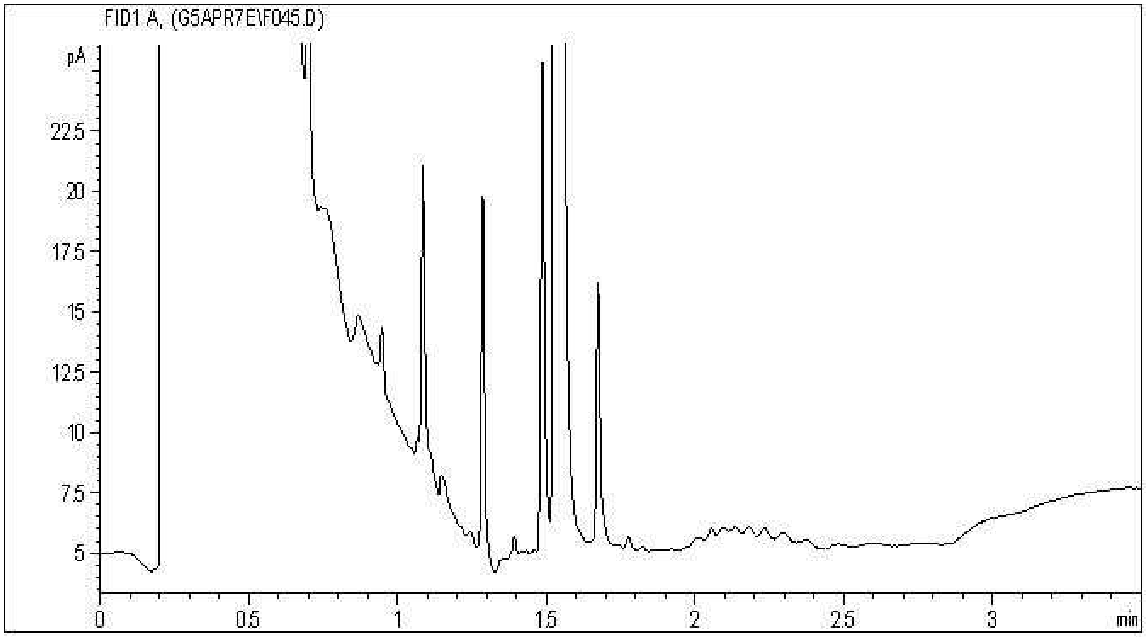
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

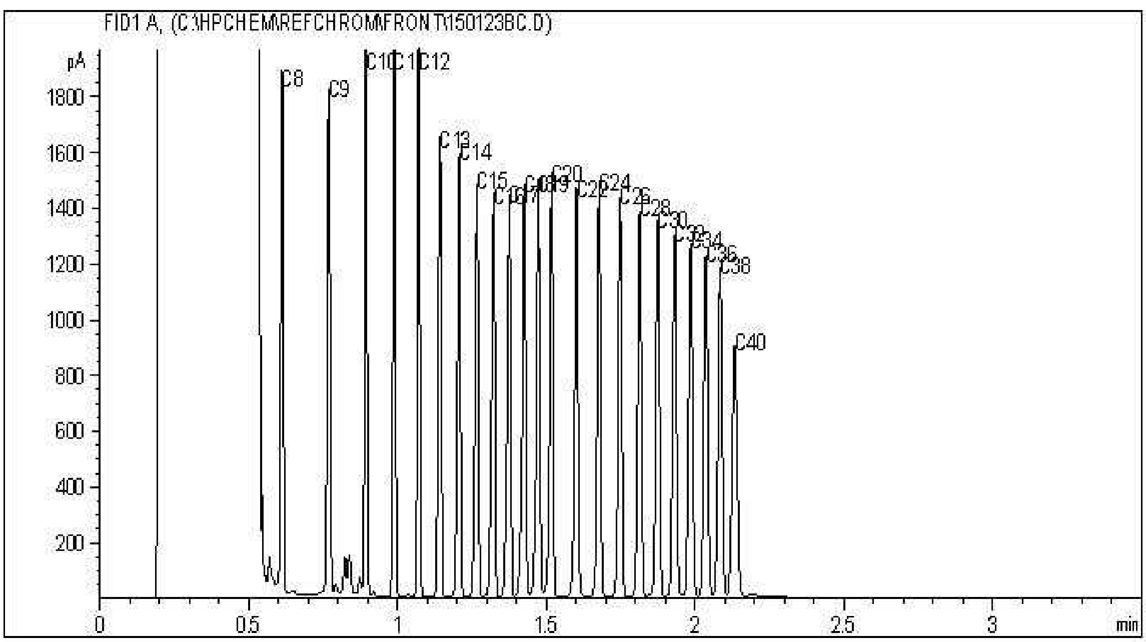
Maxxam Job #: B526575
Report Date: 2015/04/09
Maxxam Sample: LZ4497

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 Port Drive, Nanaimo, BC
Client ID: 14MW25

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



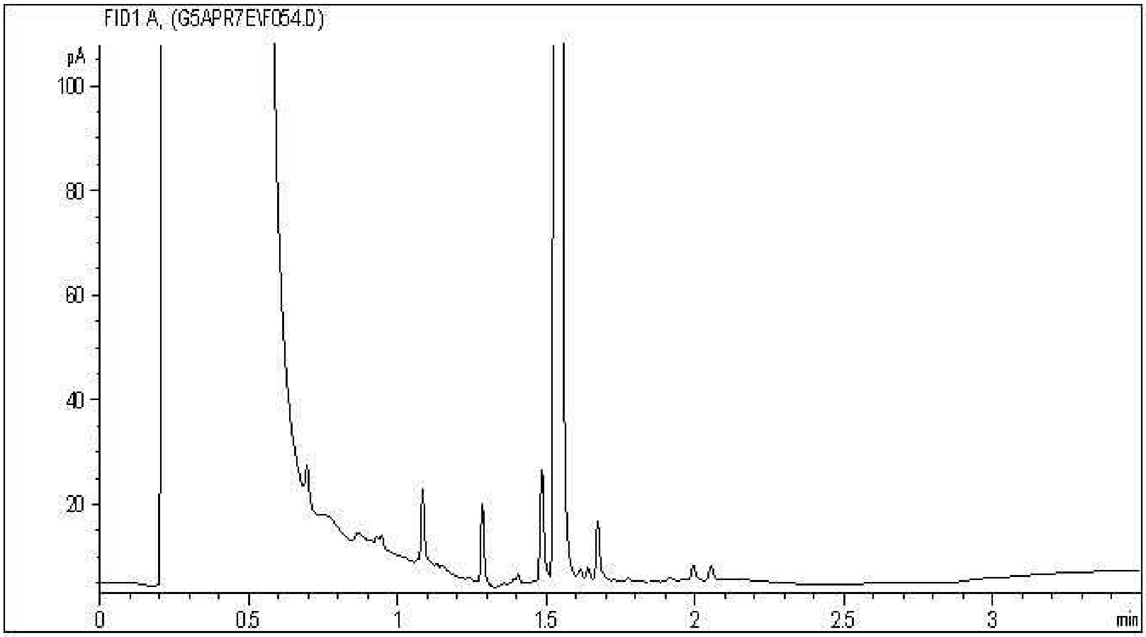
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

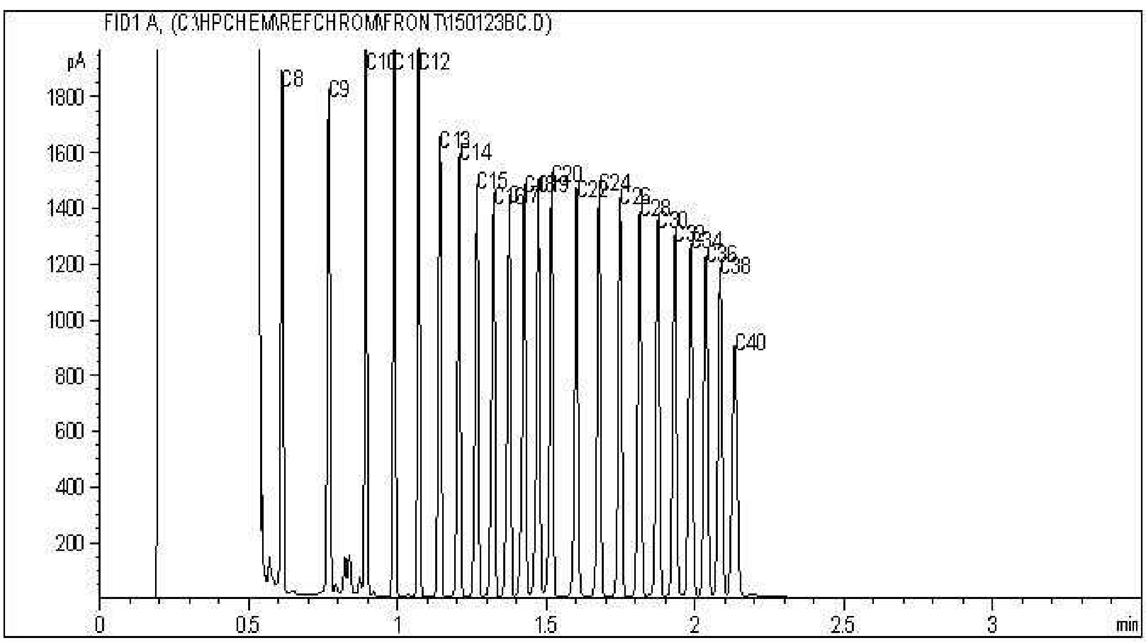
Maxxam Job #: B526575
Report Date: 2015/04/09
Maxxam Sample: LZ4498

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 Port Drive, Nanaimo, BC
Client ID: DUP6

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Success Through Science®

Your Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Your C.O.C. #: 462385-03-01

Attention:DARREN THOMAS

TETRA TECH EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2015/04/14
Report #: R1844832
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B527845
Received: 2015/04/08, 08:30

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS	5	2015/04/09	2015/04/09	BBY8SOP-00010/11	EPA 8260c R3 m
Phenols in Water by GCMS	2	2015/04/08	2015/04/09	BBY8SOP-00025	EPA 8270d R4
Phenols in Water by GCMS	1	2015/04/08	2015/04/10	BBY8SOP-00025	EPA 8270d R4
Glycols in Water	1	N/A	2015/04/08	BBY5SOP-00001	EPA 8015c R3 m
Hardness (calculated as CaCO3)	2	N/A	2015/04/13	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved) by CVAF	2	N/A	2015/04/14	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	3	2015/04/09	2015/04/09	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	2	N/A	2015/04/13	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	2	N/A	2015/04/10	BBY7SOP-00002	EPA 6020A R1 m
PAH in Water by GC/MS (SIM)	3	2015/04/09	2015/04/09	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	3	N/A	2015/04/10	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	2	N/A	2015/04/10	BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	3	N/A	2015/04/10	BBY WI-00033	Auto Calc
Volatile HC-BTEX	5	N/A	2015/04/10	BBY WI-00033	Auto Calc

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tabitha Rudkin, AScT, Burnaby Project Manager
Email: TRudkin@maxxam.ca
Phone# (604)638-2639
==
This report has been generated and distributed using a secure automated process.
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Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		MA0503	MA0508	
Sampling Date		2015/04/07	2015/04/07	
COC Number		462385-03-01	462385-03-01	
	Units	**SNC09-03**	**14MW29**	**QC Batch**
Calculated Parameters				
Filter and HNO3 Preservation	N/A	FIELD	FIELD	ONSITE

Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

GLYCOLS BY GC-FID (WATER)

Maxxam ID		MA0503		
Sampling Date		2015/04/07		
COC Number		462385-03-01		
	Units	**SNC09-03**	**RDL**	**QC Batch**
Glycols				
Ethylene Glycol	mg/L	<10	10	7859166
Diethylene Glycol	mg/L	<10	10	7859166
Triethylene Glycol	mg/L	<10	10	7859166
Tetraethylene Glycol	mg/L	<10	10	7859166
Propylene Glycol	mg/L	<10	10	7859166
Surrogate Recovery (%)				
SULFOLANE (sur.)	%	107		7859166
RDL = Reportable Detection Limit				

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		MA0504		MA0505		MA0506		
Sampling Date		2015/04/06		2015/04/06		2015/04/06		
COC Number		462385-03-01		462385-03-01		462385-03-01		
	Units	**DUP5**	**RDL**	**14MW10**	**RDL**	**14MW15**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS								
2-chlorophenol	ug/L	<0.10	0.10	<0.10	0.10	<0.10	0.10	7858444
3 & 4-chlorophenol	ug/L	<27 (1)	27	<21 (1)	21	<0.10	0.10	7858444
2,4 + 2,5-Dichlorophenol	ug/L	2.9	0.10	2.8	0.10	<0.10	0.10	7858444
2,3-Dichlorophenol	ug/L	<0.10	0.10	<0.10	0.10	<0.10	0.10	7858444
2,6-dichlorophenol	ug/L	<0.10	0.10	<0.10	0.10	<0.10	0.10	7858444
3,5-Dichlorophenol	ug/L	0.54	0.10	0.55	0.10	<0.10	0.10	7858444
3,4-Dichlorophenol	ug/L	100 (2)	20	85 (2)	20	<0.10	0.10	7858444
2,4,5-trichlorophenol	ug/L	38 (2)	20	35 (2)	20	<0.10	0.10	7858444
2,4,6-trichlorophenol	ug/L	0.72	0.10	0.75	0.10	<0.10	0.10	7858444
2,3,5-trichlorophenol	ug/L	0.12	0.10	0.12	0.10	<0.10	0.10	7858444
2,3,6-Trichlorophenol	ug/L	0.23	0.10	0.26	0.10	<0.10	0.10	7858444
2,3,4-trichlorophenol	ug/L	0.85	0.10	0.91	0.10	<0.10	0.10	7858444
3,4,5-Trichlorophenol	ug/L	5.2	0.10	5.4	0.10	<0.10	0.10	7858444
2,3,4,6-tetrachlorophenol	ug/L	850 (2)	20	760 (2)	20	<0.10	0.10	7858444
2,3,4,5-tetrachlorophenol	ug/L	<20 (1)	20	<20 (1)	20	<0.10	0.10	7858444
2,3,5,6-tetrachlorophenol	ug/L	1.3	0.10	1.4	0.10	<0.10	0.10	7858444
2,6-Dimethylphenol	ug/L	<0.50	0.50	<0.50	0.50	<0.50	0.50	7858444
Pentachlorophenol	ug/L	450 (2)	20	390 (2)	20	<0.10	0.10	7858444
Surrogate Recovery (%)								
2,4,6-TRIBROMOPHENOL (sur.)	%	88		96		89		7858444
2,4-DIBROMOPHENOL	%	78		82		78		7858444

RDL = Reportable Detection Limit
(1) Detection limits raised due to matrix interference.
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

BCCSR BTEX/VPH IN WATER (WATER)

Maxxam ID		MA0503	MA0503	MA0504	MA0505	MA0506	MA0507		
Sampling Date		2015/04/07	2015/04/07	2015/04/06	2015/04/06	2015/04/06	2015/04/07		
COC Number		462385-03-01	462385-03-01	462385-03-01	462385-03-01	462385-03-01	462385-03-01		
	Units	**SNC09-03**	**SNC09-03 Lab-Dup**	**DUP5**	**14MW10**	**14MW15**	**14MW23**	**RDL**	**QC Batch**
Volatiles									
VPH (VH6 to 10 - BTEX)	ug/L	<300		610	500	<300	<300	300	7858279
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0		4.0	7859736
Benzene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40		0.40	7859736
Toluene	ug/L	<0.40	<0.40	0.77	0.68	<0.40		0.40	7859736
Ethylbenzene	ug/L	<0.40	<0.40	22	21	<0.40		0.40	7859736
m & p-Xylene	ug/L	<0.40	<0.40	98	95	<0.40		0.40	7859736
o-Xylene	ug/L	<0.40	<0.40	52	50	<0.40		0.40	7859736
Styrene	ug/L	<0.40	<0.40	<0.40	<0.40	<0.40		0.40	7859736
Xylenes (Total)	ug/L	<0.40	<0.40	150	150	<0.40		0.40	7859736
VH C6-C10	ug/L	<300	<300	790	660	<300	<300	300	7859736
Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	105	105	105	104	105	105		7859736
4-Bromofluorobenzene (sur.)	%	100	100	100	100	100	100		7859736
D4-1,2-Dichloroethane (sur.)	%	107	106	104	104	105	106		7859736

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		MA0503	MA0507	MA0508	MA0508		
Sampling Date		2015/04/07	2015/04/07	2015/04/07	2015/04/07		
COC Number		462385-03-01	462385-03-01	462385-03-01	462385-03-01		
	Units	SNC09-03	14MW23	14MW29	14MW29 Lab-Dup	RDL	QC Batch
Polycyclic Aromatics							
Low Molecular Weight PAH`s	ug/L	<0.24	<0.24	<0.24		0.24	7858278
High Molecular Weight PAH`s	ug/L	<0.050	<0.050	<0.050		0.050	7858278
Total PAH	ug/L	<0.24	<0.24	<0.24		0.24	7858278
Naphthalene	ug/L	<0.10	<0.10	<0.10		0.10	7859855
2-Methylnaphthalene	ug/L	<0.10	<0.10	<0.10		0.10	7859855
Quinoline	ug/L	<0.24	<0.24	<0.24		0.24	7859855
Acenaphthylene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Acenaphthene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Fluorene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Phenanthrene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Anthracene	ug/L	<0.010	<0.010	<0.010		0.010	7859855
Acridine	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Fluoranthene	ug/L	<0.020	<0.020	<0.020		0.020	7859855
Pyrene	ug/L	<0.020	<0.020	<0.020		0.020	7859855
Benzo(a)anthracene	ug/L	<0.010	<0.010	<0.010		0.010	7859855
Chrysene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	<0.0090		0.0090	7859855
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	<0.050		0.050	7859855
Calculated Parameters							
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	<0.20		0.20	7859143
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	<0.20		0.20	7859143
Ext. Pet. Hydrocarbon							
EPH (C10-C19)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	7859897
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	<0.20	0.20	7859897
Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	107	108	109	105		7859897
D10-ANTHRACENE (sur.)	%	97	96	94			7859855
D8-ACENAPHTHYLENE (sur.)	%	92	91	90			7859855
D8-NAPHTHALENE (sur.)	%	90	87	87			7859855
D9-Acridine	%	87	79	76			7859855

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		MA0503	MA0507	MA0508	MA0508		
Sampling Date		2015/04/07	2015/04/07	2015/04/07	2015/04/07		
COC Number		462385-03-01	462385-03-01	462385-03-01	462385-03-01		
	Units	**SNC09-03**	**14MW23**	**14MW29**	**14MW29 Lab-Dup**	**RDL**	**QC Batch**
TERPHENYL-D14 (sur.)	%	86	83	77			7859855

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		MA0503	MA0503		MA0508		
Sampling Date		2015/04/07	2015/04/07		2015/04/07		
COC Number		462385-03-01	462385-03-01		462385-03-01		
	Units	**SNC09-03**	**SNC09-03 Lab-Dup**	**RDL**	**14MW29**	**RDL**	**QC Batch**
Misc. Inorganics							
Dissolved Hardness (CaCO3)	mg/L	1640		0.50	2630	0.50	7858476
Elements							
Dissolved Mercury (Hg)	ug/L	<0.010	<0.010	0.010	<0.010	0.010	7862925
Dissolved Metals by ICPMS							
Dissolved Aluminum (Al)	ug/L	<6.0		6.0	94	12	7859879
Dissolved Antimony (Sb)	ug/L	<1.0		1.0	<2.0	2.0	7859879
Dissolved Arsenic (As)	ug/L	0.21		0.20	<0.40	0.40	7859879
Dissolved Barium (Ba)	ug/L	24.4		2.0	45.4	4.0	7859879
Dissolved Beryllium (Be)	ug/L	<0.20		0.20	<0.40	0.40	7859879
Dissolved Bismuth (Bi)	ug/L	<2.0		2.0	<4.0	4.0	7859879
Dissolved Boron (B)	ug/L	1510		100	1870	200	7859879
Dissolved Cadmium (Cd)	ug/L	0.023		0.020	0.209	0.040	7859879
Dissolved Chromium (Cr)	ug/L	<2.0		2.0	<4.0	4.0	7859879
Dissolved Cobalt (Co)	ug/L	<1.0		1.0	<2.0	2.0	7859879
Dissolved Copper (Cu)	ug/L	1.24		0.40	85.9	0.80	7859879
Dissolved Iron (Fe)	ug/L	<10		10	157	20	7859879
Dissolved Lead (Pb)	ug/L	<0.40		0.40	2.63	0.80	7859879
Dissolved Lithium (Li)	ug/L	49		10	66	20	7859879
Dissolved Manganese (Mn)	ug/L	<2.0		2.0	84.6	4.0	7859879
Dissolved Molybdenum (Mo)	ug/L	3.8		2.0	4.1	4.0	7859879
Dissolved Nickel (Ni)	ug/L	10.0		2.0	24.9	4.0	7859879
Dissolved Selenium (Se)	ug/L	<0.20		0.20	<0.40	0.40	7859879
Dissolved Silicon (Si)	ug/L	5320		200	4610	400	7859879
Dissolved Silver (Ag)	ug/L	<0.040		0.040	<0.080	0.080	7859879
Dissolved Strontium (Sr)	ug/L	2210		2.0	3260	4.0	7859879
Dissolved Thallium (Tl)	ug/L	<0.10		0.10	<0.20	0.20	7859879
Dissolved Tin (Sn)	ug/L	<10		10	<20	20	7859879
Dissolved Titanium (Ti)	ug/L	<10		10	<20	20	7859879
Dissolved Uranium (U)	ug/L	2.28		0.20	2.03	0.40	7859879
Dissolved Vanadium (V)	ug/L	<10		10	<20	20	7859879
Dissolved Zinc (Zn)	ug/L	<10		10	69	20	7859879
Dissolved Zirconium (Zr)	ug/L	<1.0		1.0	<2.0	2.0	7859879
Dissolved Calcium (Ca)	mg/L	180		0.10	242	0.20	7858478
Dissolved Magnesium (Mg)	mg/L	289		0.10	492	0.20	7858478

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		MA0503	MA0503		MA0508		
Sampling Date		2015/04/07	2015/04/07		2015/04/07		
COC Number		462385-03-01	462385-03-01		462385-03-01		
	Units	SNC09-03	SNC09-03 Lab-Dup	RDL	14MW29	RDL	QC Batch
Dissolved Potassium (K)	mg/L	89.6		0.10	137	0.20	7858478
Dissolved Sodium (Na)	mg/L	2300		0.10	3860	0.20	7858478
Dissolved Sulphur (S)	mg/L	248		6.0	377	12	7858478

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER) Comments

Sample MA0503-02 Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference sample dilution required.
Sample MA0508-02 Elements by CRC ICPMS (dissolved): RDL raised due to sample matrix interference sample dilution required.

Results relate only to the items tested.

Success Through Science®

Maxxam Job #: B527845
Report Date: 2015/04/14

QUALITY ASSURANCE REPORT

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7858444	2,4,6-TRIBROMOPHENOL (sur.)	2015/04/08			86	10 - 123	83	%		
7858444	2,4-DIBROMOPHENOL	2015/04/08			80	21 - 100	79	%		
7859166	SULFOLANE (sur.)	2015/04/08	120	70 - 130	101	70 - 130	122	%		
7859736	1,4-Difluorobenzene (sur.)	2015/04/09	105	70 - 130	105	70 - 130	105	%		
7859736	4-Bromofluorobenzene (sur.)	2015/04/09	99	70 - 130	98	70 - 130	99	%		
7859736	D4-1,2-Dichloroethane (sur.)	2015/04/09	103	70 - 130	101	70 - 130	107	%		
7859855	D10-ANTHRACENE (sur.)	2015/04/09	97	60 - 130	99	60 - 130	109	%		
7859855	D8-ACENAPHTHYLENE (sur.)	2015/04/09	91	50 - 130	93	50 - 130	102	%		
7859855	D8-NAPHTHALENE (sur.)	2015/04/09	86	50 - 130	87	50 - 130	100	%		
7859855	D9-Acridine	2015/04/09	94	50 - 130	91	50 - 130	100	%		
7859855	TERPHENYL-D14 (sur.)	2015/04/09	88	60 - 130	93	60 - 130	101	%		
7859897	O-TERPHENYL (sur.)	2015/04/09	112	50 - 130	109	50 - 130	107	%		
7858444	2,3,4,5-tetrachlorophenol	2015/04/08			90	14 - 176	<0.10	ug/L		
7858444	2,3,4,6-tetrachlorophenol	2015/04/08			95	14 - 176	<0.10	ug/L		
7858444	2,3,4-trichlorophenol	2015/04/08			97	37 - 144	<0.10	ug/L		
7858444	2,3,5,6-tetrachlorophenol	2015/04/08			89	14 - 176	<0.10	ug/L		
7858444	2,3,5-trichlorophenol	2015/04/08			91	37 - 144	<0.10	ug/L		
7858444	2,3,6-Trichlorophenol	2015/04/08			97	37 - 144	<0.10	ug/L		
7858444	2,3-Dichlorophenol	2015/04/08			86	39 - 135	<0.10	ug/L		
7858444	2,4 + 2,5-Dichlorophenol	2015/04/08			87	39 - 135	<0.10	ug/L		
7858444	2,4,5-trichlorophenol	2015/04/08			96	37 - 144	<0.10	ug/L		
7858444	2,4,6-trichlorophenol	2015/04/08			93	37 - 144	<0.10	ug/L		
7858444	2,6-dichlorophenol	2015/04/08			88	39 - 135	<0.10	ug/L		
7858444	2,6-Dimethylphenol	2015/04/08			68	32 - 119	<0.50	ug/L		
7858444	2-chlorophenol	2015/04/08			81	27 - 123	<0.10	ug/L		
7858444	3 & 4-chlorophenol	2015/04/08			75	27 - 123	<0.10	ug/L		
7858444	3,4,5-Trichlorophenol	2015/04/08			97	37 - 144	<0.10	ug/L		
7858444	3,4-Dichlorophenol	2015/04/08			84	39 - 135	<0.10	ug/L		
7858444	3,5-Dichlorophenol	2015/04/08			78	39 - 135	<0.10	ug/L		
7858444	Pentachlorophenol	2015/04/08			105	14 - 176	<0.10	ug/L		
7859166	Diethylene Glycol	2015/04/08	107	70 - 130	109	70 - 130	<10	mg/L	NC	30
7859166	Ethylene Glycol	2015/04/08	75	70 - 130	88	70 - 130	<10	mg/L	NC	30

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Maxxam Job #: B527845
Report Date: 2015/04/14

QUALITY ASSURANCE REPORT(CONT'D)

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7859166	Propylene Glycol	2015/04/08	79	70 - 130	86	70 - 130	<10	mg/L	NC	30
7859166	Tetraethylene Glycol	2015/04/08	108	70 - 130	85	70 - 130	<10	mg/L	NC	30
7859166	Triethylene Glycol	2015/04/08	128	70 - 130	94	70 - 130	<10	mg/L	NC	30
7859736	Benzene	2015/04/09	103	70 - 130	103	70 - 130	<0.40	ug/L	NC	30
7859736	Ethylbenzene	2015/04/09	100	70 - 130	101	70 - 130	<0.40	ug/L	NC	30
7859736	m & p-Xylene	2015/04/09	NC	70 - 130	98	70 - 130	<0.40	ug/L	NC	30
7859736	Methyl-tert-butylether (MTBE)	2015/04/09	96	70 - 130	97	70 - 130	<4.0	ug/L	NC	30
7859736	o-Xylene	2015/04/09	NC	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
7859736	Styrene	2015/04/09	100	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
7859736	Toluene	2015/04/09	93	70 - 130	93	70 - 130	<0.40	ug/L	NC	30
7859736	VH C6-C10	2015/04/09			91	70 - 130	<300	ug/L	NC	30
7859736	Xylenes (Total)	2015/04/09					<0.40	ug/L	NC	30
7859855	2-Methylnaphthalene	2015/04/09	79	50 - 130	79	50 - 130	<0.10	ug/L	1.5	40
7859855	Acenaphthene	2015/04/09	81	50 - 130	83	50 - 130	<0.050	ug/L	NC	40
7859855	Acenaphthylene	2015/04/09	83	50 - 130	81	50 - 130	<0.050	ug/L	NC	40
7859855	Acridine	2015/04/09	81	50 - 130	77	50 - 130	<0.050	ug/L	NC	40
7859855	Anthracene	2015/04/09	85	60 - 130	84	60 - 130	<0.010	ug/L	NC	40
7859855	Benzo(a)anthracene	2015/04/09	73	60 - 130	70	60 - 130	<0.010	ug/L	NC	40
7859855	Benzo(a)pyrene	2015/04/09	75	60 - 130	73	60 - 130	<0.0090	ug/L	NC	40
7859855	Benzo(b&j)fluoranthene	2015/04/09	80	60 - 130	73	60 - 130	<0.050	ug/L	NC	40
7859855	Benzo(g,h,i)perylene	2015/04/09	74	60 - 130	74	60 - 130	<0.050	ug/L	NC	40
7859855	Benzo(k)fluoranthene	2015/04/09	72	60 - 130	75	60 - 130	<0.050	ug/L	NC	40
7859855	Chrysene	2015/04/09	77	60 - 130	76	60 - 130	<0.050	ug/L	NC	40
7859855	Dibenz(a,h)anthracene	2015/04/09	75	60 - 130	73	60 - 130	<0.050	ug/L	NC	40
7859855	Fluoranthene	2015/04/09	75	60 - 130	73	60 - 130	<0.020	ug/L	NC	40
7859855	Fluorene	2015/04/09	75	50 - 130	75	50 - 130	<0.050	ug/L	NC	40
7859855	Indeno(1,2,3-cd)pyrene	2015/04/09	77	60 - 130	76	60 - 130	<0.050	ug/L	NC	40
7859855	Naphthalene	2015/04/09	76	50 - 130	75	50 - 130	<0.10	ug/L	2.2	40
7859855	Phenanthrene	2015/04/09	77	60 - 130	76	60 - 130	<0.050	ug/L	NC	40
7859855	Pyrene	2015/04/09	78	60 - 130	76	60 - 130	<0.020	ug/L	NC	40
7859855	Quinoline	2015/04/09	103	50 - 130	100	50 - 130	<0.24	ug/L	NC	40
7859879	Dissolved Aluminum (Al)	2015/04/10	92	80 - 120	95	80 - 120	<3.0	ug/L	NC	20

QUALITY ASSURANCE REPORT(CONT'D)

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7859879	Dissolved Antimony (Sb)	2015/04/10	97	80 - 120	99	80 - 120	<0.50	ug/L	NC	20
7859879	Dissolved Arsenic (As)	2015/04/10	103	80 - 120	99	80 - 120	<0.10	ug/L	NC	20
7859879	Dissolved Barium (Ba)	2015/04/10	NC	80 - 120	97	80 - 120	<1.0	ug/L	4.6	20
7859879	Dissolved Beryllium (Be)	2015/04/10	103	80 - 120	101	80 - 120	<0.10	ug/L	NC	20
7859879	Dissolved Bismuth (Bi)	2015/04/10	89	80 - 120	93	80 - 120	<1.0	ug/L	NC	20
7859879	Dissolved Boron (B)	2015/04/10					<50	ug/L	NC	20
7859879	Dissolved Cadmium (Cd)	2015/04/10	94	80 - 120	98	80 - 120	<0.010	ug/L	NC	20
7859879	Dissolved Chromium (Cr)	2015/04/10	101	80 - 120	104	80 - 120	<1.0	ug/L	NC	20
7859879	Dissolved Cobalt (Co)	2015/04/10	100	80 - 120	104	80 - 120	<0.50	ug/L	NC	20
7859879	Dissolved Copper (Cu)	2015/04/10	NC	80 - 120	102	80 - 120	<0.20	ug/L	0.65	20
7859879	Dissolved Iron (Fe)	2015/04/10	101	80 - 120	104	80 - 120	<5.0	ug/L	NC	20
7859879	Dissolved Lead (Pb)	2015/04/10	93	80 - 120	96	80 - 120	<0.20	ug/L	NC	20
7859879	Dissolved Lithium (Li)	2015/04/10	103	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
7859879	Dissolved Manganese (Mn)	2015/04/10	NC	80 - 120	102	80 - 120	<1.0	ug/L	2.8	20
7859879	Dissolved Molybdenum (Mo)	2015/04/10	NC	80 - 120	92	80 - 120	<1.0	ug/L	3.1	20
7859879	Dissolved Nickel (Ni)	2015/04/10	97	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
7859879	Dissolved Selenium (Se)	2015/04/10	94	80 - 120	94	80 - 120	<0.10	ug/L	6.8	20
7859879	Dissolved Silicon (Si)	2015/04/10					<100	ug/L	0.97	20
7859879	Dissolved Silver (Ag)	2015/04/10	94	80 - 120	94	80 - 120	<0.020	ug/L	NC	20
7859879	Dissolved Strontium (Sr)	2015/04/10	NC	80 - 120	94	80 - 120	<1.0	ug/L	3.4	20
7859879	Dissolved Thallium (Tl)	2015/04/10	92	80 - 120	91	80 - 120	<0.050	ug/L	NC	20
7859879	Dissolved Tin (Sn)	2015/04/10	95	80 - 120	99	80 - 120	<5.0	ug/L	NC	20
7859879	Dissolved Titanium (Ti)	2015/04/10	93	80 - 120	97	80 - 120	<5.0	ug/L	NC	20
7859879	Dissolved Uranium (U)	2015/04/10	90	80 - 120	92	80 - 120	<0.10	ug/L	4.9	20
7859879	Dissolved Vanadium (V)	2015/04/10	98	80 - 120	99	80 - 120	<5.0	ug/L	NC	20
7859879	Dissolved Zinc (Zn)	2015/04/10	96	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
7859879	Dissolved Zirconium (Zr)	2015/04/10					<0.50	ug/L	NC	20
7859897	EPH (C10-C19)	2015/04/09	126	50 - 130	102	50 - 130	<0.20	mg/L	NC	30
7859897	EPH (C19-C32)	2015/04/09	122	50 - 130	104	50 - 130	<0.20	mg/L	NC	30

Maxxam Job #: B527845
Report Date: 2015/04/14

QUALITY ASSURANCE REPORT(CONT'D)

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7862925	Dissolved Mercury (Hg)	2015/04/14	82	80 - 120	97	80 - 120	<0.010	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B527845
Report Date: 2015/04/14

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam

Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-Free:800-563-6266 Fax:(604) 731 2386 www.maxxam.ca

Chain Of Custody Record

Page 1 of 1

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#11478 TETRA TECH EBA INC.	Company Name	#28955 TETRA TECH EBA	Quotation #	B40497	Maxxam Job #	Bottle Order #:
Contact Name	ACCOUNTS PAYABLE	Contact Name	DARREN THOMAS	P.O. #		B527845	462385
Address	14940-123 AVENUE	Address	#1 - 4376 Boban Drive	Project #	ENVIND03511-01.008	Chain Of Custody Record	Project Manager
	EDMONTON AB T5V 1B4		Nanaimo BC V9T 6A7	Project Name	#1 Port Drive ESA	C#462385-03-01	Tabitha Rudkin
Phone	(780) 451-2121 x Fax (780) 454-5688 x	Phone	(250) 756-2256 Fax	Site #			
Email	EBA.Accounts.Payable@tetratech.com	Email	Darren.Thomas@tetratech.com	Sampled By	Darren Thomas		

Regulatory Criteria:

- [X] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other

Special Instructions

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]

(will be applied if Rush TAT is not specified)

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: ______ [ ]

Rush Confirmation Number: ______ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	LEPH/HEPH/PAH	Dissolved Metals with CV Hg	Chlorinated Phenols	BTEX/VPH	Total Metals with CV Hg	Glycols	VPH				# of Bottles	Comments
1	MA0503	SNC09-03	04/07/15		water	Y	X	X		X		X					9	
2	MA0504	DUP5	04/6/15						X	X							4	
3	MA0505	14MW10 ~~DUP6~~	"						X	X							4	
4	MA0506	14MW15	"						X	X							4	
5	MA0507	14MW23	04/07/15				X						X				6	
6	MA0508	14MW29	"			Y	X	X									5	
7		~~14MW~~																
8																		
9																		B527845
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Darren Thomas	15/04/07	16:00	Laurel Berthier	2015/04/08	08:30		[ ]	5,3,6 / 1,1,1	NA [ ] Yes [ ] No

Lab Use Only

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

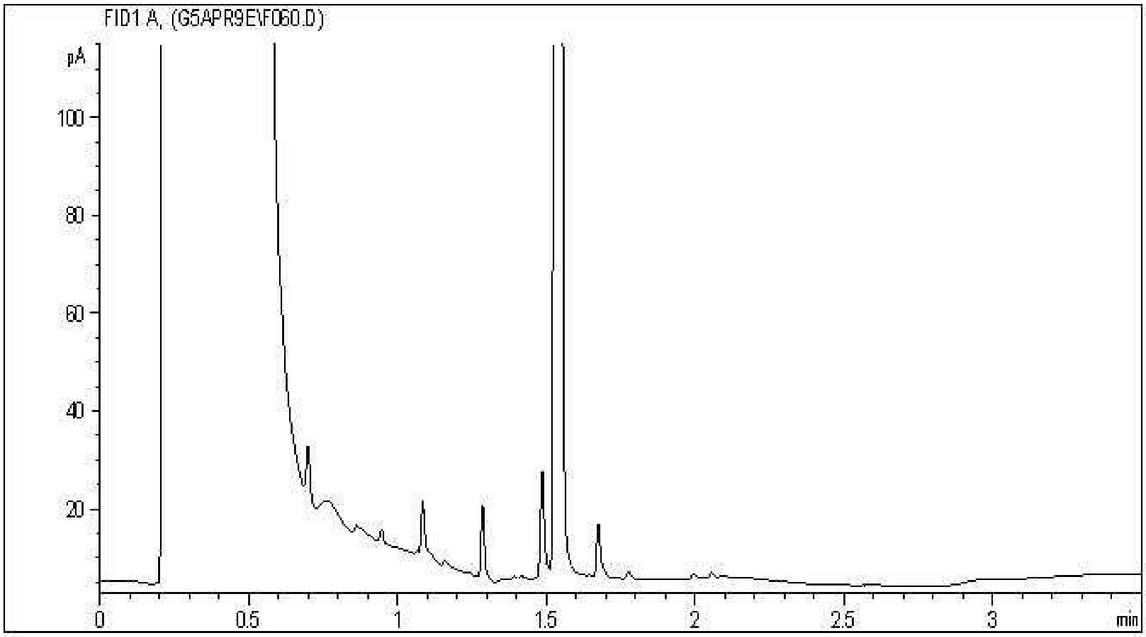
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

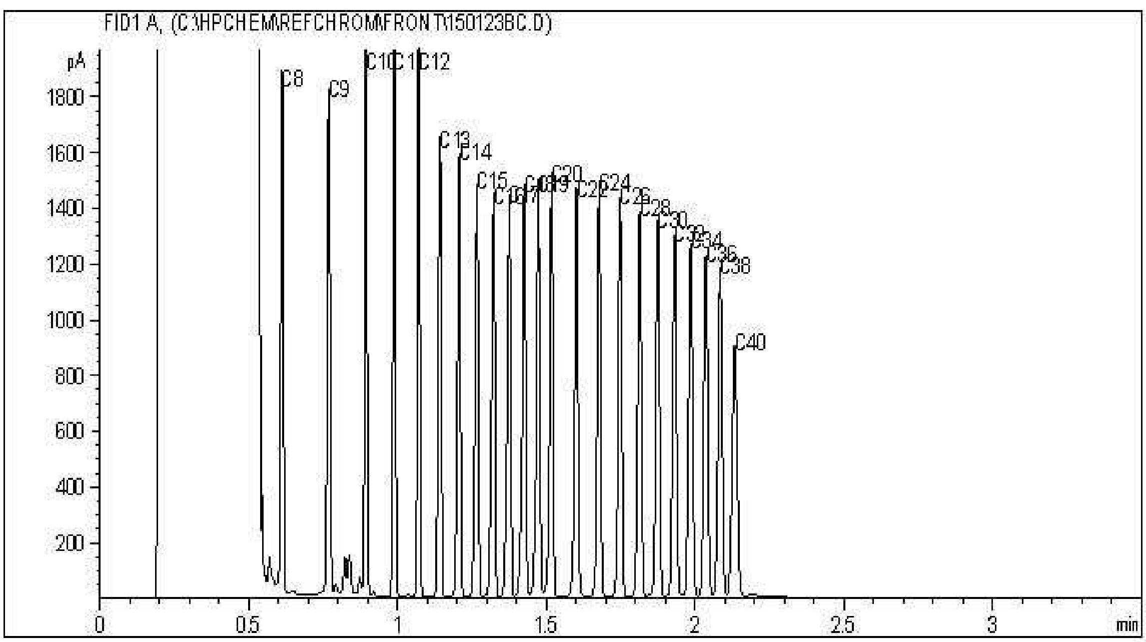
Maxxam Job #: B527845
Report Date: 2015/04/14
Maxxam Sample: MA0503

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: SNC09-03

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



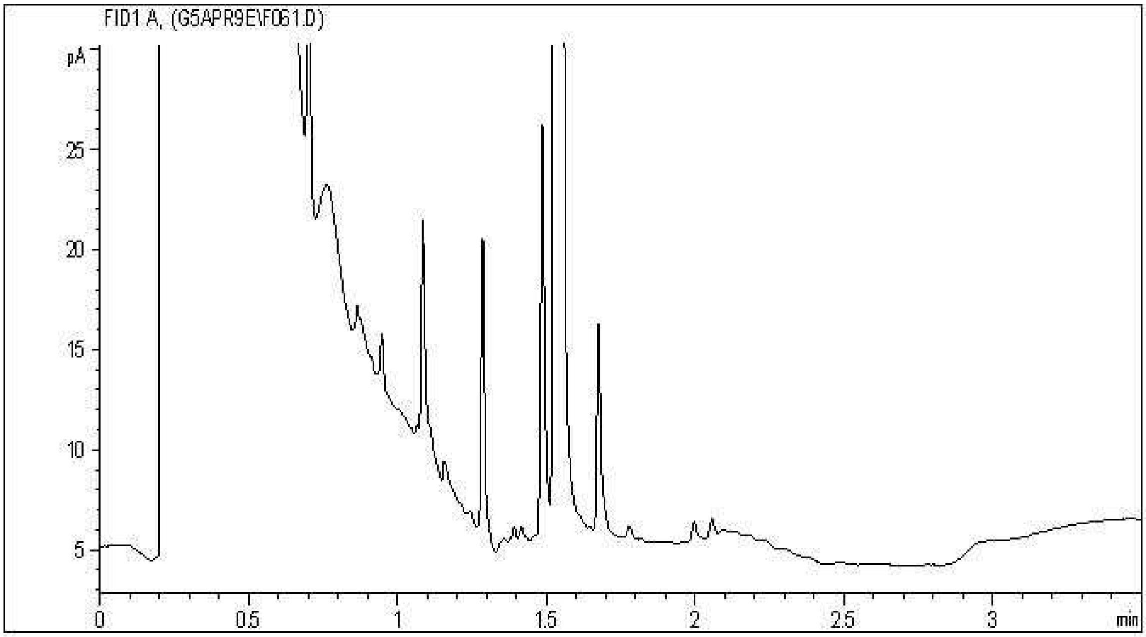
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

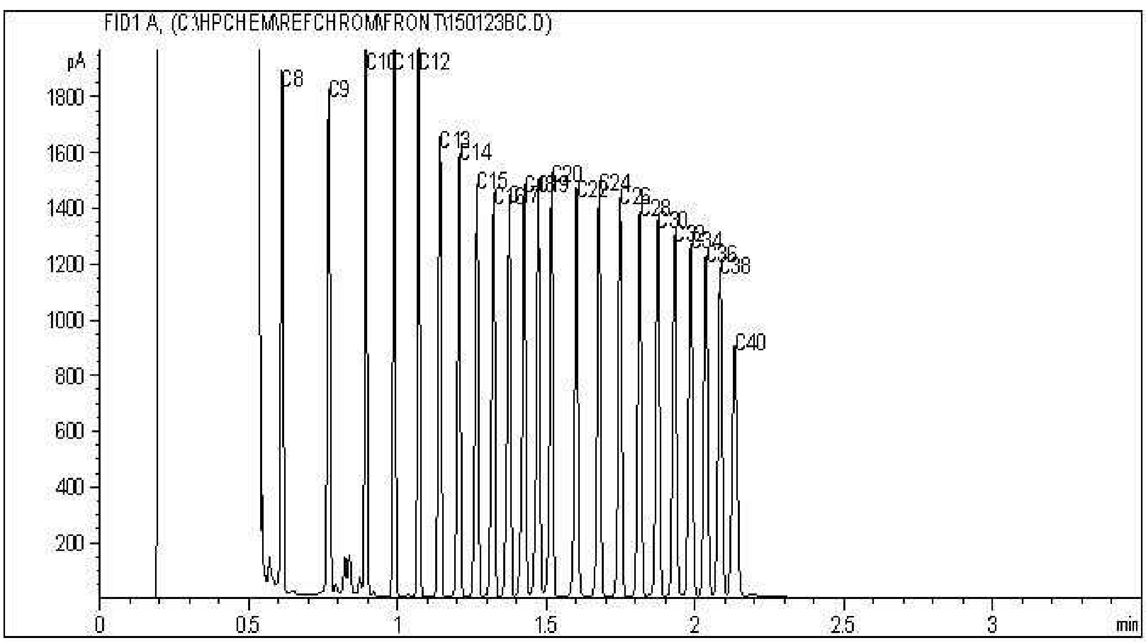
Maxxam Job #: B527845
Report Date: 2015/04/14
Maxxam Sample: MA0507

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW23

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



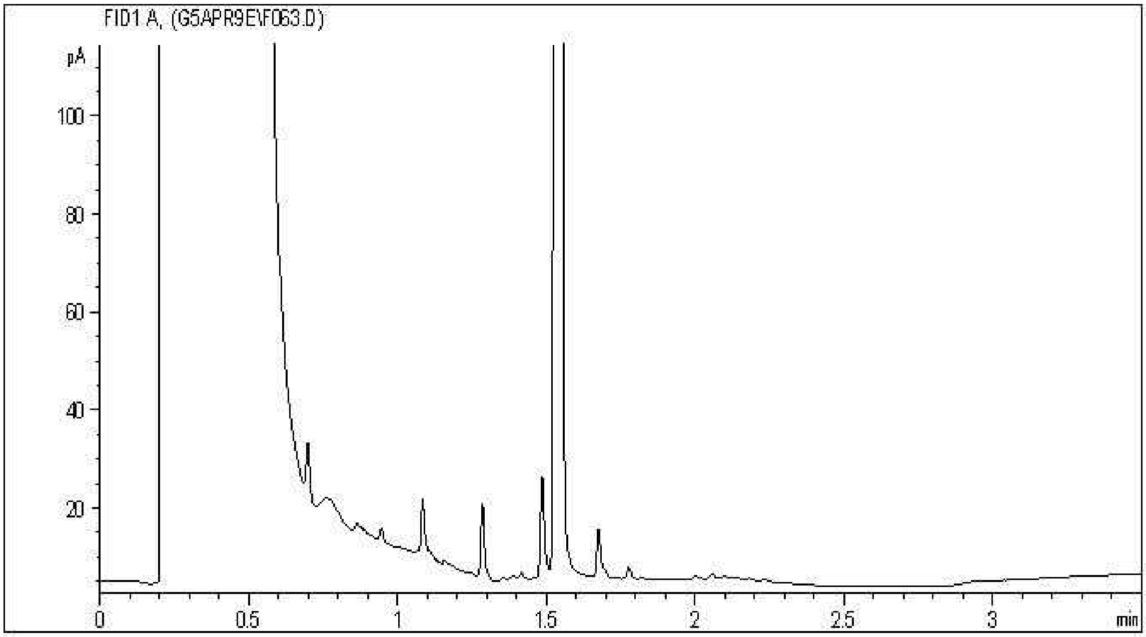
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

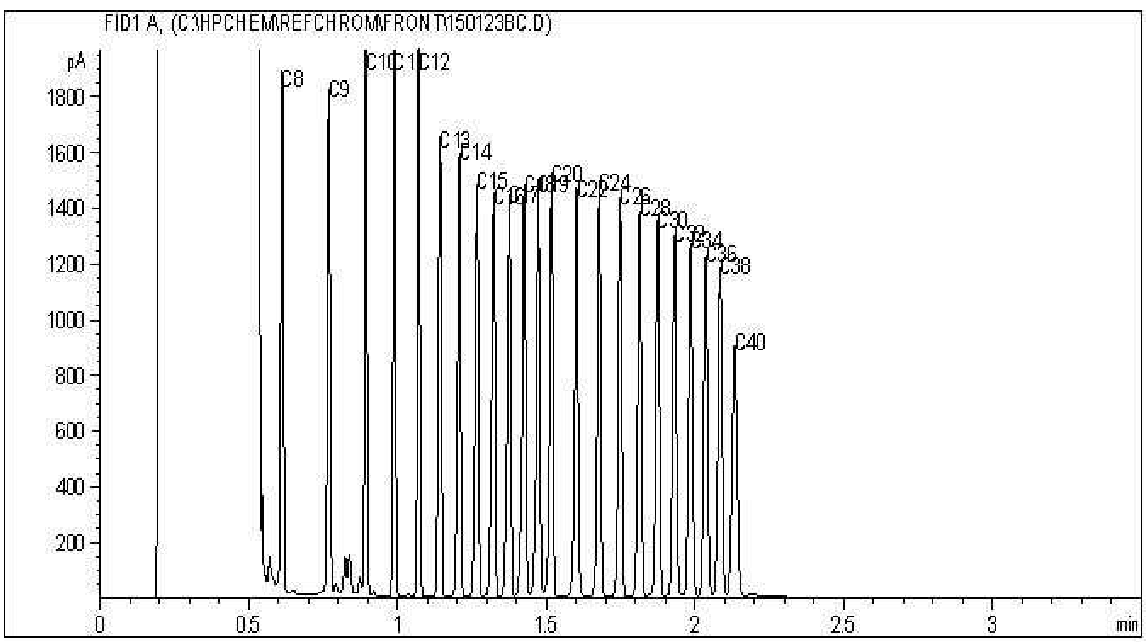
Maxxam Job #: B527845
Report Date: 2015/04/14
Maxxam Sample: MA0508

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW29

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



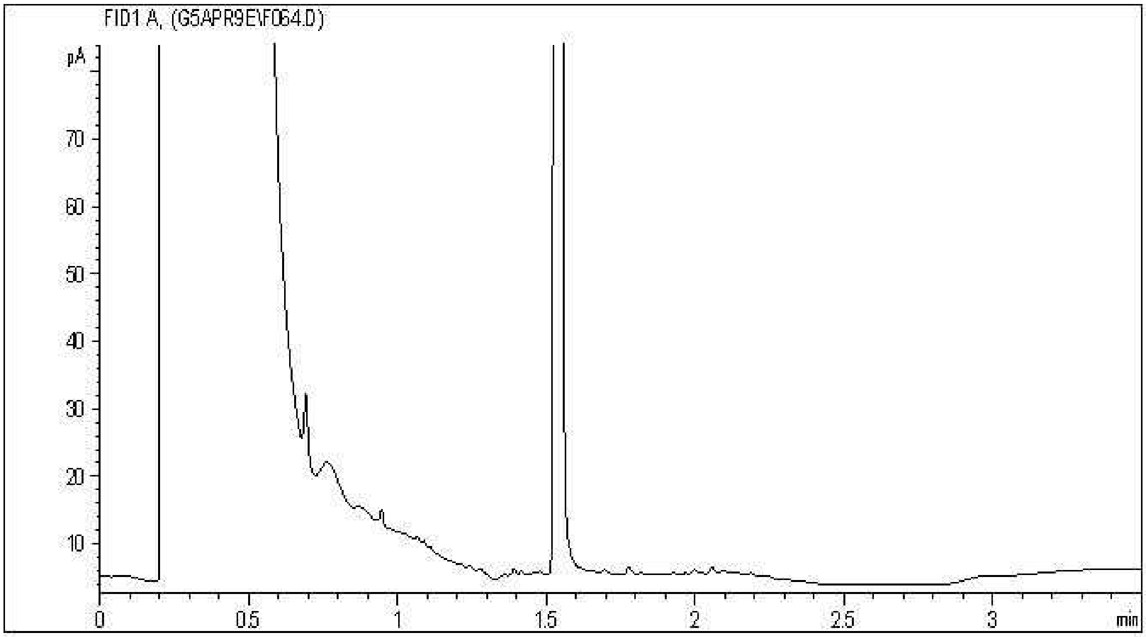
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

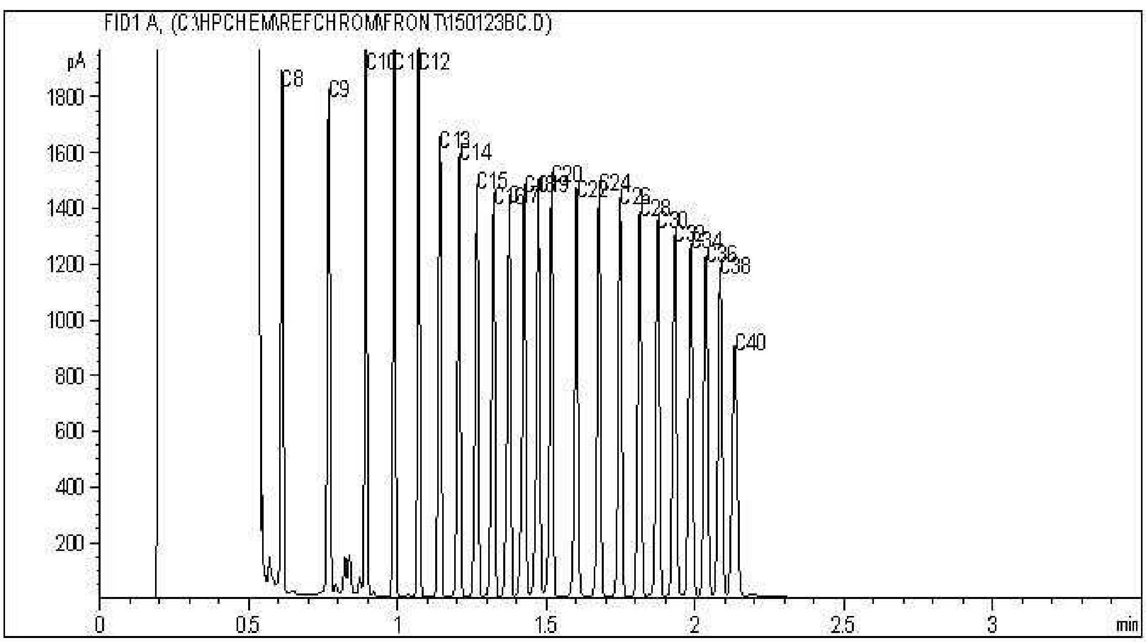
Maxxam Job #: B527845
Report Date: 2015/04/14
Maxxam Sample: MA0508 Lab-Dup

TETRA TECH EBA
Client Project #: ENVINDO3511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW29

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Your C.O.C. #: 462385-01-01

Attention:DARREN THOMAS

TETRA TECH EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2015/04/16
Report #: R1846228
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B528783
Received: 2015/04/10, 08:05

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
BTEX/MTBE LH, VH, F1 SIM/MS	4	2015/04/10	2015/04/11	BBY8SOP-00010/11	EPA 8260c R3 m
Phenols in Water by GCMS	3	2015/04/13	2015/04/14	BBY8SOP-00025	EPA 8270d R4
Hardness (calculated as CaCO3)	1	N/A	2015/04/14	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved) by CVAF	1	N/A	2015/04/15	BBY7SOP-00015	BCMOE BCLM Oct2013 m
EPH in Water when PAH required	7	2015/04/13	2015/04/13	BBY8SOP-00029	BCMOE EPH w 12/00 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/04/14	BBY7SOP-00002	EPA 6020A R1 m
Elements by CRC ICPMS (dissolved)	1	N/A	2015/04/14	BBY7SOP-00002	EPA 6020A R1 m
PAH in Water by GC/MS (SIM)	7	2015/04/13	2015/04/13	BBY8SOP-00021	EPA 8270d R4 m
Total LMW, HMW, Total PAH Calc	7	N/A	2015/04/14	BBY WI-00033	Auto Calc
Filter and HNO3 Preserve for Metals	1	N/A	2015/04/13	BBY7 WI-00004	BCMOE Reqs 08/14
EPH less PAH in Water by GC/FID	7	N/A	2015/04/14	BBY WI-00033	Auto Calc
Volatile HC-BTEX	4	N/A	2015/04/13	BBY WI-00033	Auto Calc

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
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Maxxam Job #: B528783
Report Date: 2015/04/16

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		MA5049	
Sampling Date		2015/04/09	
COC Number		462385-01-01	
	Units	**14MW21**	**QC Batch**
Calculated Parameters			
Filter and HNO3 Preservation	N/A	FIELD	ONSITE

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Maxxam ID		MA5055	MA5056	MA5057		
Sampling Date		2015/04/08	2015/04/08	2015/04/08		
COC Number		462385-01-01	462385-01-01	462385-01-01		
	Units	**14MW13**	**14MW12**	**14MW11**	**RDL**	**QC Batch**
SEMI-VOLATILE ORGANICS						
2-chlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
3 & 4-chlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,4 + 2,5-Dichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,3-Dichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,6-dichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
3,5-Dichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
3,4-Dichlorophenol	ug/L	<0.10	<0.10	0.19	0.10	7862863
2,4,5-trichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,4,6-trichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,3,5-trichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,3,6-Trichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,3,4-trichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
3,4,5-Trichlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,3,4,6-tetrachlorophenol	ug/L	<0.10	<0.10	0.19	0.10	7862863
2,3,4,5-tetrachlorophenol	ug/L	<0.10	<0.10	<0.10	0.10	7862863
2,3,5,6-tetrachlorophenol	ug/L	<0.10	<0.10	0.12	0.10	7862863
2,6-Dimethylphenol	ug/L	<0.50	<0.50	<0.50	0.50	7862863
Pentachlorophenol	ug/L	<0.10	<0.10	0.15	0.10	7862863
Surrogate Recovery (%)						
2,4,6-TRIBROMOPHENOL (sur.)	%	67	77	82		7862863
2,4-DIBROMOPHENOL	%	60	71	74		7862863
RDL = Reportable Detection Limit						

Maxxam Job #: B528783
Report Date: 2015/04/16

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

BCCSR BTEX/VPH IN WATER (WATER)

Maxxam ID		MA5048	MA5055	MA5056	MA5057		
Sampling Date		2015/04/08	2015/04/08	2015/04/08	2015/04/08		
COC Number		462385-01-01	462385-01-01	462385-01-01	462385-01-01		
	Units	00-07	14MW13	14MW12	14MW11	RDL	QC Batch
Volatiles							
VPH (VH6 to 10 - BTEX)	ug/L	<300	<300	<300	<300	300	7860911
Methyl-tert-butylether (MTBE)	ug/L	<4.0	<4.0	<4.0	<4.0	4.0	7861512
Benzene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	7861512
Toluene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	7861512
Ethylbenzene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	7861512
m & p-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	7861512
o-Xylene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	7861512
Styrene	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	7861512
Xylenes (Total)	ug/L	<0.40	<0.40	<0.40	<0.40	0.40	7861512
VH C6-C10	ug/L	<300	<300	<300	<300	300	7861512
Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	102	103	103	102		7861512
4-Bromofluorobenzene (sur.)	%	100	104	104	102		7861512
D4-1,2-Dichloroethane (sur.)	%	99	100	101	98		7861512
RDL = Reportable Detection Limit							

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Maxxam Job #: B528783
Report Date: 2015/04/16

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		MA5048	MA5049	MA5049	MA5050	MA5051	MA5052		
Sampling Date		2015/04/08	2015/04/09	2015/04/09	2015/04/08	2015/04/09	2015/04/09		
COC Number		462385-01-01	462385-01-01	462385-01-01	462385-01-01	462385-01-01	462385-01-01		
	Units	**00-07**	**14MW21**	**14MW21 Lab-Dup**	**14MW05**	**14MW07**	**14MW08**	**RDL**	**QC Batch**
Polycyclic Aromatics									
Low Molecular Weight PAH`s	ug/L	<0.24	<0.24		<0.24	<0.24	<0.24	0.24	7860658
High Molecular Weight PAH`s	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7860658
Total PAH	ug/L	<0.24	<0.24		<0.24	<0.24	<0.24	0.24	7860658
Naphthalene	ug/L	<0.10	<0.10		<0.10	<0.10	<0.10	0.10	7862659
2-Methylnaphthalene	ug/L	<0.10	<0.10		<0.10	<0.10	<0.10	0.10	7862659
Quinoline	ug/L	<0.24	<0.24		<0.24	<0.24	<0.24	0.24	7862659
Acenaphthylene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Acenaphthene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Fluorene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Phenanthrene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Anthracene	ug/L	<0.010	<0.010		<0.010	<0.010	<0.010	0.010	7862659
Acridine	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Fluoranthene	ug/L	<0.020	<0.020		0.023	<0.020	<0.020	0.020	7862659
Pyrene	ug/L	<0.020	<0.020		<0.020	<0.020	<0.020	0.020	7862659
Benzo(a)anthracene	ug/L	<0.010	<0.010		<0.010	<0.010	<0.010	0.010	7862659
Chrysene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Benzo(k)fluoranthene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Benzo(a)pyrene	ug/L	<0.0090	<0.0090		<0.0090	<0.0090	<0.0090	0.0090	7862659
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050		<0.050	<0.050	<0.050	0.050	7862659
Calculated Parameters									
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20		<0.20	<0.20	<0.20	0.20	7860659
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20		<0.20	<0.20	<0.20	0.20	7860659
Ext. Pet. Hydrocarbon									
EPH (C10-C19)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7862810
EPH (C19-C32)	mg/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	7862810
Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	99	99	98	100	101	99		7862810
D10-ANTHRACENE (sur.)	%	109	110		109	107	109		7862659
D8-ACENAPHTHYLENE (sur.)	%	104	106		105	103	105		7862659
D8-NAPHTHALENE (sur.)	%	102	100		102	102	104		7862659
D9-Acridine	%	99	99		97	95	96		7862659

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B528783
Report Date: 2015/04/16

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		MA5048	MA5049	MA5049	MA5050	MA5051	MA5052		
Sampling Date		2015/04/08	2015/04/09	2015/04/09	2015/04/08	2015/04/09	2015/04/09		
COC Number		462385-01-01	462385-01-01	462385-01-01	462385-01-01	462385-01-01	462385-01-01		
	Units	**00-07**	**14MW21**	**14MW21 Lab-Dup**	**14MW05**	**14MW07**	**14MW08**	**RDL**	**QC Batch**
TERPHENYL-D14 (sur.)	%	88	100		99	95	96		7862659

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Maxxam Job #: B528783
Report Date: 2015/04/16

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

LEPH & HEPH WITH CSR/CCME PAH IN WATER (WATER)

Maxxam ID		MA5053	MA5054		
Sampling Date		2015/04/09	2015/04/09		
COC Number		462385-01-01	462385-01-01		
	Units	**14MW26**	**14MW27**	**RDL**	**QC Batch**
Polycyclic Aromatics					
Low Molecular Weight PAH`s	ug/L	<0.24	<0.24	0.24	7860658
High Molecular Weight PAH`s	ug/L	<0.050	<0.050	0.050	7860658
Total PAH	ug/L	<0.24	<0.24	0.24	7860658
Naphthalene	ug/L	<0.10	<0.10	0.10	7862659
2-Methylnaphthalene	ug/L	<0.10	<0.10	0.10	7862659
Quinoline	ug/L	<0.24	<0.24	0.24	7862659
Acenaphthylene	ug/L	<0.050	<0.050	0.050	7862659
Acenaphthene	ug/L	<0.050	0.12	0.050	7862659
Fluorene	ug/L	<0.050	<0.050	0.050	7862659
Phenanthrene	ug/L	<0.050	<0.050	0.050	7862659
Anthracene	ug/L	<0.010	<0.010	0.010	7862659
Acridine	ug/L	<0.050	<0.050	0.050	7862659
Fluoranthene	ug/L	<0.020	<0.020	0.020	7862659
Pyrene	ug/L	<0.020	<0.020	0.020	7862659
Benzo(a)anthracene	ug/L	<0.010	<0.010	0.010	7862659
Chrysene	ug/L	<0.050	<0.050	0.050	7862659
Benzo(b&j)fluoranthene	ug/L	<0.050	<0.050	0.050	7862659
Benzo(k)fluoranthene	ug/L	<0.050	<0.050	0.050	7862659
Benzo(a)pyrene	ug/L	<0.0090	<0.0090	0.0090	7862659
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	<0.050	0.050	7862659
Dibenz(a,h)anthracene	ug/L	<0.050	<0.050	0.050	7862659
Benzo(g,h,i)perylene	ug/L	<0.050	<0.050	0.050	7862659
Calculated Parameters					
LEPH (C10-C19 less PAH)	mg/L	<0.20	<0.20	0.20	7860659
HEPH (C19-C32 less PAH)	mg/L	<0.20	<0.20	0.20	7860659
Ext. Pet. Hydrocarbon					
EPH (C10-C19)	mg/L	<0.20	<0.20	0.20	7862810
EPH (C19-C32)	mg/L	<0.20	<0.20	0.20	7862810
Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	99	98		7862810
D10-ANTHRACENE (sur.)	%	108	107		7862659
D8-ACENAPHTHYLENE (sur.)	%	104	104		7862659
D8-NAPHTHALENE (sur.)	%	104	102		7862659
D9-Acridine	%	94	94		7862659
TERPHENYL-D14 (sur.)	%	95	97		7862659
RDL = Reportable Detection Limit					

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TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		MA5049		
Sampling Date		2015/04/09		
COC Number		462385-01-01		
	Units	**14MW21**	**RDL**	**QC Batch**
Misc. Inorganics				
Dissolved Hardness (CaCO3)	mg/L	368	0.50	7860868
Elements				
Dissolved Mercury (Hg)	ug/L	<0.010	0.010	7865045
Dissolved Metals by ICPMS				
Dissolved Aluminum (Al)	ug/L	3.8	3.0	7862754
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	7862754
Dissolved Arsenic (As)	ug/L	0.14	0.10	7862754
Dissolved Barium (Ba)	ug/L	11.0	1.0	7862754
Dissolved Beryllium (Be)	ug/L	<0.10	0.10	7862754
Dissolved Bismuth (Bi)	ug/L	<1.0	1.0	7862754
Dissolved Boron (B)	ug/L	759	50	7862754
Dissolved Cadmium (Cd)	ug/L	0.015	0.010	7862754
Dissolved Chromium (Cr)	ug/L	<1.0	1.0	7862754
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	7862754
Dissolved Copper (Cu)	ug/L	0.93	0.20	7862754
Dissolved Iron (Fe)	ug/L	<5.0	5.0	7862754
Dissolved Lead (Pb)	ug/L	<0.20	0.20	7862754
Dissolved Lithium (Li)	ug/L	14.6	5.0	7862754
Dissolved Manganese (Mn)	ug/L	18.9	1.0	7862754
Dissolved Molybdenum (Mo)	ug/L	1.3	1.0	7862754
Dissolved Nickel (Ni)	ug/L	5.6	1.0	7862754
Dissolved Selenium (Se)	ug/L	0.14	0.10	7862754
Dissolved Silicon (Si)	ug/L	6520	100	7862754
Dissolved Silver (Ag)	ug/L	<0.020	0.020	7862754
Dissolved Strontium (Sr)	ug/L	593	1.0	7862754
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	7862754
Dissolved Tin (Sn)	ug/L	<5.0	5.0	7862754
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	7862754
Dissolved Uranium (U)	ug/L	0.54	0.10	7862754
Dissolved Vanadium (V)	ug/L	<5.0	5.0	7862754
Dissolved Zinc (Zn)	ug/L	<5.0	5.0	7862754
Dissolved Zirconium (Zr)	ug/L	<0.50	0.50	7862754
Dissolved Calcium (Ca)	mg/L	77.5	0.050	7860869
Dissolved Magnesium (Mg)	mg/L	42.4	0.050	7860869
Dissolved Potassium (K)	mg/L	15.8	0.050	7860869
RDL = Reportable Detection Limit				

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TETRA TECH EBA
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CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Maxxam ID		MA5049		
Sampling Date		2015/04/09		
COC Number		462385-01-01		
	Units	**14MW21**	**RDL**	**QC Batch**
Dissolved Sodium (Na)	mg/L	237	0.050	7860869
Dissolved Sulphur (S)	mg/L	77.0	3.0	7860869
RDL = Reportable Detection Limit				

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TETRA TECH EBA
Client Project #: ENVIND03511-01.008
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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.3°C
Package 2	5.0°C

Results relate only to the items tested.

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Success Through Science®

Maxxam Job #: B528783
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QUALITY ASSURANCE REPORT

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7861512	1,4-Difluorobenzene (sur.)	2015/04/11	102	70 - 130	100	70 - 130	106	%		
7861512	4-Bromofluorobenzene (sur.)	2015/04/11	103	70 - 130	102	70 - 130	103	%		
7861512	D4-1,2-Dichloroethane (sur.)	2015/04/11	97	70 - 130	95	70 - 130	101	%		
7862659	D10-ANTHRACENE (sur.)	2015/04/13	108	60 - 130	108	60 - 130	116	%		
7862659	D8-ACENAPHTHYLENE (sur.)	2015/04/13	104	50 - 130	102	50 - 130	111	%		
7862659	D8-NAPHTHALENE (sur.)	2015/04/13	96	50 - 130	93	50 - 130	111	%		
7862659	D9-Acridine	2015/04/13	79	50 - 130	102	50 - 130	105	%		
7862659	TERPHENYL-D14 (sur.)	2015/04/13	86	60 - 130	101	60 - 130	107	%		
7862810	O-TERPHENYL (sur.)	2015/04/13	103	50 - 130	102	50 - 130	103	%		
7862863	2,4,6-TRIBROMOPHENOL (sur.)	2015/04/13			76	10 - 123	70	%		
7862863	2,4-DIBROMOPHENOL	2015/04/13			63	21 - 100	67	%		
7861512	Benzene	2015/04/11	99	70 - 130	97	70 - 130	<0.40	ug/L	NC	30
7861512	Ethylbenzene	2015/04/11	109	70 - 130	106	70 - 130	<0.40	ug/L	NC	30
7861512	m & p-Xylene	2015/04/11	103	70 - 130	99	70 - 130	<0.40	ug/L	NC	30
7861512	Methyl-tert-butylether (MTBE)	2015/04/11	95	70 - 130	93	70 - 130	<4.0	ug/L		
7861512	o-Xylene	2015/04/11	107	70 - 130	104	70 - 130	<0.40	ug/L	NC	30
7861512	Styrene	2015/04/11	112	70 - 130	111	70 - 130	<0.40	ug/L		
7861512	Toluene	2015/04/11	97	70 - 130	95	70 - 130	<0.40	ug/L	NC	30
7861512	VH C6-C10	2015/04/11			92	70 - 130	<300	ug/L		
7861512	Xylenes (Total)	2015/04/11					<0.40	ug/L	NC	30
7862659	2-Methylnaphthalene	2015/04/13	100	50 - 130	95	50 - 130	<0.10	ug/L	NC	40
7862659	Acenaphthene	2015/04/13	104	50 - 130	101	50 - 130	<0.050	ug/L	NC	40
7862659	Acenaphthylene	2015/04/13	103	50 - 130	100	50 - 130	<0.050	ug/L	NC	40
7862659	Acridine	2015/04/13	78	50 - 130	97	50 - 130	<0.050	ug/L	NC	40
7862659	Anthracene	2015/04/13	110	60 - 130	107	60 - 130	<0.010	ug/L	NC	40
7862659	Benzo(a)anthracene	2015/04/13	92	60 - 130	90	60 - 130	<0.010	ug/L	NC	40
7862659	Benzo(a)pyrene	2015/04/13	94	60 - 130	93	60 - 130	<0.0090	ug/L	NC	40
7862659	Benzo(b&j)fluoranthene	2015/04/13	91	60 - 130	93	60 - 130	<0.050	ug/L	NC	40
7862659	Benzo(g,h,i)perylene	2015/04/13	90	60 - 130	92	60 - 130	<0.050	ug/L	NC	40
7862659	Benzo(k)fluoranthene	2015/04/13	99	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
7862659	Chrysene	2015/04/13	97	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
7862659	Dibenz(a,h)anthracene	2015/04/13	88	60 - 130	92	60 - 130	<0.050	ug/L	NC	40

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Maxxam Job #: B528783
Report Date: 2015/04/16

QUALITY ASSURANCE REPORT(CONT'D)

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7862659	Fluoranthene	2015/04/13	93	60 - 130	91	60 - 130	<0.020	ug/L	NC	40
7862659	Fluorene	2015/04/13	93	50 - 130	91	50 - 130	<0.050	ug/L	NC	40
7862659	Indeno(1,2,3-cd)pyrene	2015/04/13	92	60 - 130	95	60 - 130	<0.050	ug/L	NC	40
7862659	Naphthalene	2015/04/13	95	50 - 130	88	50 - 130	<0.10	ug/L	NC	40
7862659	Phenanthrene	2015/04/13	99	60 - 130	96	60 - 130	<0.050	ug/L	NC	40
7862659	Pyrene	2015/04/13	96	60 - 130	94	60 - 130	<0.020	ug/L	NC	40
7862659	Quinoline	2015/04/13	110	50 - 130	110	50 - 130	<0.24	ug/L	NC	40
7862754	Dissolved Aluminum (Al)	2015/04/14	101	80 - 120	104	80 - 120	<3.0	ug/L	NC	20
7862754	Dissolved Antimony (Sb)	2015/04/14	103	80 - 120	104	80 - 120	<0.50	ug/L	NC	20
7862754	Dissolved Arsenic (As)	2015/04/14	103	80 - 120	103	80 - 120	<0.10	ug/L	NC	20
7862754	Dissolved Barium (Ba)	2015/04/14	NC	80 - 120	102	80 - 120	<1.0	ug/L	4.5	20
7862754	Dissolved Beryllium (Be)	2015/04/14	103	80 - 120	104	80 - 120	<0.10	ug/L	NC	20
7862754	Dissolved Bismuth (Bi)	2015/04/14	92	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
7862754	Dissolved Boron (B)	2015/04/14					<50	ug/L	NC	20
7862754	Dissolved Cadmium (Cd)	2015/04/14	97	80 - 120	99	80 - 120	<0.010	ug/L	NC	20
7862754	Dissolved Chromium (Cr)	2015/04/14	98	80 - 120	106	80 - 120	<1.0	ug/L	NC	20
7862754	Dissolved Cobalt (Co)	2015/04/14	95	80 - 120	106	80 - 120	<0.50	ug/L	NC	20
7862754	Dissolved Copper (Cu)	2015/04/14	95	80 - 120	110	80 - 120	<0.20	ug/L	NC	20
7862754	Dissolved Iron (Fe)	2015/04/14	98	80 - 120	105	80 - 120	<5.0	ug/L	NC	20
7862754	Dissolved Lead (Pb)	2015/04/14	94	80 - 120	96	80 - 120	<0.20	ug/L	NC	20
7862754	Dissolved Lithium (Li)	2015/04/14	NC	80 - 120	101	80 - 120	<5.0	ug/L	NC	20
7862754	Dissolved Manganese (Mn)	2015/04/14	NC	80 - 120	104	80 - 120	<1.0	ug/L	3.8	20
7862754	Dissolved Molybdenum (Mo)	2015/04/14	102	80 - 120	103	80 - 120	<1.0	ug/L	NC	20
7862754	Dissolved Nickel (Ni)	2015/04/14	88	80 - 120	106	80 - 120	<1.0	ug/L	NC	20
7862754	Dissolved Selenium (Se)	2015/04/14	98	80 - 120	95	80 - 120	<0.10	ug/L	NC	20
7862754	Dissolved Silicon (Si)	2015/04/14					<100	ug/L	6.1	20
7862754	Dissolved Silver (Ag)	2015/04/14	92	80 - 120	98	80 - 120	<0.020	ug/L	NC	20
7862754	Dissolved Strontium (Sr)	2015/04/14	NC	80 - 120	98	80 - 120	<1.0	ug/L	2.1	20
7862754	Dissolved Thallium (Tl)	2015/04/14	100	80 - 120	93	80 - 120	<0.050	ug/L	NC	20
7862754	Dissolved Tin (Sn)	2015/04/14	100	80 - 120	97	80 - 120	<5.0	ug/L	NC	20
7862754	Dissolved Titanium (Ti)	2015/04/14	105	80 - 120	107	80 - 120	<5.0	ug/L	NC	20
7862754	Dissolved Uranium (U)	2015/04/14	97	80 - 120	95	80 - 120	<0.10	ug/L	NC	20

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Maxxam Job #: B528783
Report Date: 2015/04/16

QUALITY ASSURANCE REPORT(CONT'D)

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7862754	Dissolved Vanadium (V)	2015/04/14	101	80 - 120	106	80 - 120	<5.0	ug/L	NC	20
7862754	Dissolved Zinc (Zn)	2015/04/14	91	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
7862754	Dissolved Zirconium (Zr)	2015/04/14					<0.50	ug/L	NC	20
7862810	EPH (C10-C19)	2015/04/13	115	50 - 130	107	50 - 130	<0.20	mg/L	NC	30
7862810	EPH (C19-C32)	2015/04/13	113	50 - 130	107	50 - 130	<0.20	mg/L	NC	30
7862863	2,3,4,5-tetrachlorophenol	2015/04/13			86	14 - 176	<0.10	ug/L		
7862863	2,3,4,6-tetrachlorophenol	2015/04/13			81	14 - 176	<0.10	ug/L		
7862863	2,3,4-trichlorophenol	2015/04/13			79	37 - 144	<0.10	ug/L		
7862863	2,3,5,6-tetrachlorophenol	2015/04/13			80	14 - 176	<0.10	ug/L		
7862863	2,3,5-trichlorophenol	2015/04/13			74	37 - 144	<0.10	ug/L		
7862863	2,3,6-Trichlorophenol	2015/04/13			74	37 - 144	<0.10	ug/L		
7862863	2,3-Dichlorophenol	2015/04/13			58	39 - 135	<0.10	ug/L		
7862863	2,4 + 2,5-Dichlorophenol	2015/04/13			58	39 - 135	<0.10	ug/L		
7862863	2,4,5-trichlorophenol	2015/04/13			79	37 - 144	<0.10	ug/L		
7862863	2,4,6-trichlorophenol	2015/04/13			70	37 - 144	<0.10	ug/L		
7862863	2,6-dichlorophenol	2015/04/13			56	39 - 135	<0.10	ug/L		
7862863	2,6-Dimethylphenol	2015/04/13			47	32 - 119	<0.50	ug/L		
7862863	2-chlorophenol	2015/04/13			49	27 - 123	<0.10	ug/L		
7862863	3 & 4-chlorophenol	2015/04/13			62	27 - 123	<0.10	ug/L		
7862863	3,4,5-Trichlorophenol	2015/04/13			94	37 - 144	<0.10	ug/L		
7862863	3,4-Dichlorophenol	2015/04/13			82	39 - 135	<0.10	ug/L		
7862863	3,5-Dichlorophenol	2015/04/13			76	39 - 135	<0.10	ug/L		
7862863	Pentachlorophenol	2015/04/13			92	14 - 176	<0.10	ug/L		

Maxxam Job #: B528783
Report Date: 2015/04/16

QUALITY ASSURANCE REPORT(CONT'D)

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

			Matrix Spike		Spiked Blank		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7865045	Dissolved Mercury (Hg)	2015/04/15	89	80 - 120	90	80 - 120	<0.010	ug/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B528783
Report Date: 2015/04/16

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Andy Lu, Data Validation Coordinator

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-Free:800-563-6266 Fax:(604) 731 2386 www.maxxam.ca

Chain Of Custody Record

Page 1 of 3

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#11478 TETRA TECH EBA INC.	Company Name	#28955 TETRA TECH EBA	Quotation #	B40497	Maxxam Job #	Bottle Order #:
Contact Name	ACCOUNTS PAYABLE	Contact Name	DARREN THOMAS Lisa Paul	P.O. #		B528783	462385
Address	14940-123 AVENUE	Address	#1 - 4376 Boban Drive	Project #	ENVIND03511-01.008	Chain Of Custody Record	Project Manager
	EDMONTON AB T5V 1B4		Nanaimo BC V9T 6A7	Project Name	#1 - Port Drive ESA	C#462385-01-01	Tabitha Rudkin
Phone	(780) 451-2121 x Fax: (780) 454-5688 x	Phone	(250) 756-2256 Fax:	Site #			
Email	EBA.Accounts.Payable@tetratech.com	Email	Darren.Thomas@tetratech.com, Lisa.Paul@tetratech.com	Sampled By	Darren Thomas		

Regulatory Criteria:

- [x] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other ______

Special Instructions

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [x]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: ______ [ ]
Rush Confirmation Number: ______ (call lab for #)

#	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	LEPH/HEPH/PAH	Dissolved Metals with CV Hg	Chlorinated Phenols	BTEX/VPH	Total Metals with CV Hg	Glycols					# of Bottles	Comments
1	MA5048	~~14MW02~~ 00-07	Apr 8		Water		X			X							6	
2	MA 5049	~~14MW03~~ 14MW21	APR 9				X	X									5	
3	MA 5050	14MW05	Apr 8				X										3	
4	MA 5051	14MW07	APR 9				X										3	
5	MA 5052	14MW08	APR 9				X										3	
6	MA 5053	14MW26	APR 9				X										3	
7	MA 5054	14MW27	APR 9				X										3	B528783
8	MA5055	~~05-07~~ 14MW13	APR 8						X	X							4	
9	MA5056	~~14MW10~~ 14MW12	APR 8						X	X							4	
10	MA5057	14MW11	APR 8						X	X							4	

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Darren Thomas	15/04/09	1500	Michael Berthier	2015/04/10	08:05	

Lab Use Only

Time Sensitive [ ]

Temperature (°C) on Receipt: 4/3/3 / 5/4/6

Custody Seal Intact on Cooler? [ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

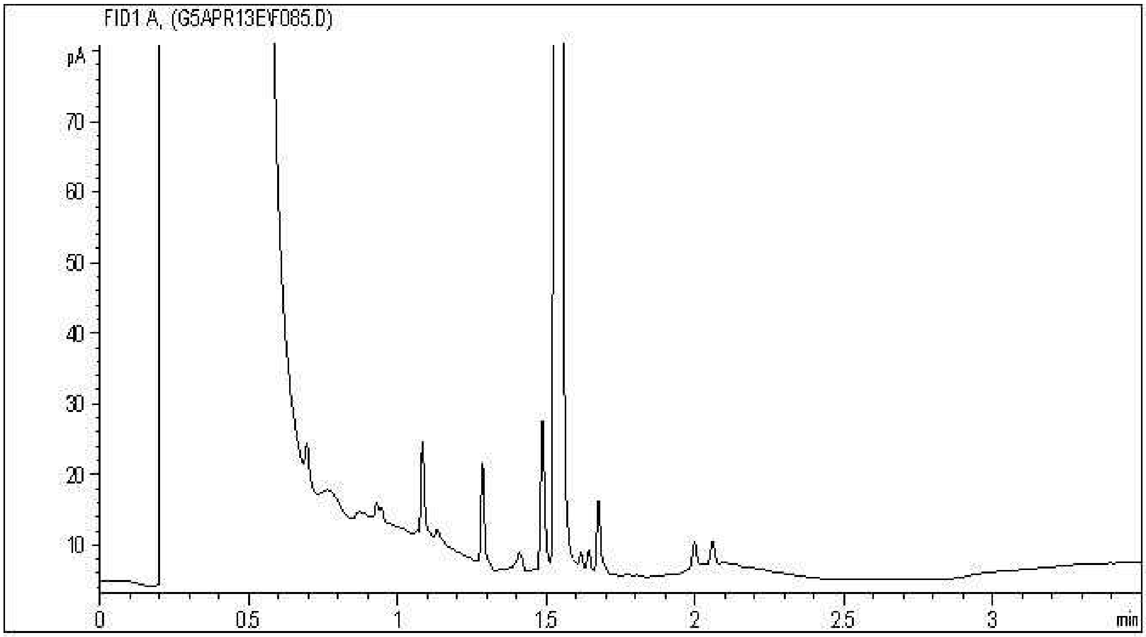
White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

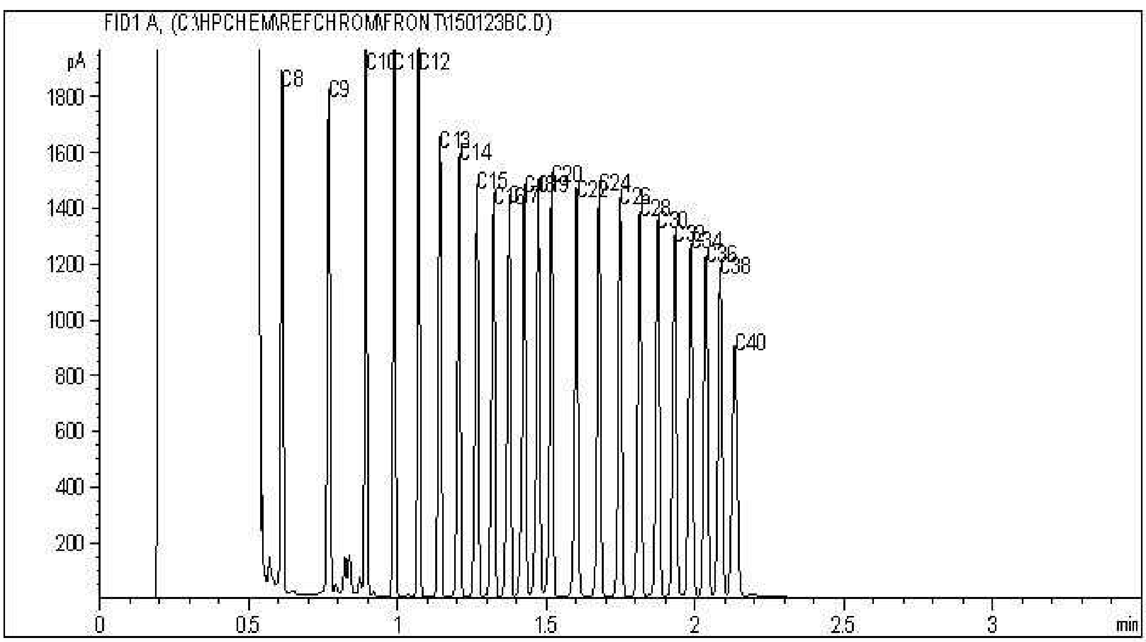
Maxxam Job #: B528783
Report Date: 2015/04/16
Maxxam Sample: MA5048

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 00-07

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



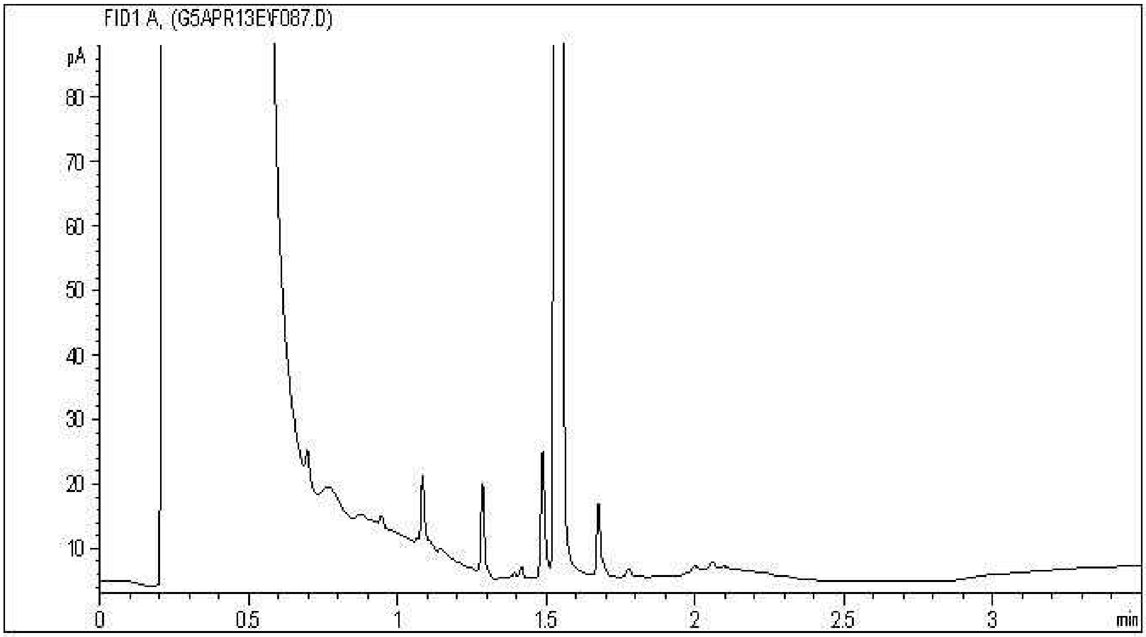
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

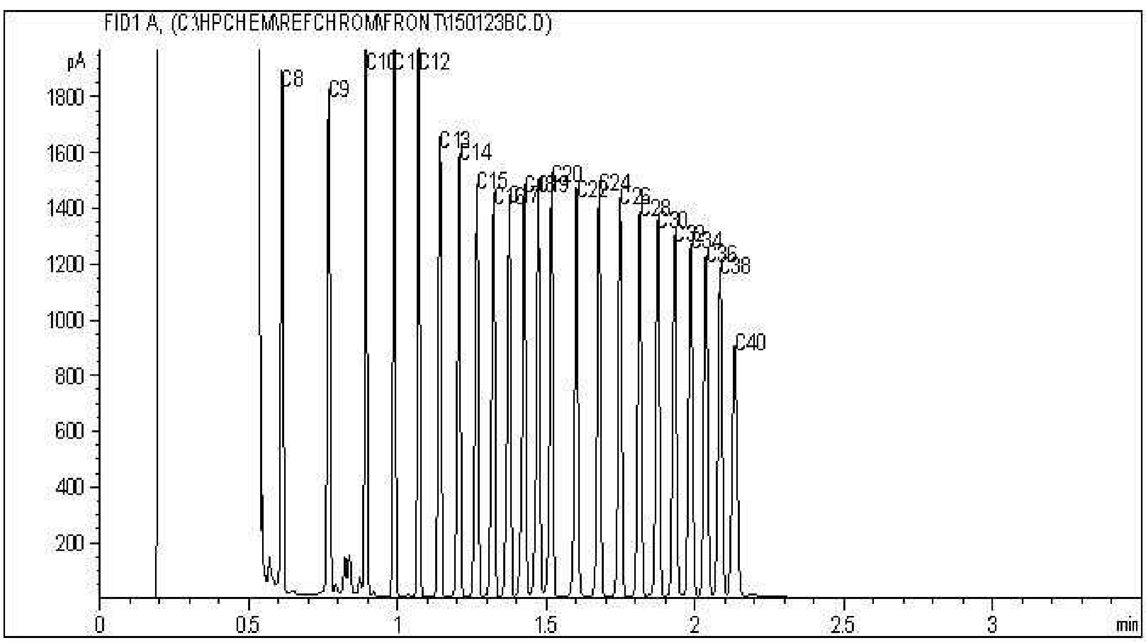
Maxxam Job #: B528783
Report Date: 2015/04/16
Maxxam Sample: MA5049

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW21

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



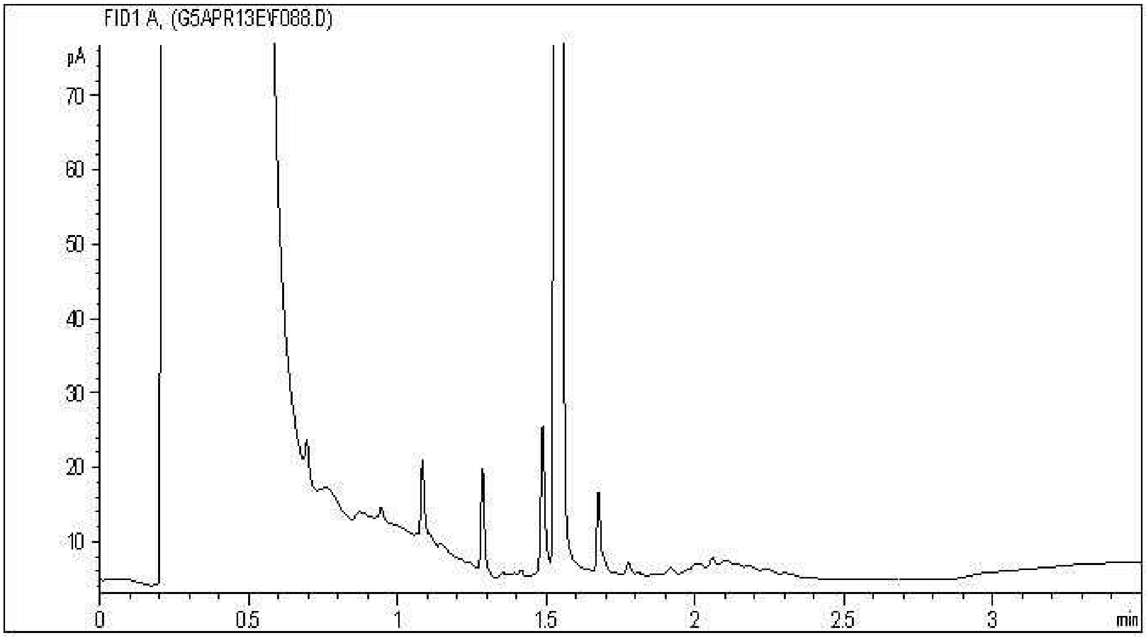
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

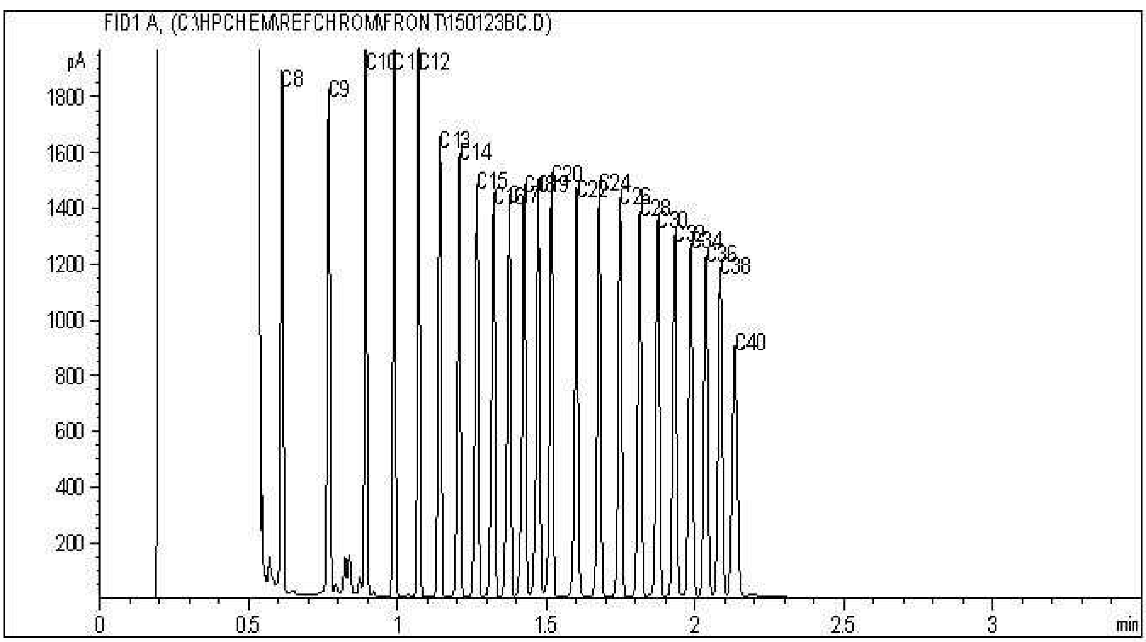
Maxxam Job #: B528783
Report Date: 2015/04/16
Maxxam Sample: MA5049 Lab-Dup

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW21

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



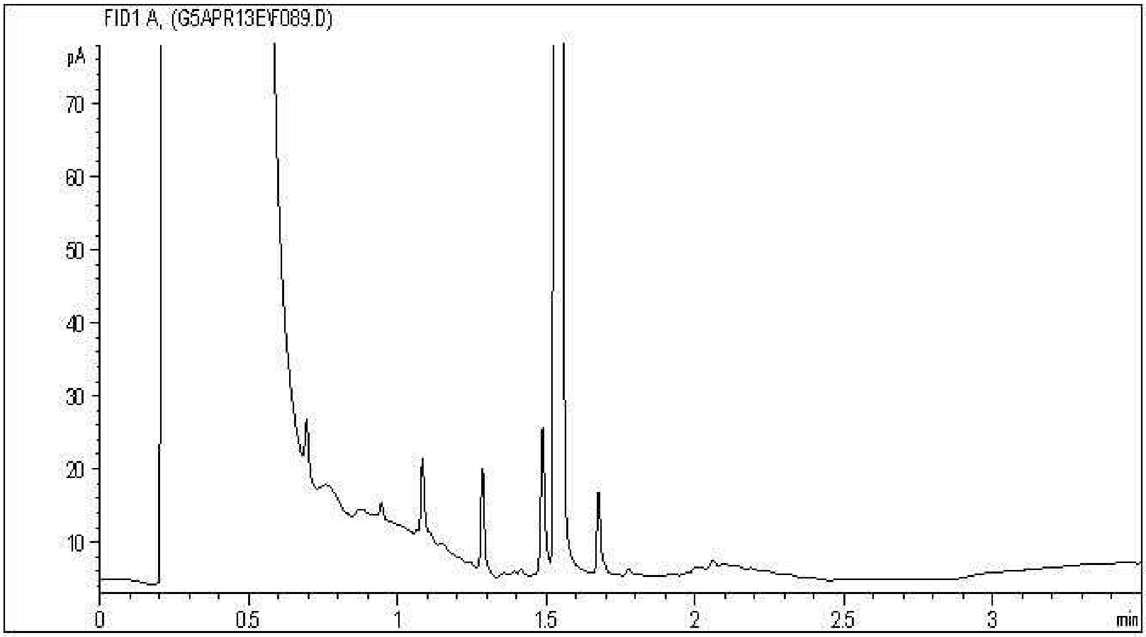
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

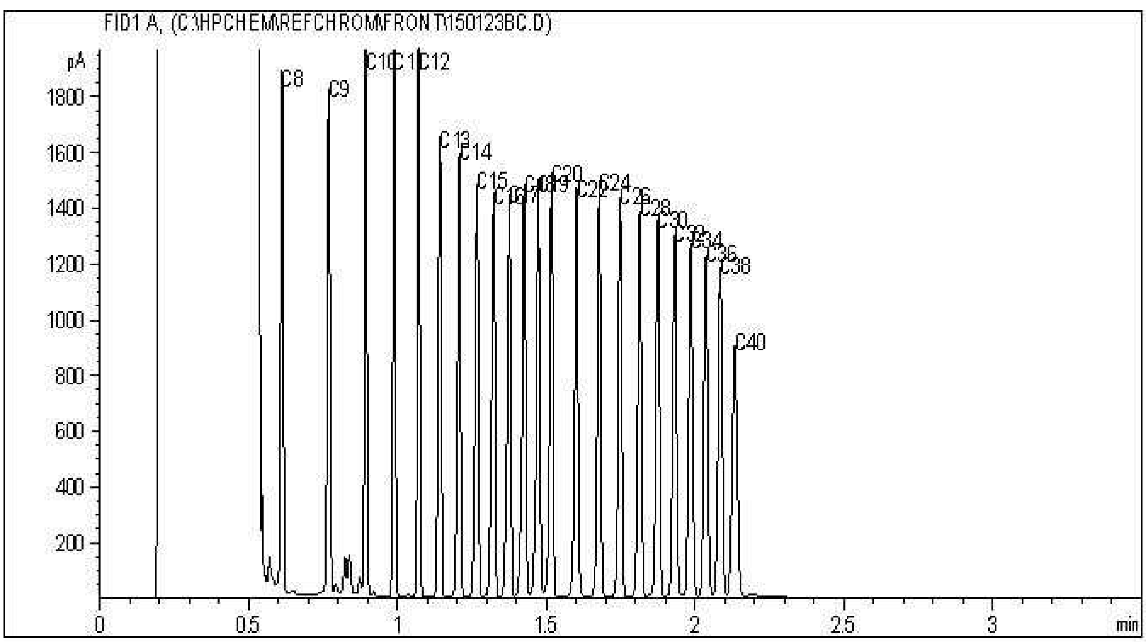
Maxxam Job #: B528783
Report Date: 2015/04/16
Maxxam Sample: MA5050

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW05

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



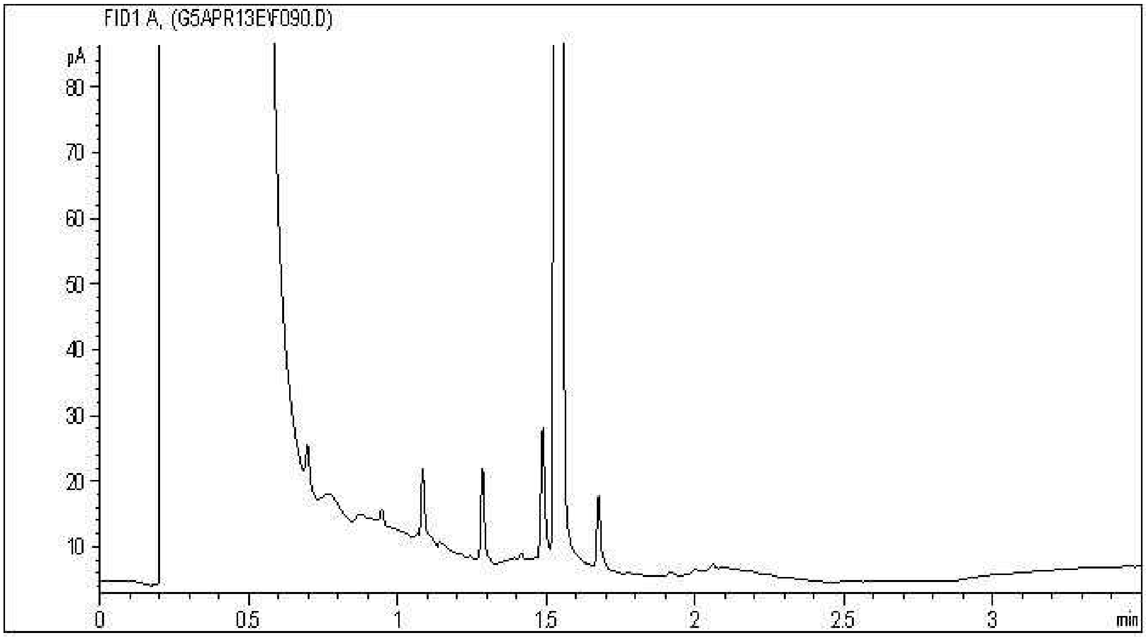
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

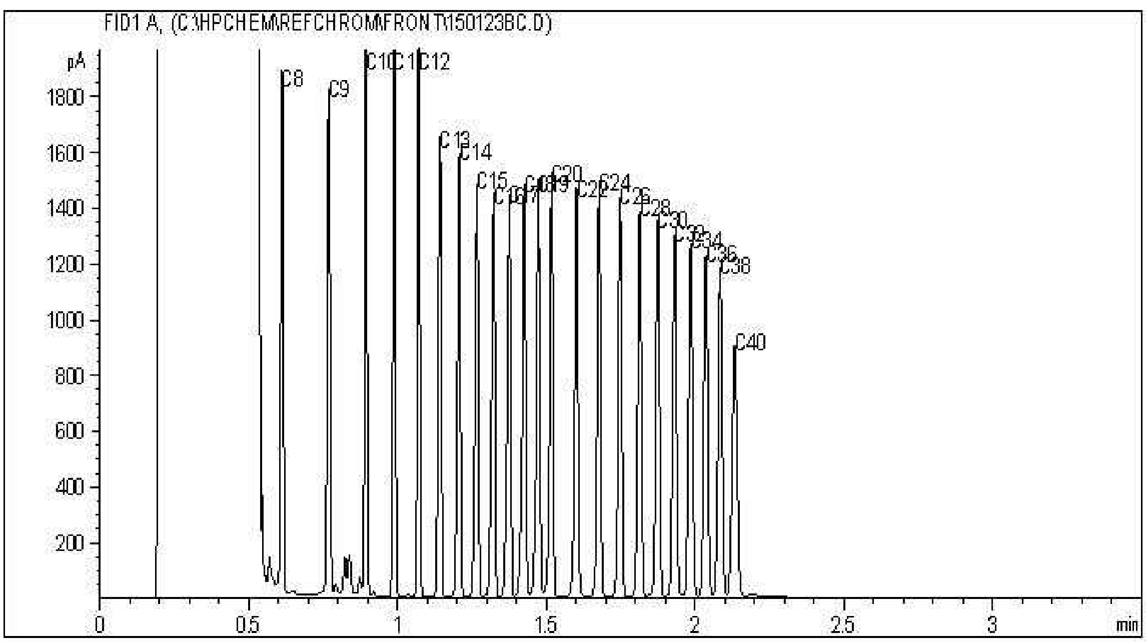
Maxxam Job #: B528783
Report Date: 2015/04/16
Maxxam Sample: MA5051

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW07

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



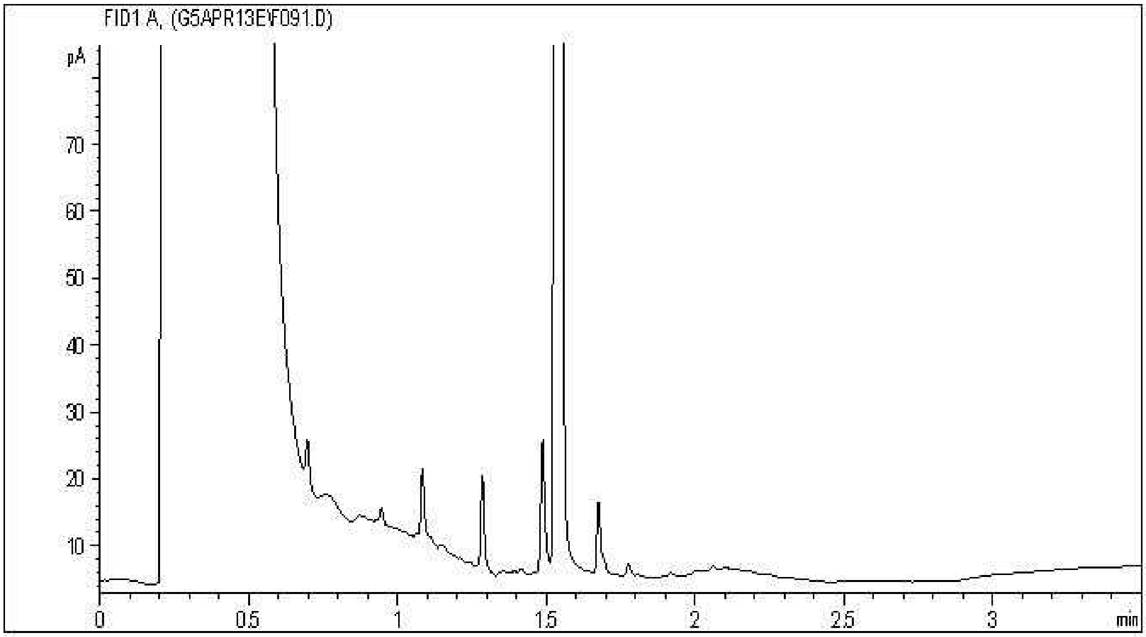
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

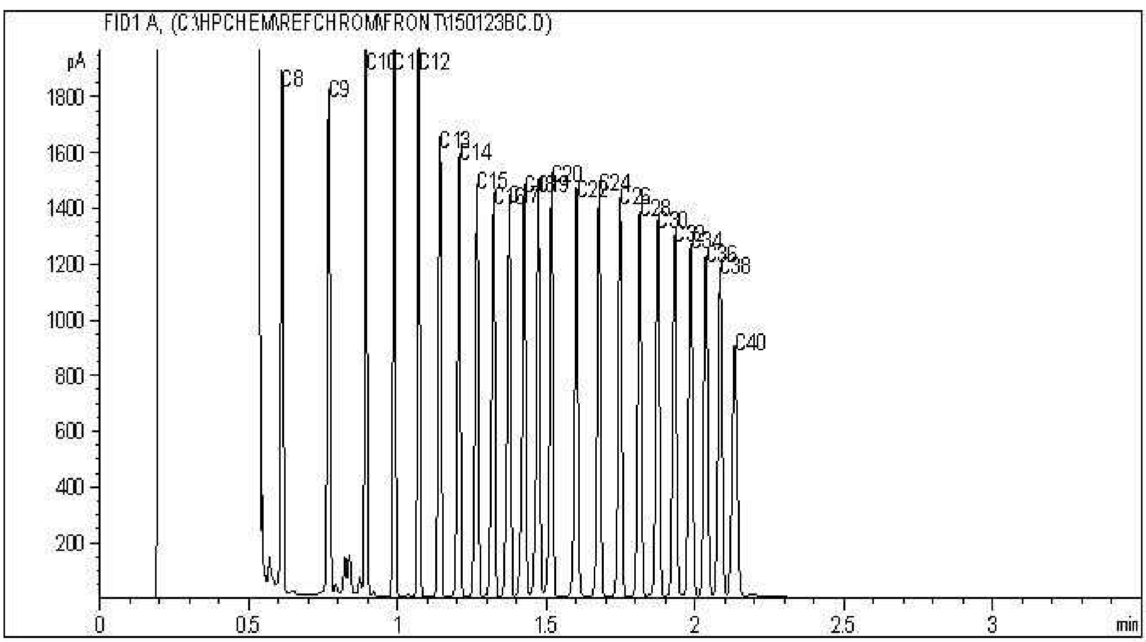
Maxxam Job #: B528783
Report Date: 2015/04/16
Maxxam Sample: MA5052

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW08

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



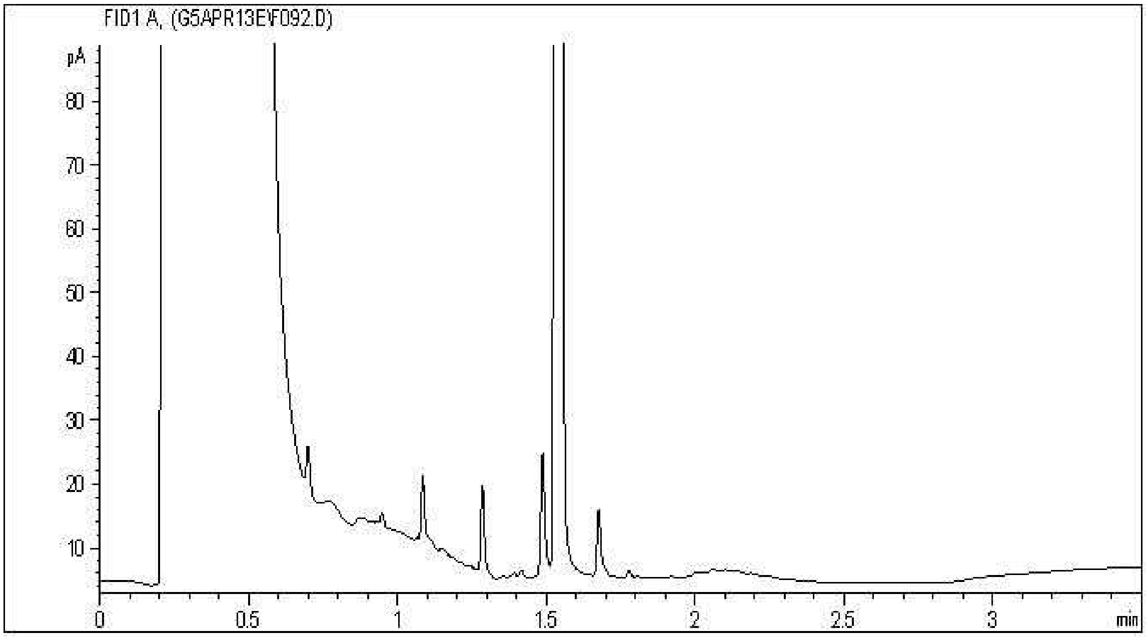
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

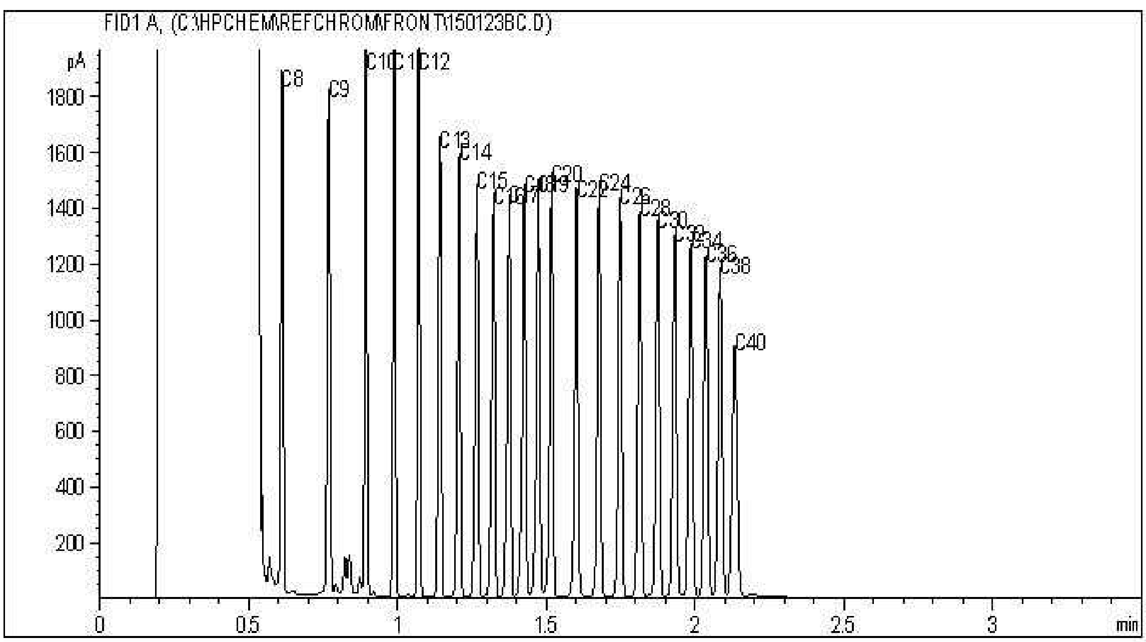
Maxxam Job #: B528783
Report Date: 2015/04/16
Maxxam Sample: MA5053

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW26

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



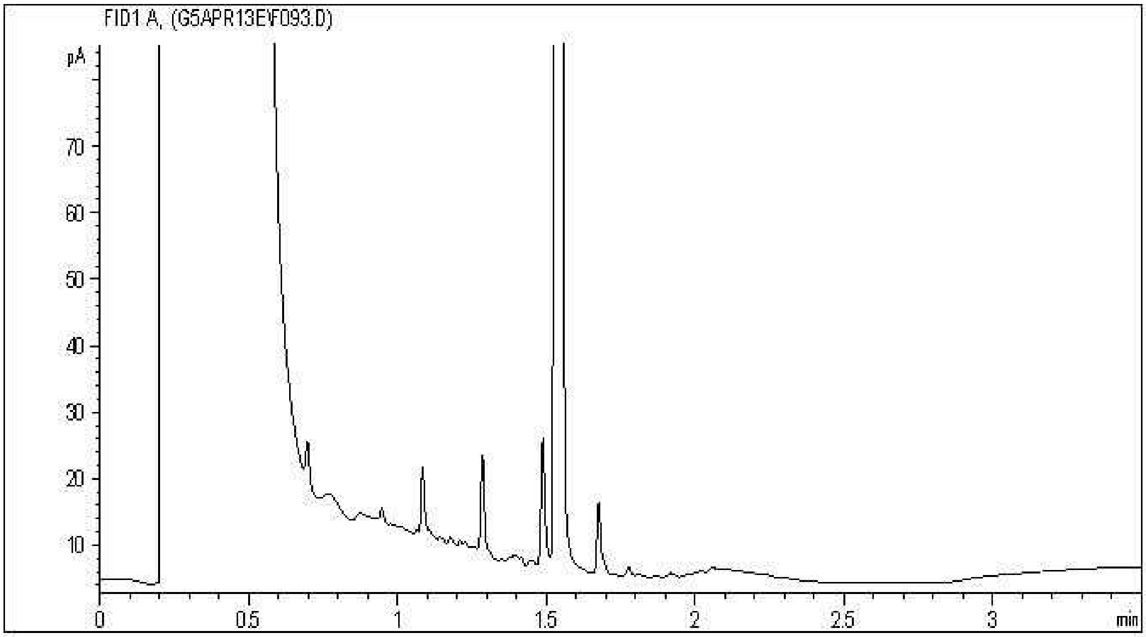
TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

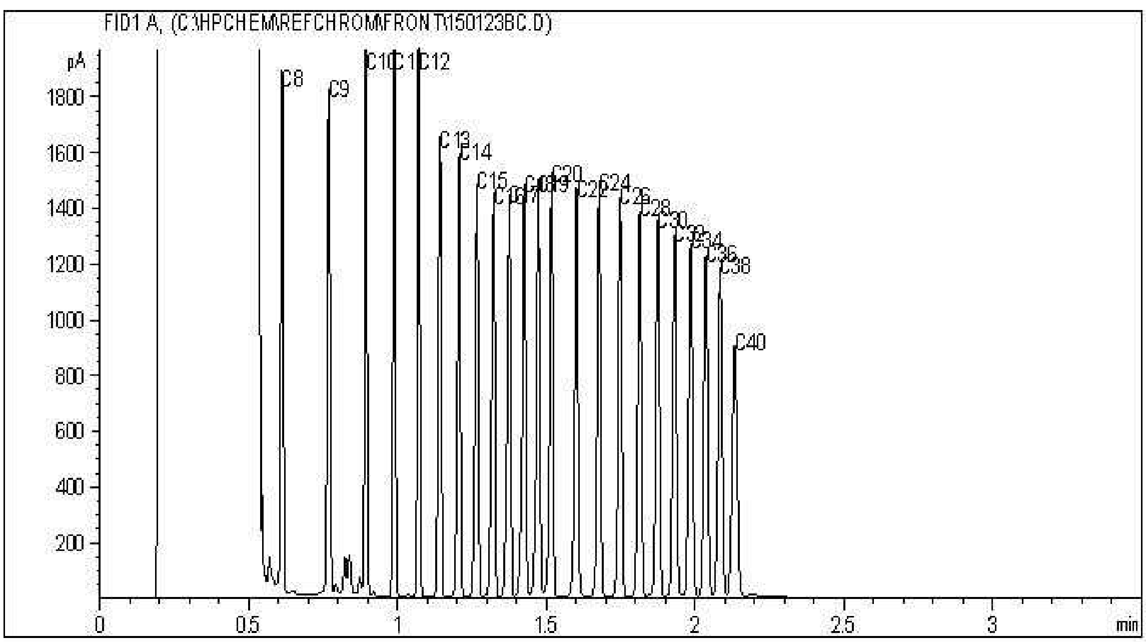
Maxxam Job #: B528783
Report Date: 2015/04/16
Maxxam Sample: MA5054

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Reference: #1 PORT DRIVE ESA
Client ID: 14MW27

EPH in Water when PAH required Chromatogram



Carbon Range Distribution - Reference Chromatogram



TYPICAL PRODUCT CARBON NUMBER RANGES

Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

Your Project #: ENVWDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Your C.O.C. #: 10223

Attention:LORA J. PAUL

TETRA TECH EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2015/04/27
Report #: R1856296
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B528142
Received: 2015/04/08, 08:30

Sample Matrix: Air
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
VOC HydroCarbon Pkg Sch11 Summa SubC (1)	3	N/A	2015/04/27		

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Ontario (From Burnaby)

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tabitha Rudkin, AScT, Burnaby Project Manager
Email: TRudkin@maxxam.ca
Phone# (604)638-2639
==
This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B528142
Report Date: 2015/04/27

TETRA TECH EBA
Client Project #: ENVWDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		MA1884	MA1885	MA1886	
Sampling Date		2015/04/07	2015/04/07	2015/04/07	
COC Number		10223	10223	10223	
	Units	**14VP03**	**1SVP07**	**1SVP08**	**QC Batch**
Parameter					
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	7883620

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Job #: B528142
Report Date: 2015/04/27

TETRA TECH EBA
Client Project #: ENVWDO3511-01.008
Site Location: #1 PORT DRIVE ESA
Sampler Initials: DT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Tabitha Rudkin, AScT, Burnaby Project Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Chain of Custody Form - Summa™ Canister

10223

Maxxam

6740 Campobello Rd
Mississauga Ontario ,L5N 2L8
www.maxxamanalytics.com

Toll Free: 1-800-668-0639
Phone: (905) 817-5700
Fax: (905) 817-5777

B528142

Page 1 of 1

ANALYSIS REQUESTED

CLIENT INFORMATION

Company Name: # 11478 Tetra Tech EBA INC.
Project Manager: Lora Paul
e-mail: Lora.Paul@tetratech.com
Address: #1 - 4376 Boban Drive
Nanaimo, BC V9T 6A7

SECTION

Phone: 250-756-2256 Fax:
Sampled by: Duncan Morris

B528142

Field Sample ID		Canister Serial #	Flow Regulator Serial #	Collection Date	START PRESSURE	END PRESSURE	SOIL VAPOUR	AMBIENT/INDOOR	SUB SLAB	Petroleum Hydrocarbons										CANISTERS NOT USED
15VP03	MA1884	1265	FA243	APR 7 2015	28.5	1.5	X			X										
15VP07	MA1085	1434	FC0858	↓	30	2	X			X										
15VP05	MA1886	1318	FX1256	↓	28.5	2.5	X			X										

TAT Requirement

STD 10 Business day ☒
Rush 5 Business day * ☐
Rush 2 Business day * ☐
* need approval from Maxxam

PROJECT INFORMATION

Project #: ENVWD03511-01.008
Name: #1 Port Drive ESA
PO #:
Maxxam Quote #:
Maxxam Contact:

REPORTING REQUIREMENTS

Summary Report only ☐
EDD ☐
Regulation CSR

Notes

1) please indicate on chain of custody if your samples are soil vapour or ambient air

2) please list all canisters on the chain of custody even if unused

PROJECT SPECIFIC COMMENTS

Client Signature:
Affiliation: Tetra Tech EBA
Date/Time: April 7, 2015 / 16:00

Received by: Laurel Berthier
Affiliation: Maxxam
Date/Time: 2015/04/08 08:30
CS:NA

COC-1003 (04/13) - Summa Canister

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA
Your C.O.C. #: 10224

Attention:LORA J. PAUL

TETRA TECH EBA
#1 - 4376 Boban Drive
Nanaimo, BC
CANADA V9T 6A7

Report Date: 2015/04/28
Report #: R1858535
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B528750
Received: 2015/04/10, 08:05

Sample Matrix: Air
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
VOC HydroCarbon Pkg Sch11 Summa SubC (1)	5	N/A	2015/04/28		

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Maxxam Ontario (From Burnaby)

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Tabitha Rudkin, AScT, Burnaby Project Manager
Email: TRudkin@maxxam.ca
Phone# (604)638-2639
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B528750
Report Date: 2015/04/28

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA

RESULTS OF CHEMICAL ANALYSES OF AIR

Maxxam ID		MA4926	MA4927	MA4928	MA4929	MA4930	
Sampling Date		2015/04/08	2015/04/08	2015/04/08	2015/04/08	2015/04/08	
COC Number		10224	10224	10224	10224	10224	
	Units	**14VP01**	**14VP02**	**14VP04**	**14VP06**	**15VP DUP 1**	**QC Batch**
Parameter							
Subcontract Parameter	N/A	ATTACHED	ATTACHED	ATTACHED	ATTACHED	ATTACHED	7885197

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B528750
Report Date: 2015/04/28

TETRA TECH EBA
Client Project #: ENVIND03511-01.008
Site Location: #1 PORT DRIVE ESA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Tabitha Rudkin, AScT, Burnaby Project Manager

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Chain of Custody Form - Summa™ Canister

10224

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B528750

Page 1 of 1

CLIENT INFORMATION SECTION

Company Name: #11478 Tetra Tech EBA
Project Manager: Lora Paul
e-mail: Lora.Paul@tetratech.com
Address: #1-4376 Boban Drive
Nanaimo, BC V9T 6A7
Phone: 250-756-2256 Fax:
Sampled by: Darren Thomas

ANALYSIS REQUESTED

Field Sample ID		Canister Serial #	Flow Regulator Serial #	Collection Date	START PRESSURE	END PRESSURE	SOIL VAPOUR	AMBIENT/INDOOR	SUB SLAB	Naphthalene	Petroleum Hydrocarbons	BTEX, VPHs, MTBE	n-decane	1,2,4 & 1,3,5 Trimethylbenzene	1,2 dibromoethane, 1,2 dichloroethane	1,3-butadiene, hexane	isopropylbenzene, Methylcyclohexane	1,1,2,2-tetrachloroethane		CANISTERS NOT USED
unused	MA4925	1770	—	—																X
14VP01	MA4926	1506	FX0654	APR 8	30	3	X				X									
14VP02	MA4927	1893	FX0675	"	29	3	X				X									
14VP04	MA4928	1382	FX1240	"	29	3	X			X										
14VP06	MA4929	221	FX0123	"	30	3	X			X		X	X	X	X	X	X	X		
15VP DUP 1	MA4930	1186	FX0654	"	30	3	X				X									

B528750

TAT Requirement

STD 10 Business day ☒
Rush 5 Business day * ☐
Rush 2 Business day * ☐
* need approval from Maxxam

PROJECT INFORMATION

Project #: ENVIND03511-01.008
Name: #1 Port Drive ESA
PO #:
Maxxam Quote #:
Maxxam Contact:

REPORTING REQUIREMENTS

Summary Report only ☐
EDD ☐
Regulation CSR

Notes

1) please indicate on chain of custody if your samples are soil vapour or ambient air

2) please list all canisters on the chain of custody even if unused

PROJECT SPECIFIC COMMENTS

Client Signature: [signature]
Affiliation: Tetra Tech EBA
Date/Time: April 9, 2015

Received by: Marie Laurel Berthier
Affiliation: Maxxam
Date/Time: 2015/04/10 08:05 CSMA

COC-1003 (04/13) - Summa Canister

Maxxam
A Bureau Veritas Group Company

Your P.O. #: N/A
Your Project #: B574704
Your C.O.C. #: na

Attention:Tabitha Rudkin

Maxxam Analytics
Burnaby (ESDAT A046)
ON
Canada

Report Date: 2015/10/14
Report #: R3720338
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

MAXXAM JOB #: B5I7114
Received: 2015/09/16, 10:00

Sample Matrix: AIR
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Canister Pressure (TO-15)	3	N/A	2015/09/17	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (ug/m3)	3	N/A	2015/09/18	BRL SOP-00304	EPA TO-15 m
Volatile Compounds in Air (SUMMA) (1)	3	N/A	2015/09/17	BRL SOP-00304	EPA TO-15 m
Volatile Organics in Air (TO-15) (1)	3	N/A	2015/09/17	BRL SOP-00304	EPA TO-15 m
VPH analysis in Air (2)	3	N/A	2015/09/17	BRL SOP-00304	EPA TO-15 m

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Air sampling canisters have been cleaned in accordance with U.S. EPA Method TO14A. At the end of the cleaning, evacuation, and pressurization cycles, one canister was selected and was pressurized with Zero Air. This canister was then analyzed via TO14A on a GC/MS. The canister must have been found to contain <0.2 ppbv concentration of all target analytes in order for the batch to have been considered clean. Each canister also underwent a leak check prior to shipment.

Please Note: SUMMA® canister samples will be retained by Maxxam for a period of 5 calendar days or as contractually agreed from the date of this report, after which time they will be cleaned for reuse. If you require a longer sample storage period, please contact your service representative.

(2) Total VOCs as toluene and dodecane

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Theresa Stephenson, Project Manager
Email: TStephenson@maxxam.ca
Phone# (905)817-5763
==
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

RESULTS OF ANALYSES OF AIR

Maxxam ID		AZK820	AZK821	AZK822		
Sampling Date		2015/09/11	2015/09/11	2015/09/11		
COC Number		na	na	na		
	UNITS	**ND0054\15VP07**	**ND0055\15VP08**	**ND0056\15VPDUP2**	**MDL**	**QC Batch**
Pressure on Receipt	psig	(-1.9)	(-1.6)	(-1.9)	N/A	4195121

QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Job #: B5I7114
Report Date: 2015/10/14

Maxxam Analytics
Client Project #: B574704
Your P.O. #: N/A
Sampler Initials: KG

VOLATILE ORGANICS BY GC/MS (AIR)

Maxxam ID		AZK820	AZK821	AZK822			
Sampling Date		2015/09/11	2015/09/11	2015/09/11			
COC Number		na	na	na			
	UNITS	**ND0054\15VP07**	**ND0055\15VP08**	**ND0056\15VPDUP2**	**RDL**	**MDL**	**QC Batch**
1,3-Butadiene	ppbv	<0.50	<0.50	<0.50	0.50	0.10	4195237
Methyl t-butyl ether (MTBE)	ppbv	<0.20	<0.20	<0.20	0.20	0.10	4195237
1,2-Dichloroethane	ppbv	<0.10	<0.10	<0.10	0.10	0.10	4195237
Ethylene Dibromide	ppbv	<0.050	<0.050	<0.050	0.050	0.050	4195237
Benzene	ppbv	<0.18	<0.18	0.18	0.18	0.10	4195237
Toluene	ppbv	0.44	0.26	1.33	0.20	0.10	4195237
Ethylbenzene	ppbv	<0.20	<0.20	<0.20	0.20	0.10	4195237
Methylcyclohexane	ppbv	<0.50	<0.50	<0.50	0.50	0.10	4195237
p+m-Xylene	ppbv	<0.37	<0.37	0.40	0.37	0.10	4195237
o-Xylene	ppbv	<0.20	<0.20	<0.20	0.20	0.10	4195237
Styrene	ppbv	<0.10	<0.10	<0.10	0.10	0.10	4195227
1,3,5-Trimethylbenzene	ppbv	<0.50	<0.50	<0.50	0.50	0.10	4195237
1,2,4-Trimethylbenzene	ppbv	<0.50	<0.50	<0.50	0.50	0.10	4195237
Cumene (Isopropylbenzene)	ppbv	<0.50	<0.50	<0.50	0.50	0.10	4195237
Hexane	ppbv	<0.30	<0.30	<0.30	0.30	0.10	4195237
Decane	ppbv	<0.50	<0.50	<0.50	0.50	0.10	4195237
Naphthalene	ppbv	<0.50	<0.50	<0.50	0.50	0.50	4195237
Total Xylenes	ppbv	<0.60	<0.60	<0.60	0.60	0.60	4195237
1,1,1,2-Tetrachloroethane	ppbv	<0.10	<0.10	<0.10	0.10	N/A	4195227
Surrogate Recovery (%)							
Bromochloromethane	%	88	87	87	N/A	N/A	4195237
D5-Chlorobenzene	%	86	87	86	N/A	N/A	4195237
Difluorobenzene	%	90	89	89	N/A	N/A	4195237

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Job #: B5I7114
Report Date: 2015/10/14

Maxxam Analytics
Client Project #: B574704
Your P.O. #: N/A
Sampler Initials: KG

CALCULATED VOLATILE ORGANICS (AIR)

Maxxam ID		AZK820	AZK821	AZK822			
Sampling Date		2015/09/11	2015/09/11	2015/09/11			
COC Number		na	na	na			
	UNITS	**ND0054\15VP07**	**ND0055\15VP08**	**ND0056\15VPDUP2**	**RDL**	**MDL**	**QC Batch**
1,3-Butadiene	ug/m3	<1.1	<1.1	<1.1	1.1	0.10	4192311
Methyl t-butyl ether (MTBE)	ug/m3	<0.72	<0.72	<0.72	0.72	0.10	4192311
1,2-Dichloroethane	ug/m3	<0.40	<0.40	<0.40	0.40	0.049	4192311
Ethylene Dibromide	ug/m3	<0.38	<0.38	<0.38	0.38	0.029	4192311
Benzene	ug/m3	<0.58	<0.58	<0.58	0.58	0.10	4192311
Toluene	ug/m3	1.66	0.99	4.99	0.75	0.020	4192311
Ethylbenzene	ug/m3	<0.87	<0.87	<0.87	0.87	0.10	4192311
Methylcyclohexane	ug/m3	<2.0	<2.0	<2.0	2.0	0.10	4192311
p+m-Xylene	ug/m3	<1.6	<1.6	1.8	1.6	0.10	4192311
o-Xylene	ug/m3	<0.87	<0.87	<0.87	0.87	0.10	4192311
Styrene	ug/m3	<0.43	<0.43	<0.43	0.43	0.051	4192311
1,3,5-Trimethylbenzene	ug/m3	<2.5	<2.5	<2.5	2.5	0.021	4192311
1,2,4-Trimethylbenzene	ug/m3	<2.5	<2.5	<2.5	2.5	0.021	4192311
Cumene (Isopropylbenzene)	ug/m3	<2.5	<2.5	<2.5	2.5	0.10	4192311
Hexane	ug/m3	<1.1	<1.1	<1.1	1.1	0.031	4192311
Decane	ug/m3	<2.9	<2.9	<2.9	2.9	0.10	4192311
Naphthalene	ug/m3	<2.6	<2.6	<2.6	2.6	N/A	4192311
Total Xylenes	ug/m3	<2.6	<2.6	<2.6	2.6	N/A	4192311
1,1,1,2-Tetrachloroethane	ug/m3	<0.69	<0.69	<0.69	0.69	N/A	4192311

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5I7114
Report Date: 2015/10/14

Maxxam Analytics
Client Project #: B574704
Your P.O. #: N/A
Sampler Initials: KG

VOLATILE ORGANIC HYDROCARBONS BY GC/MS (AIR)

Maxxam ID		AZK820	AZK821	AZK822			
Sampling Date		2015/09/11	2015/09/11	2015/09/11			
COC Number		na	na	na			
	UNITS	**ND0054\15VP07**	**ND0055\15VP08**	**ND0056\15VPDUP2**	**RDL**	**MDL**	**QC Batch**
VPHv (C6-C13)	ug/m3	57	37	36	10	10	4195262
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	90	89	89	N/A	N/A	4195262
Bromochloromethane	%	88	87	87	N/A	N/A	4195262
D5-Chlorobenzene	%	86	87	86	N/A	N/A	4195262

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5I7114
Report Date: 2015/10/14

Maxxam Analytics
Client Project #: B574704
Your P.O. #: N/A
Sampler Initials: KG

TEST SUMMARY

Maxxam ID: AZK820
Sample ID: ND0054\15VP07
Matrix: AIR

Collected: 2015/09/11
Shipped:
Received: 2015/09/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	4195121	N/A	2015/09/17	Yao Liang Sun
Volatile Organics in Air (ug/m3)	GC/MS	4192311	N/A	2015/09/18	Maureen Smith
Volatile Compounds in Air (SUMMA)	GC/MS	4195237	N/A	2015/09/17	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	4195227	N/A	2015/09/17	Yao Liang Sun
VPH analysis in Air	GC/MS	4195262	N/A	2015/09/17	Yao Liang Sun

Maxxam ID: AZK821
Sample ID: ND0055\15VP08
Matrix: AIR

Collected: 2015/09/11
Shipped:
Received: 2015/09/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	4195121	N/A	2015/09/17	Yao Liang Sun
Volatile Organics in Air (ug/m3)	GC/MS	4192311	N/A	2015/09/18	Maureen Smith
Volatile Compounds in Air (SUMMA)	GC/MS	4195237	N/A	2015/09/17	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	4195227	N/A	2015/09/17	Yao Liang Sun
VPH analysis in Air	GC/MS	4195262	N/A	2015/09/17	Yao Liang Sun

Maxxam ID: AZK822
Sample ID: ND0056\15VPDUP2
Matrix: AIR

Collected: 2015/09/11
Shipped:
Received: 2015/09/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Canister Pressure (TO-15)	PRES	4195121	N/A	2015/09/17	Yao Liang Sun
Volatile Organics in Air (ug/m3)	GC/MS	4192311	N/A	2015/09/18	Maureen Smith
Volatile Compounds in Air (SUMMA)	GC/MS	4195237	N/A	2015/09/17	Yao Liang Sun
Volatile Organics in Air (TO-15)	GC/MS	4195227	N/A	2015/09/17	Yao Liang Sun
VPH analysis in Air	GC/MS	4195262	N/A	2015/09/17	Yao Liang Sun

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

GENERAL COMMENTS

Results relate only to the items tested.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam
A Bureau Veritas Group Company

Maxxam Job #: B5I7114
Report Date: 2015/10/14

QUALITY ASSURANCE REPORT

Maxxam Analytics
Client Project #: B574704
Your P.O. #: N/A
Sampler Initials: KG

			SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4195237	Bromochloromethane	2015/09/17	97	60 - 140	91	%		
4195237	D5-Chlorobenzene	2015/09/17	98	60 - 140	91	%		
4195237	Difluorobenzene	2015/09/17	99	60 - 140	94	%		
4195262	1,4-Difluorobenzene	2015/09/17			94	%		
4195262	Bromochloromethane	2015/09/17			91	%		
4195262	D5-Chlorobenzene	2015/09/17			91	%		
4192311	1,1,1,2-Tetrachloroethane	2015/09/26					NC	25
4192311	1,2,4-Trimethylbenzene	2015/09/26					NC	25
4192311	1,2-Dichloroethane	2015/09/26					NC	25
4192311	1,3,5-Trimethylbenzene	2015/09/26					NC	25
4192311	1,3-Butadiene	2015/09/26					NC	25
4192311	Benzene	2015/09/26					NC	25
4192311	Ethylbenzene	2015/09/26					NC	25
4192311	Ethylene Dibromide	2015/09/26					NC	25
4192311	Hexane	2015/09/26					NC	25
4192311	Methyl t-butyl ether (MTBE)	2015/09/26					NC	25
4192311	Naphthalene	2015/09/26					NC	25
4192311	o-Xylene	2015/09/26					NC	25
4192311	p+m-Xylene	2015/09/26					0.16	25
4192311	Styrene	2015/09/26					NC	25
4192311	Toluene	2015/09/26					NC	25
4192311	Total Xylenes	2015/09/26					NC	25
4195227	1,1,1,2-Tetrachloroethane	2015/09/17			<0.10	ppbv		
4195227	Styrene	2015/09/17	106	70 - 130	<0.10	ppbv		
4195237	1,2,4-Trimethylbenzene	2015/09/17	98	70 - 130	<0.50	ppbv		
4195237	1,2-Dichloroethane	2015/09/17	101	70 - 130	<0.10	ppbv		
4195237	1,3,5-Trimethylbenzene	2015/09/17	98	70 - 130	<0.50	ppbv		
4195237	1,3-Butadiene	2015/09/17	99	70 - 130	<0.50	ppbv		
4195237	Benzene	2015/09/17	105	70 - 130	<0.18	ppbv		
4195237	Cumene (Isopropylbenzene)	2015/09/17			<0.50	ppbv		

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5I7114
Report Date: 2015/10/14

QUALITY ASSURANCE REPORT(CONT'D)

Maxxam Analytics
Client Project #: B574704
Your P.O. #: N/A
Sampler Initials: KG

			SPIKED BLANK		Method Blank		RPD	
QC Batch	Parameter	Date	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
4195237	Decane	2015/09/17			<0.50	ppbv		
4195237	Ethylbenzene	2015/09/17	108	70 - 130	<0.20	ppbv		
4195237	Ethylene Dibromide	2015/09/17	107	70 - 130	<0.050	ppbv		
4195237	Hexane	2015/09/17	99	70 - 130	<0.30	ppbv		
4195237	Methyl t-butyl ether (MTBE)	2015/09/17	101	70 - 130	<0.20	ppbv		
4195237	Methylcyclohexane	2015/09/17			<0.50	ppbv		
4195237	Naphthalene	2015/09/17	79	70 - 130	<0.50	ppbv		
4195237	o-Xylene	2015/09/17	106	70 - 130	<0.20	ppbv		
4195237	p+m-Xylene	2015/09/17	103	70 - 130	<0.37	ppbv		
4195237	Toluene	2015/09/17	108	70 - 130	<0.20	ppbv		
4195237	Total Xylenes	2015/09/17	104	70 - 130	<0.60	ppbv		
4195262	VPHv (C6-C13)	2015/09/17			<10	ug/m3		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5I7114
Report Date: 2015/10/14

Maxxam Analytics
Client Project #: B574704
Your P.O. #: N/A
Sampler Initials: KG

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Angel Guerrero, Team Leader, VOC Air

Maureen Smith

Maureen Smith, Supervisor, Volatiles

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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EBA INTERNAL QA/QC FOR LABORATORY RESULTS

Project File No: 704-ENVIND03511-01.008 **Date:** 15-Oct

Project Description (report title): Supplementary PSI

Table(s) that this QA checklist addresses (list table numbers): 10, 15 → Sept/Oct 2015 data only

Laboratory Certificates Reviewed (list certificate numbers): Maxxam Job# B517114

Verification completed by: BOS **Reviewed by:**

Signature: **Signature:**

Tasks		Issues Identified
1. Have all data in the report tables been confirmed with those in the laboratory certificates? Name of the individual who compiled the table(s): Kristy G. / Miranda R. Describe how data was originally entered into the tables: ☑ Electronically transferred from a spreadsheet file provided by the laboratory ☐ Other. Describe: Describe how the data verification was achieved: ☐ Spot checking of data in tables with data in lab certificates (spot checking for all analyses) at a frequency of approximately __% ☑ Checking all data in tables with data in lab certificates Describe any data not verified (or list 'none'): none	Y ☑ N ☐	none
2. Have all samples and parameters analyzed been reported in the tables?	Y ☑ N ☐	Xylene - m and p not reported (not necessary)
3. Are the results being compared to the correct applicable standards? Applicable Standards: CSR CL, IL / Prot. 11 CL/IL	Y ☑ N ☐	
4. Have the Standards in the report tables been compared with the published regulations (e.g. CSR) or other criteria? Minimum requirement: Every standard listed in the tables to be compared to the published regulation	Y ☐ N ☑ Done by KG in May 2015	
5. Have the data in the report tables been highlighted where they exceed Standards? (including non-detect results, where the detection limit is greater than the Standard) Minimum requirement: Every data point listed in the tables to be compared to the Standards and highlighted where concentrations (or detection limits) are greater than the Standard.	Y ☑ N ☐	
6. Have Matrix Spikes been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
7. Have Laboratory Duplicates been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
8. Have Surrogate Compound Spike been analyzed during laboratory analyses of soil and groundwater samples?	Y ☑ N ☐	
FORMATTING		
9. Are the tables numbered correctly?	Y ☑ N ☐	
10. Are the headers and footers correct and formatted consistently?	Y ☑ N ☐	
11. Are the footnotes of the tables correct and appropriate for the table in which they follow?	Y ☑ N ☐	
12. Are the table borders formatted correctly?	Y ☑ N ☐	
13. Do the tables print correctly?	Y ☑ N ☐	

Table 10: Soil Vapour Analytical Results – Volatile Organic Compounds

Location:	UNITS	CSR - CL	CSR - IL	Protocol 11 - CL	Protocol 11 - IL	15VP07									15VP08					
Date Sampled:						7-Apr-15			11-Sep-15			11-Sept-15 (DUP2)			7-Apr-15			11-Sep-15		
Exposure:						C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$	C_{vapour}	$C_{outdoor\ Air}$	$C_{indoor\ Air}$
Depth of sand pack (m):						0.7	N/A	N/A	0.7	N/A	N/A	0.7	N/A	N/A	0.7	N/A	N/A	0.7	N/A	N/A
Attenuation Factor						N/A	0.0001	0.02	N/A	0.0001	0.02	N/A	0.0001	0.02	N/A	0.0001	0.02	N/A	0.0001	0.02
Volatile Organic Compounds																				
Naphthalene	µg/m3	9	25	90	2,500	<2.6	0.00026	0.052	<2.6	0.00026	0.052	<2.6	0.00026	0.052	<2.6	0.00026	0.052	<2.6	0.00026	0.052
Benzene	µg/m3	4	10	40	1,000	2.00	0.000200	0.0400	<0.58	0.000058	0.0116	<0.58	0.000058	0.0116	10.1	0.00101	0.202	<0.58	0.00006	0.012
1,1,1,2-Tetrachloroethane	µg/m3	4	10	40	1,000	-	-	-	<0.69	0.000069	0.0138	<0.69	0.000069	0.0138	-	-	-	<0.69	0.00007	0.014
Ethylbenzene	µg/m3	3,000	9,000	30,000	450,000	2.21	0.000221	0.0442	<0.87	0.000087	0.0174	<0.87	0.000087	0.0174	2.71	0.000271	0.0542	<0.87	0.000087	0.0174
MTBE	µg/m3	9,000	27,000	90,000	200,000	<0.72	0.000072	0.014	<0.72	0.000072	0.014	<0.72	0.000072	0.014	<0.72	0.000072	0.014	<0.72	0.000072	0.014
Toluene	µg/m3	15,000	45,000	75,500	75,500	43.1	0.00431	0.862	1.66	0.00017	0.033	4.96	0.00050	0.100	30.4	0.00304	0.608	0.99	0.00010	0.020
Xylenes Total	µg/m3	300	900	3,000	90,000	12.5	0.00125	0.250	<2.6	0.00026	0.052	<2.6	0.00026	0.052	18.0	0.00180	0.360	<2.6	0.00026	0.052
1,2,4-Trimethylbenzene	µg/m3	20	55	200	5,500	14.0	0.00140	0.280	<2.5	0.00025	0.050	<2.5	0.00025	0.050	9.8	0.00098	0.20	<2.5	0.00025	0.05
1,2-Dibromoethane	µg/m3	1	1	10	100	<0.38	0.000038	0.008	<0.38	0.000038	0.008	<0.38	0.000038	0.008	<0.38	0.000038	0.0076	<0.38	0.000038	0.0076
1,2-Dichloroethane	µg/m3	1	4	10	350	<0.40	0.000040	0.0080	<0.40	0.000040	0.0080	<0.40	0.000040	0.0080	<0.40	0.000040	0.0080	<0.40	0.000040	0.0080
1,3,5-Trimethylbenzene	µg/m3	20	55	200	5,500	3.3	0.00033	0.066	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050
1,3-Butadiene	µg/m3	6	20	60	2,000	<1.1	0.00011	0.022	<1.1	0.00011	0.022	<1.1	0.00011	0.022	<1.1	0.00011	0.022	<1.1	0.00011	0.022
Decane	µg/m3	8,000	25,000	80,000	2,500,000	5.6	0.00056	0.11	<2.9	0.00029	0.06	<2.9	0.00029	0.06	5.5	0.00055	0.11	<2.9	0.00029	0.06
Hexane	µg/m3	2,000	6,500	20,000	70,500	2.4	0.00024	0.048	<1.1	0.00011	0.022	<1.1	0.00011	0.022	16.0	0.00160	0.320	<1.1	0.00011	0.022
Isopropylbenzene	µg/m3	1,000	4,000	10,000	100,000	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050	<2.5	0.00025	0.050
Methylcyclohexane	µg/m3	9,000	27,000	90,000	1,500,000	10.6	0.00106	0.212	<2.0	0.00020	0.040	<2.0	0.00020	0.040	28.8	0.00288	0.576	<2.0	0.00020	0.040
VPH (C6-C13)	µg/m3	3,000	11,500	30,000	1,150,000	696	0.0696	13.9	57	0.0057	1.1	36	0.0036	0.7	842	0.0842	16.8	37	0.0037	0.7
1,2,3-Trimethylbenzene	µg/m3	-	-	-	-	6.6	0.00066	0.13	-	-	-	-	-	-	4.6	0.00046	0.092	-	-	-
2,2,4-Trimethylpentane	µg/m3	-	-	-	-	<0.93	0.000093	0.019	-	-	-	-	-	-	<0.93	0.000093	0.019	-	-	-
2-propanol	µg/m3	-	-	-	-	<7.4	0.00074	0.15	-	-	-	-	-	-	<7.4	0.00074	0.15	-	-	-
4-ethyltoluene	µg/m3	-	-	-	-	<11	0.0011	0.22	-	-	-	-	-	-	<11	0.0011	0.22	-	-	-
Cyclohexane	µg/m3	-	-	-	-	14.3	0.00143	0.286	-	-	-	-	-	-	49.4	0.00494	0.988	-	-	-
Heptane	µg/m3	-	-	-	-	4.2	0.00042	0.084	-	-	-	-	-	-	10.4	0.00104	0.208	-	-	-
Styrene	µg/m3	3,000	9,000	30,000	200,000	<0.85	0.000085	0.017	<0.43	0.000043	0.009	<0.43	0.000043	0.009	<0.85	0.000085	0.017	<0.43	0.000043	0.009
Laboratory Work Order Number						B528142			B517114			B517114			B528142			B517114		
Laboratory Identification Number						MA1885			ND0054			ND0056			MA1886			ND0055		

NOTES:

Units	All results are in µg/m^3
<	Concentration is less than the laboratory detection limit indicated. For attenuation purposes, concentration was assumed to be equal to the detection limit.
-	Not Analyzed
VPHv	Volatile Petroleum Hydrocarbons
MTBE	Methyl Tert-Butyl Ether
*	Indoor and Outdoor concentrations have been multiplied by an applicable BC Ministry of Environment attenuation factor based on the depth to determine final concentrations.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedule 11)
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014)
CL	Commercial Land Use
IL	Industrial Land Use
C_{vapour}	Vapour concentration without attenuation are not compared to applicable standards.
Bold and Underlined	Bold indicates an exceedance of the CSR CL Schedule 11 standards.
Red Text	Red text indicates an exceedance of the CSR IL Schedule 11 standards.
SHADED	Shaded indicates an exceedance of the Protocol 11 Upper Cap concentrations (CL or IL).

Vapour Attenuation Factors have been taken from Table 2 - Default vapour attenuation factors of BC Ministry of Environment Technical Guidance 4 on Contaminated Sites "*Vapour Investigation and Remediation*" Version 1, Sept. 2010.

APPENDIX H

SLRA FEASIBILITY

TETRA TECH EBA

TECHNICAL MEMO

ISSUED FOR USE

To:	City of Nanaimo	**Date:**	November 24, 2015
C:		**Memo No.:**	1
From:	Tetra Tech EBA Lora Paul and Kristy Gabelhouse	**File:**	704-ENVIND03511-01.006
Subject:	Screening Level Risk Assessment Feasibility Study		

1.0 INTRODUCTION

Tetra Tech EBA Inc. (Tetra Tech EBA) was retained by the City of Nanaimo (CON) to conduct a feasibility study for the potential use of the British Columbia Ministry of Environment (BC MOE) Protocol 13 (P13) for Contaminated Sites *Screening Level Risk Assessment* (SLRA) (August 2008) on the Property located at 1 Port Drive in Nanaimo, BC (herein referred to as the “Property”).

Previous environmental subsurface investigations conducted at the Property by other firms and Tetra Tech EBA identified arsenic, cadmium, chromium, zinc, light extractable petroleum hydrocarbons (LEPH), heavy extractable petroleum hydrocarbons (HEPH), volatile petroleum hydrocarbon (VPH), 2,4,5 trichlorophenol, 2,3,4,6 tetrachlorophenol, 3,4 dichlorophenol, and pentachlorophenol in soils exceeding the applicable British Columbia Environmental Management Act Contaminated Sites Regulation (BC CSR) commercial (CL) and industrial (IL) land use standards on the upland portions of the Property. As well as exceedances in groundwater for select chlorinated phenols. The attached Tables 1-5 include all the soil and groundwater analytical parameters with identified exceedances collected to date from the subsurface investigations completed on the upland portion of the Property.

The purpose of this memo is to provide the CON with an overview of the feasibility of using SLRA methods on the upland portion of the Property and determine whether or not there would be any remaining unacceptable risks present within soil and groundwater which could cause impacts to human health and/or ecological receptors, if such an approach was used.

This SLRA feasibility was completed based on the existing subsurface conditions and land uses on the Property. Completing a final SLRA for all or portions of the upland areas can only be completed once an overall development plan is developed for the Property. We note that this technical memorandum is not intended to be used as a final report adequate for a Certificate of Compliance (CofC) application, but rather an assessment of whether or not the use of SLRA would be feasible and acceptable for a future CofC application for the Property.

Tetra Tech EBA Inc.
#1 - 4376 Boban Drive
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Tel 250.756.2256 Fax 250.756.2686

2.0 BACKGROUND

Tetra Tech EBA conducted a Stage 1 Preliminary Site Investigation (PSI) in October 2014 (Tetra Tech EBA 2014). The Stage 1 PSI reviewed previous historical subsurface environmental investigations conducted on the Property between 1998 and 2009. Based on the information reviewed, Tetra Tech EBA identified a total of twelve Areas of Potential Environmental Concern (APECs). Six of the APECs were brought forward as known Areas of Environmental Concern (AECs) since previous investigations completed by SNC Lavalin Environment Inc. (SNC) identified concentrations of regulated parameters that exceeded the BC CSR standards applicable to the Property and one remained as an APEC (APEC 11) since soil vapour was not assessed during any of the previous subsurface investigations. An additional five APECs were identified by Tetra Tech EBA during the 2014 Stage 1 PSI which had not previously been identified during any previous environmental assessments and thus had not yet been investigated. Based on the Stage 1 PSI findings, a Detailed Site Investigation (DSI) was conducted at the Property from August 2014 to October 2015 (Tetra Tech EBA 2015).

During the DSI it was determined, using BC MOE Technical Guidance 6 (TG6) (July 2010), that BC CSR drinking water (DW) standards were not applicable for this site based on a number of factors but primarily since the subject lands were marine areas that were in-filled with coal waste and other industrial fill materials. Tetra Tech EBA therefore applied for and was successful in obtaining a drinking water exemption for the Property in December 2014. Therefore, during the DSI all the soil and groundwater analytical data was compared to the BC CSR CL/IL standards for the protection of aquatic life (AW) and/or any other more stringent applicable BC CSR generic numerical CL/IL standards for the Property. A summary of the DSI findings is provided below.

Table 1 – Summary of DSI Findings

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination
AEC 1 Imported Fill With Coal Waste	Chromium >CSR CL/IL at an average thickness of 2 m	None.	None.	Area 1A: Estimated Area **6500 m^2** Estimated Volume **13,000 m^3**
				Area 1B: Estimated Area **1200 m^2** Estimated Volume **2400 m^3**
AEC 2 Railyard	LEPH and HEPH> CSR CL/IL from 4.8 m to 8.8 m	None.	None.	Estimated Area **1800** m^2 Estimated Volume **5400 m^3**
AEC 3A Former Offsite Sawmills	PCP >CSR CL/IL from surface to 1.5 m	None.	None.	Area 3A Estimated Area **1800 m^2** Estimated Volume **2700 m^3**

TT EBA AEC/APEC	Soil Contamination	Groundwater Contamination	Vapour Contamination	Extent of Identified Soil Contamination
AEC 3B Former Offsite Sawmills	2,4,5 trichlorophenol, 2,3,4,6 tetrachlorophenol, 3,4 dichlorophenol, VPH >CSR CL/IL from surface to 5.9 m	Chlorinated Phenols > CSR AW standards.	None.	Area 3B Estimated Area **1000 m^2** Estimated Volume **5900 m^3**
AEC 3C Former Offsite Sawmills	PCP , Arsenic >CSR CL/IL from surface to 1 m	None.	None.	Area 3C Estimated Area **500 m^2** Estimated Volume **500 m^3**
Marine AEC 1 Active Harbour	PAHs > CSR Typical Sediment Standards from surface to maximum depth of 1.5 mbg with average thickness of ~1.0	N/A	N/A	Estimated Area **28,069 m^2** Estimated Volume **28,069 m^3**
APEC 8 Former Locomotive Engine House	None.	None.	N/A	None confirmed
APEC 9 Heating Oil UST adjacent to Seaspan office	None.	None.	None.	None Confirmed
AEC 4 (formerly APEC 10) Former Machine Shop at Gadd Marine Site	Cadmium, Zinc >CSR CL/ IL from 0.5 to 2.7 m	None.	N/A	Estimated Area **600 m^2** Estimated Volume **1320 m^3**
APEC 11 Former Heating Oil UST at Island Pallets	None.	None.	None.	None confirmed
APEC 12 1951 Miscellaneous Industrial Activities	None.	None.	None.	None confirmed
APEC 13 Former Sawmill	None.	None.	N/A	None confirmed

Notes:
CSR - Contaminated Sites Regulation;
AW – Aquatic Water for Protection of marine aquatic life;
LEPH - Light Extractable Petroleum Hydrocarbons;
PAHs - Polycyclic Aromatic Hydrocarbons;
VPH - Volatile Petroleum Hydrocarbons;
IL – Industrial Land use;
CL – Commercial Land Use;
HEPH - Heavy Extractable Petroleum Hydrocarbons;
UST(s) - Underground Storage Tank(s); and
PCPs Pentachlorophenols

Based on the data from the DSI, the following conclusions were made regarding soil and groundwater quality on the Property:

- Soil quality at AEC 1 exceeded the BC CSR CL/IL standard for chromium in select areas of the Property within coal waste fill from surface to 7 metres below ground surface (mbgs) with an average thickness of 2 m. Chromium leachate results by synthetic precipitation leaching procedure (SPLP) did not exceed the BC CSR AW for the protection of marine aquatic life. AEC 1 includes the chromium exceedances found in the areas of AEC 2, and APEC 12;

- Soil quality at AEC 2 exceeded the BC CSR CL/IL standard for LEPH (EPHC10-19) and HEPH (EPH C19-32) from 4.8 m to 8.8 mbgs;

- Soil quality at AEC 3A, 3B and 3C exceeded the BC CSR CL/IL standard for various chlorinated phenols from 0.5 mbgs to 5.13 mbgs and at AEC 3B for VPH from 0.5 mbgs to greater than 2.5 mbgs. During the DSI, there were no arsenic exceedances found in the area of the historical exceedance and the highest arsenic concentration in the area of the historical exceedance had arsenic leachate results by SPLP that did not exceed the BC CSR AW for protection of marine aquatic life;

- Soil quality at AEC 4 exceeded the BC CSR CL/IL standard for cadmium and zinc (from 0.5 mbgs to 2.7 mbgs). Cadmium and zinc leachate results by SPLP did not exceed the BC CSR AW for protection of marine aquatic life; and

- Groundwater quality at AEC 3B exceeded the BC CSR AW standard for protection of marine aquatic life for various chlorinated phenols (2,4,5 trichlorophenol, 2,3,4,6 tetrachlorophenol 3,4 dichlorophenol, 3,4,5-trichlorophenol and pentachlorophenol).

The above listed AECs (Tetra Tech EBA AEC 1 to AEC 4) soil and groundwater analytical results used for this SLRA feasibility study are provided in the attached Tables 1 to 5. For the SLRA, the contaminants of concern (COCs) carried forward for the SLRA are arsenic, cadmium, chromium, zinc, LEPH, HEPH, VPH, 2,4,5 trichlorophenol, 2,3,4,6 tetrachlorophenol, 3,4 dichlorophenol, 3,4,5-trichlorphenol and pentachlorophenol.

3.0 REGULATORY REGIME

In British Columbia, soil and groundwater quality are assessed based on standards and guidelines outlined in the Environmental Management Act and fall under the jurisdiction of the BC MOE. One component of the Environmental Management Act is directly applicable to work being completed as part of this investigation; the BC CSR. Soils standards are provided for the protection of human health from incidental soil ingestion and for protection of drinking water from soil leaching. For ecological receptors, soil standards are provided for protection of soil microbes and plants, and for protection of groundwater from soil leaching which would be used for irrigation, livestock watering and aquatic life. For groundwater, standards have been developed for protection of drinking water, aquatic life, irrigation and livestock watering use. For air, standards have been provided for protection of air at the point of exposure (indoors or outdoors) on residential, urban parkland, wild lands, commercial and industrial sites.

The assessment and remediation of contaminated sites in British Columbia are governed by the BC CSR. The BC CSR standards must be achieved for the site to be deemed uncontaminated using a standards approach. The BC CSR also allows for the development of site-specific and risk-based standards for a site. In using a risk assessment approach, it must be demonstrated that there are no unacceptable human health or ecological risks to both on-site and off-site receptors (humans, plants and animals). The soil, groundwater and air standards are intended to provide protection at all contaminated sites in BC and are therefore based upon conservative assumptions regarding site characteristics and the potential for exposure of receptors to COCs. In using a screening-level risk assessment approach, site-specific factors that affect the completeness of exposure pathways of receptors to contaminants may be considered. If concentrations exceed a standard and the exposure pathway is deemed complete, further detailed risk assessment is required. If concentrations exceed a standard but the exposure pathway is not complete, then a SLRA is sufficient to address the exceedance.

3.1 Soils

Schedules 4 and 5 of the BC CSR provide generic and matrix numerical standards, respectively, for the assessment and remediation of soils. Generic standards depend solely on land use and matrix standards are risk-based standards that depend on land use and a number of site-specific factors, for example, the use, if any, of groundwater at the site. For present and future proposed land use at the Property, the BC CSR CL and IL soil standards have been applied.

Three site-specific factors of the matrix soil standards apply to the Property. These are:

- Human Health Protection, intake of contaminated soil;
- Environmental Protection, toxicity to soil invertebrates and plants; and
- Groundwater flow to surface water used by marine aquatic life.

Tetra Tech EBA concluded that soil standards for the protection of groundwater used as drinking water, livestock and irrigation were not applicable at the Property.

3.2 Groundwater

Tetra Tech EBA's assessment of groundwater use and surface water receptors in the area indicates that the BC CSR Schedule 6 standards for the protection of marine aquatic life apply to groundwater at the Property. An exemption from the CSR drinking water standard was granted for the Property by the BC MOE in December 2014.

3.3 Soil Vapour

For the SLRA, the BC CSR Schedule 11 Commercial Use standards were applied to vapours at the Property.

4.0 SLRA QUESTIONNAIRE ASSESSMENT

A SLRA questionnaire has been developed for use in the BC MOE Protocol 13 and was completed based on the findings of the DSI for the Property. The completed SLRA questionnaire form for Tetra Tech EBA AEC 1 to AEC 4 are included in Appendix B. It is a tool to illustrate whether or not an exposure pathway can be addressed by screening level risk assessment (pathway is incomplete) or will require further qualitative risk assessment and/or remediation. This questionnaire is used to assess all eight potential exposure pathways, and to consider exceedances of BC CSR Standards with the likelihood of the pathway being complete. For a complete exposure pathway or "scenario" (as identified in the questionnaire) a "yes" answer is indicated whereas a "no" is indicated for incomplete scenarios. Details of the SLRA questionnaire results are in the below sections.

Sites with precluding conditions do not qualify for assessment using a SLRA, and require quantitative detailed risk assessment or remediation. The precluding conditions are as follows:

- Ionizing organic substances;
- Inorganic substances with soil pH < 5;
- Bio-accumulative substances within the top 1 m of soils;
- Presence of light non-aqueous phase liquid (LNAPL) or dense non-aqueous phase liquid (DNAPL);
- Soil vapours (for all land uses except Wild Lands land use);
- Very high permeability soil (e.g., cobbles) or complex hydrogeologic units (e.g., fractured bedrock, karst terrain);
- Deep-rooting plants or trees (root structures extending below 1 m depth) in areas of contamination;
- Contaminated sediments or surface water except where the contamination is related to a beneficial use;
- Preferential flow pathways that transport contaminated groundwater or soil; and
- Vapours directly to a receiving environment or water well, or groundwater contamination that extends offsite and is at concentrations that exceed standards protective of drinking water use (at sites where drinking water use is applicable).

None of the above listed precluding conditions were found to be present within the upland portion of the Property. We do note that SLRA methods cannot be used for the identified impacted sediments located within the water lot portion of the Property.

The upland portion of the Property was determined not to be high-risk as concentrations in soils were either less than the applicable BC MOE Protocol 11 Upper Cap Concentrations (BC MOE June 2010b) or did not have a complete pathway as per Protocol 12 Site Risk Classification, Reclassification and Reporting (BC MOE June 2010c). See Tables 1 to 4 attached for comparison of data to the Protocol 11 upper cap concentrations.

As impacts on one area of the Property were from offsite sources (former CIPA Lease site AEC 3) that were included under a MOE approved risk management and Conditional Certificate of Compliance, possible risks to off-site receptors could not be modelled due to the unknown extent of the contamination plumes in groundwater and thus not included within this SLRA.

4.1 Human Exposure Scenarios

4.1.1 Exposure to Contaminated Soils or Dust (HS- 1 to 3)

Soil samples collected from AEC 1 through AEC 4 did not contain any concentrations of COCs that exceeded the applicable commercial and industrial land BC CSR Schedule 5 for human exposure via intake of contaminated soil standards.

For the generic numerical soil standards (BC CSR Schedule 4) there were exceedances for **LEPH (and EPH$_{C10-19}$),** and **EPH$_{C19-32}$** within the areas of **AEC 2.** As well **2,3,4,6-tetrachlorophenol, 2,4,5-trichlorophenol, 3,4-dichlorophenol** and **VPH** within areas of **AEC 3.**

The results of the SLRA questionnaire for AEC 2 and AEC 3 with exceedances of the generic numerical standards are summarized below:

AEC 2

AEC 2 contained LEPH (and EPH_{C10-19}), and EPH_{C19-32} concentrations in soil exceeding the Schedule 4 generic numerical soil standards at a depth of 4.9 mbgs.

The answer provided for HS-1 in the SLRA questionnaire was therefore "yes".

However, the contamination was delineated and found to be below 1 m depth, therefore the pathway is incomplete for this AEC.

The answer provided for HS-2 in the SLRA questionnaire was therefore "no".

AEC 3

AEC 3B contained 2,3,4,6-tetrachlorophenol, 2,4,5-trichlorophenol, 3,4-dichlorophenol and VPH concentrations in soil exceeding the Schedule 4 generic numerical soil standards at a depth of 1.12 mbgs. AEC 3A and 3C did not have exceedances of this pathway.

The answer provided for HS-1 in the SLRA questionnaire was therefore "yes".

The contamination identified was at 1.12 mbgs with the sample collected at 0.84 mbgs meeting the applicable standards. Based on available analytical results, we cannot state that contamination is not within 1 m of surface.

The answer provided for HS-2 in the SLRA questionnaire was therefore "yes".

The area of AEC 3B is currently not completely paved, therefore there is a complete pathway for the current condition of this AEC 3B. However, since this area of AEC 3B is part of a proposed road right-a-way, it is expected AEC 3B will be completely paved during future development and therefore no human exposure to the soils at AEC 3B is expected once this area is developed into a road right-a-way.

The answer provided for HS-3 in the SLRA questionnaire was therefore "no" based on expected future development.

4.1.2 Exposure to Contaminant Vapours (HV- 1 to 2)

Based on data collected during the DSI, vapour concentrations did not exceed the BC CSR Schedule 11 CL/IL standards for indoor or outdoor air exposure at any of the AECs.

The answer provided for HV-1 in the SLRA questionnaire was therefore "no".

4.1.3 Exposure to Contaminated Groundwater (HW- 1 to 3)

Based on data collected during the DSI, it was concluded that under BC CSR TG6, DW standards do not apply to either soil or groundwater on the Property.

The answer provided for HW-1 in the SLRA questionnaire was therefore "no".

4.2 Ecological Exposure Scenarios

4.2.1 Exposure of Terrestrial Biota Exposure to Contaminated Soils (TS-1 to 5)

Soil samples collected from **AEC 3** contained concentrations of **pentachlorophenol** exceeding the applicable BC CSR Schedule 5 Matrix standards for soil invertebrates and plants. As well, soil samples collected from **AEC 4** contained concentrations of **zinc** exceeding the applicable BC CSR Schedule 5 Matrix standards for soil invertebrates and plants.

For the generic numerical soil standards (BC CSR Schedule 4) there were exceedances for **LEPH (and EPH$_{C10\text{-}19}$),** and **EPH$_{C19\text{-}32}$** within the areas of **AEC 2.** As well **2,3,4,6-tetrachlorophenol, 2,4,5-trichlorophenol, 3,4-dichlorophenol** and **VPH** within areas of **AEC 3.**

The results of the SLRA questionnaire for AEC 2, AEC 3 and AEC 4 with exceedances of the matrix and/or generic numerical standards are summarized below:

<u>AEC 2</u>

AEC 2 contained LEPH (and EPH$_{C10\text{-}19}$), and EPH$_{C19\text{-}32}$ concentrations in soil exceeding the Schedule 4 generic numerical soil standards at a depth of 4.9 mbgs.

The answer provided for TS-1 in the SLRA questionnaire was therefore "yes".

The contamination was delineated and found to be below 1 m depth therefore the pathway is incomplete for this AEC.

The answer provided for TS-2 in the SLRA questionnaire was therefore "no".

<u>AEC 3</u>

AEC 3B contained 2,3,4,6-tetrachlorophenol, 2,4,5-trichlorophenol, 3,4-dichlorophenol and VPH concentrations in soil exceeding the Schedule 4 generic numerical soil standards and pentachlorophenol exceeding the applicable BC CSR Schedule 5 Matrix standards for soil invertebrates and plants at a depth of 1.12 mbgs. AEC 3A and 3C did not have exceedances of this pathway.

The answer provided for TS-1 in the SLRA questionnaire was therefore "yes".

The contamination identified was at 1.12 mbgs with the sample collected at 0.84 mbgs meeting the applicable standards. Based on available analytical results, we cannot state that contamination is not within 1 m of surface.

The answer provided for TS-2 in the SLRA questionnaire was therefore "yes".

The area of AEC 3B is currently not completely paved, therefore there is a complete pathway for the current condition of this AEC 3B. However, since this area of AEC 3B is part of a proposed road right-a-way, it is expected AEC 3B will be completely paved during future development and therefore no human exposure to the soils at AEC 3B is expected once this area is developed into a road right-a-way.

The answer provided for TS-3 in the SLRA questionnaire was therefore "no" based on expected future development.

AEC 4

Soil samples collected from **AEC 4** contained concentrations of **zinc** exceeding the applicable BC CSR Schedule 5 Matrix standards for soil invertebrates and plants at 1.05 mbgs.

The answer provided for TS-1 in the SLRA questionnaire was "yes".

The contamination was identified at 1.05 mbgs with no samples collected at a depth less than 1 mbgs. Therefore we cannot state that contamination is not within 1 m of surface.

The answer provided for TS-2 in the SLRA questionnaire was therefore "yes".

There are currently some uncovered areas within AEC 4.

The answer provided for TS-3 in the SLRA questionnaire was therefore "yes".

A biological assessment would be required to be completed to answer TS-4 therefore it is currently unknown whether this pathway is complete.

The answer provided for TS-4 in the SLRA questionnaire was therefore "unknown at this time".

4.2.2 Exposure of Aquatic Biota to Contaminated Groundwater (AW-1 to 3)

According to BC MOE TG6, aquatic life water use applies at the Property since the distance to the nearest water body is less than 500 m.

The answer provided for AW-1 in the SLRA questionnaire was therefore "yes" for groundwater.

Soil samples collected from **AEC 1** (**chromium), AEC 3A (PCP), AEC 3B (PCP), AEC 3C (PCP and historical arsenic),** and **AEC 4** (**cadmium and zinc)** contained concentrations of contaminants of concern exceeding the applicable BC CSR Schedule 5 Matrix standards for protection of aquatic life. As well as, select chlorinated phenol exceedances were identified in groundwater collected from **AEC 3B (2,4,5 trichlorophenol, 2,3,4,6 tetrachlorophenol 3,4 dichlorophenol, 3,4,5-trichlorophenol and PCP)** during the DSI above BC CSR AW standards.

For the default soil standards (BC CSR Schedule 4) there were exceedances for **LEPH (and EPH_{C10-19}),** and **EPH_{C19-32}** within the areas of **AEC 2**. As well **2,3,4,6-tetrachlorophenol, 2,4,5-trichlorophenol, 3,4-dichlorophenol** and **VPH** within areas of **AEC 3B.**

The answer provided for AW-2 in the SLRA questionnaire was therefore "yes".

As allowed under SLRA, to address inorganic metals contamination identified in soils and their inherent potential to leach into groundwater, soil samples with the highest metals concentrations within **AEC 1, AEC 3** and **AEC 4** underwent SPLP. This test is used to estimate the leaching potential of contaminants from soils under typical environmental conditions and is recommended in BC MOE Protocol 13. The leachate concentrations can be adjusted by a dilution factor and compared to the appropriate BC CSR AW standards.

The metal SPLP results for arsenic, chromium, cadmium and zinc are summarized below:

AEC 1 - Chromium

It was found that BC CSR AW standard of 0.15 mg/L was achieved through SPLP testing with a maximum result of chromium from AEC 1 in the leachate using the application of a conservative dilution factor of 1. This indicates that there is no risk from chromium in soil leachate to down-gradient AW receptors, which would cause this pathway to be incomplete.

AEC 3C - Arsenic

It was found that BC CSR AW standard of 5 mg/L was achieved through SPLP testing with a maximum result of arsenic from AEC 3C in the leachate using the application of a conservative dilution factor of 1. This indicates that there is no risk from arsenic in soil leachate to down-gradient AW receptors, which would cause this pathway to be incomplete.

AEC 4 – Cadmium and Zinc

It was found that BC CSR AW standard of 0.001 mg/L for cadmium and 0.1 mg/L for zinc was achieved through SPLP testing with a maximum result of cadmium and zinc from AEC 4 in the leachate using the application of a conservative dilution factor of 1. This indicates that there is no risk from cadmium and zinc in soil leachate to down-gradient AW receptors, which would cause this pathway to be incomplete.

For organic substances, as allowed under SLRA, soil leachate concentrations are calculated using partitioning equations as detailed in Appendix A of Protocol 13.

The results of the partitioning equations for AEC 2 (LEPH and EPH 10-19) and AEC 3 (Chlorinated Phenols and VPH) and groundwater transport model are summarized below:

AEC 2

Concentrations of LEPH and EPH_{C10-19} in soil that exceeded the applicable BC CSR standards in the area of AEC 2 were evaluated further using the P13 soil leachate and groundwater transport assessment model. EPH_{C19-32} does not have an applicable aquatic life groundwater standard so it was excluded from further evaluation.

The highest concentration of the LEPH and EPH_{C10-19} exceedances was used in the model. See the Table 5 attached for the model input.

It was found that BC CSR AW standard of 0.5 mg/L was met at the nearest aquatic life receptor using the P13 soil leachate and groundwater transport assessment model using a maximum result of LEPH and EPH_{C10-19} from AEC 2. This indicates that there is no risk from LEPH and EPH_{C10-19} in soil leachate to down-gradient AW receptors, which would cause this pathway to be incomplete.

AEC 3

Modelling of the potential soil leachate from AEC 3 (A, B and C) and identified groundwater concentrations exceeding the CSR AW standards from AEC 3B to flow to a down-gradient marine aquatic receptor as normally completed in a SLRA for organic compounds could not be completed since soils and groundwater with higher chlorinated phenols and/or /VPH contamination is expected to be located on the former sawmill sites to the east/southeast of the road right-of-way portion of the Property.

The answer provided for AW-3 in the SLRA Questionnaire was therefore "no" for AEC 1, 2, and 4. SLRA cannot be used to address exceedances at AEC 3 for exposure of aquatic biota to contaminated groundwater.

4.2.3 Exposure of Crops to Contaminated Irrigation Groundwater (IW-1 to 3)

The DSI indicated that irrigation water use does not apply to soil and groundwater at the Property.

Therefore the answer to Question IW-1 was "no".

4.2.4 Exposure of Livestock to Contaminated Groundwater (from soil leaching) (LW-1 to 3)

The DSI indicated that livestock watering use does not apply to soil and groundwater at the Property.

Therefore the answer to Question LW-1 was "no".

4.3 Exposure to Volatile and Extractable petroleum hydrocarbons (DF-1 to 2)

Based on data collected during the DSI, concentrations of these parameters were less than the applicable BC CSR Standards.

The answer to the DF-1 question in the SLRA questionnaire was "no".

5.0 CONCLUSIONS

The results of pathway screening of the BC MOE Protocol 13 questionnaire for the COCs (arsenic, cadmium, chromium, zinc, LEPH, HEPH, EPH_{10-19}, VPH, 2,4,5 trichlorophenol, 2,3,4,6 tetrachlorophenol, 3,4 dichlorophenol, 3,4,5-trichlorophenol and PCP) in soils and groundwater at AEC 1 through AEC 4 are displayed in the table below:

Table 2 – Summary of SLRA Feasibility Findings

Tetra Tech EBA AEC	SLRA Findings for Existing Conditions		Comments
	Contaminants of Concern	Exposure Pathways for Identified Contaminants of Concern	
AEC 1	Chromium (Cr) in soil	• Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since Cr in soils is not leachable to levels exceeding CSR AW standard.	None
AEC 2	LEPH (and EPH_{C10-19}), and EPH_{C19-32} in soil	• Exposure to contaminated soils or dust and terrestrial biota to contaminated soils – Pathways deemed incomplete since contamination greater than 1 m below ground surface. • Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since modelling shows hydrocarbons in soils in groundwater not migrating to primary receptor, the nearby marine harbor.	Would meet SLRA if contamination remains under 1 m of material or is paved.

Tetra Tech EBA AEC	SLRA Findings for Existing Conditions		Comments
	Contaminants of Concern	**Exposure Pathways for Identified Contaminants of Concern**	
AEC 3A	PCPs in soil	• Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed due to unknown offsite maximum concentration and unknown plume size.	Potential groundwater and soil leachate impacts cannot be fully addressed under SLRA but area has an existing risk assessment/ management plan approved by BC MOE for former CIPA site which includes this area of Property.
AEC 3B	chlorinated phenols and VPH in soil and/or groundwater	• Exposure to contaminated soils or dust and terrestrial biota to contaminated soils – Pathway complete for current conditions since contamination potentially less than 1 m below ground surface and area not paved. • Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed due to unknown offsite maximum concentration and unknown plume size.	Would meet pathways for human and terrestrial biota exposure to contaminated soils if either up to 1 m of clean soil placed above any exposed soils in area or area paved. Potential groundwater and soil leachate impacts cannot be fully addressed under SLRA but area has existing risk assessment/ management plan approved by BC MOE for former CIPA site which includes this area of Property.
AEC 3C	PCPs and Arsenic (As) in soil	• Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete for Arsenic since As in soils is not leachable to levels exceeding CSR AW standard. • Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed for PCPs due to unknown offsite maximum concentration and unknown plume size.	Potential groundwater and soil leachate impacts from PCP soil leachate cannot be fully addressed using SLRA so if legal instrument ever needed for Property in future, PCP contaminated soils would have to be removed until met CSR numerical standards or a detailed risk assessment completed since not part of existing risk assessment/ management plan approved by BC MOE for former CIPA site.
AEC 4	Zinc (Zn) and cadmium (Cd) in soil	• Exposure of terrestrial biota to contaminated soils – Pathway deemed complete for Zinc under current site conditions since contamination less than 1 m below ground surface and area not paved. • Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since Zn and Cd in soils is not leachable to levels exceeding CSR AW standard.	Would meet pathway for terrestrial biota exposure to contaminated soils if either up to 1 m of clean soil placed above any exposed soils in area or area paved.

6.0 CLOSURE

This technical memorandum and its contents are intended for the sole use of the City of Nanaimo for the intended purposes. Tetra Tech EBA Inc. does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any other Party or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this report is subject to the terms and conditions stated in Tetra Tech EBA's Services Agreement. Tetra Tech EBA's General Conditions are attached as Appendix A to this memo.

Sincerely,
Tetra Tech EBA Inc.

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Attachments: Analytical Tables 1 to 5
Groundwater Model Table 6
Figure 1
Appendix A: Tetra Tech EBA's General Conditions
Appendix B: SLRA Questionnaire

LIST OF REFERENCES

British Columbia Ministry of Environment, September 2010. Technical Guidance #4 – Vapour Investigation and Remediation.

British Columbia Ministry of Environment, July 2010. Technical Guidance #6 – Groundwater Use Determination at Contaminated Sites.

British Columbia Ministry of Environment, June 2010a. Protocol 6 – Eligibility of Applications for Review by Approved Professionals.

British Columbia Ministry of Environment, June 2010b. Protocol 11 - Upper Cap Concentration of Substances.

British Columbia Ministry of Environment, June 2010c. Protocol 12 - Site Risk Classification, Reclassification and Reporting.

British Columbia Ministry of Environment, August 2008. Protocol 13 – Screening Level Risk Assessment.

Government of British Columbia. British Columbia Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014, January 31, 2014).

Tetra Tech EBA Inc., October 2014. Stage 1 Preliminary Site Investigation, 1 Port Drive. City of Nanaimo, Nanaimo, British Columbia.

Tetra Tech EBA Inc., October 2015. Detailed Site Investigation, 1 Port Drive. City of Nanaimo, Nanaimo, British Columbia.

TABLES

Tables 1 to 6

Table 1: Soil Analytical Results - Metals

Parameter	Unit	Protocol 11	Protocol 4	CSR CL and IL - Intake of Contaminated Soil	CSR CL and IL - GW flow to marine used by aquatic life	CSR CL and IL - Toxicity to soil invertebrates and plants	TT EBA APEC/AEC												
							Borehole	BH09-2		BH09-19		14BH01				14BH02			
							Field ID	BH09-2-2	BH09-5	BH09-19-2	BH09-19-5	14BH01-1	DUP.2	14BH01-2	14BH01-3	14BH02-1	14BH02-2	14BH02-3	14BH02-4
							Depth	0.8 - 0.9	2.3 - 2.4	0.8 - 0.9	2.4 - 2.6	0.5 - 0.9		1.55 - 1.7	2.44 - 2.59	0.65 - 0.75	1.15 - 1.27	2.15 - 2.3	2.5 - 2.67
							Date	4/6/2009	4/6/2009	4/6/2009	4/6/2009	9/15/2014		9/15/2014	9/15/2014	9/15/2014	9/15/2014	9/15/2014	9/15/2014
Metals																			
Arsenic	mg/kg	1,000	10	300	25	100		-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	1,000	0.35	100	$2^{\#2}$	500		-	-	-	-	0.375	0.357	0.194	0.226	0.32	0.461	0.441	1.09
Chromium	mg/kg	3,000	90	300	60	700		**140**	68	80	**93**	**130**	**116**	83.6	88.4	**124**	**125**	82	19.4
Chromium (Trivalent)	mg/kg	-	90	-	95	700		-	-	-	-	**130**	-	-	-	-	**124**	-	-
Zinc	mg/kg	6,000	100	30000	$150^{\#2}$	600		-	-	-	-	87.7	82.7	65.5	44	69.9	83.7	68.4	40.2

NOTES:

#1	Schedule 10 Substance
#2	Standard is pH dependant
-	Not analyzed, not applicable data, or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 12

Table 1: Soil Analytical Results - Metals

Parameter	Unit	Protocol 11	Protocol 4	CSR CL and IL - Intake of Contaminated Soil	CSR CL and IL - GW flow to marine used by aquatic life	CSR CL and IL - Toxicity to soil invertebrates and plants	TT EBA APEC/AEC	AEC 1																	
							Borehole	14BH03		14BH04			14BH17				14BH19				14BH20				
							Field ID	14BH03-1	14BH03-2	14BH04-2	14BH04-3	14BH04-4	14BH17-2	14BH17-3	14BH18-2	14BH18-3	14BH19-1	14BH19-3	DUP1	14BH19-4	14BH20-1	14BH20-2	14BH20-3	14BH20-4	14BH20-5
							Depth	0.55 - 0.7	1.35 - 1.45	0.95 - 1.05	2.29 - 2.44	3.53 - 3.70	1.05 - 1.2	2.34 - 2.49	1.68 - 1.8	2.57 - 2.74	0.66 - 0.78	1.9 - 2.05		3.96 - 4.11	0.62 - 0.75	1.8 - 1.98	2.82 - 3.0	3.86 - 4.04	5.33 - 5.49
							Date	9/16/2014	9/16/2014	9/16/2014	9/16/2014	9/16/2014	9/15/2014	9/15/2014	9/15/2014	9/15/2014	9/15/2014	9/15/2014		9/15/2014	9/16/2014	9/16/2014	9/16/2014	9/16/2014	9/16/2014
Metals																									
Arsenic	mg/kg	1,000	10	300	25	100		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	1,000	0.35	100	2#2	500		0.659	0.293	0.351	0.555	0.156	0.089	0.402	0.129	0.132	0.093	0.187	0.145	-	0.321	0.257	0.194	0.206	-
Chromium	mg/kg	3,000	90	300	60	700		71.5	77.1	**138**	52.6	18.9	22.7	78.1	86.5	57.4	15.4	85.9	**95**	81.9	**109**	**115**	81.6	**96.8**	77.1
Chromium (Trivalent)	mg/kg	-	90	-	95	700		-	-	**138**	-	-	-	-	-	-	-	-	-	-	-	**115**	-	**96.8**	-
Zinc	mg/kg	6,000	100	30000	150#2	600		24.3	48.7	80.3	48.1	34.2	52.6	61.5	107	134	34.8	47.9	48.6	-	73.1	70.2	65.1	57.9	-

NOTES:

#1	Schedule 10 Substance
#2	Standard is pH dependant
-	Not analyzed, not applicable data, or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 12

Table 1: Soil Analytical Results - Metals

Parameter	Unit	Protocol 11	Protocol 4	CSR CL and IL - Intake of Contaminated Soil	CSR CL and IL - GW flow to marine used by aquatic life	CSR CL and IL - Toxicity to soil invertebrates and plants
Metals						
Arsenic	mg/kg	1,000	10	300	25	100
Cadmium	mg/kg	1,000	0.35	100	$2^{\#2}$	500
Chromium	mg/kg	3,000	90	300	60	700
Chromium (Trivalent)	mg/kg	-	90	-	95	700
Zinc	mg/kg	6,000	100	30000	$150^{\#2}$	600

TT EBA APEC/AEC	AEC 2								
Borehole	**14BH05**		**14BH06**		**14BH07**		**14BH08**		
Field ID	**14BH05-2**	**14BH05-6**	**14BH06-2**	**14BH06-6**	**14BH07-1**	**14BH07-3**	**14BH08-2**	**14BH08-4**	**DUP.3**
Depth	**1.67 - 1.83**	**5.64 - 6.1**	**2.12 - 2.22**	**6.68 - 6.78**	**1.22 - 1.35**	**3.81 - 3.96**	**2.1 - 2.25**	**4.57 - 4.88**	
Date	**9/15/2014**	**9/15/2014**	**9/17/2014**	**9/17/2014**	**9/17/2014**	**9/17/2014**	**9/16/2014**	**9/16/2014**	
Metals									
Arsenic	-	-	-	-	-	-	-	-	-
Cadmium	0.345	-	0.282	-	0.311	0.232	0.414	0.417	0.428
Chromium	32.7	12.9	69.2	14.3	42.6	29.3	75	64	66.5
Chromium (Trivalent)	-	-	-	-	-	-	-	-	-
Zinc	23.2	-	61.5	-	52.6	47.6	45.9	41	42.7

TT EBA APEC/AEC	AEC 2									
Borehole	**14BH09**					**14BH26**	**14BH10**	**14BH11**	**14BH12**	**14BH13**
Field ID	**14BH09-2**	**14BH09-3**	**14BH09-5**	**14BH09-6**	**14BH09-7**	**14BH26-7**	**14BH10-2**	**14BH11-4**	**14BH12-1**	**14BH13-2**
Depth	**2.13 - 2.29**	**4.04 - 4.17**	**5.18 - 5.44**	**6.86 - 7.01**	**8.31 - 8.46**	**6.88 - 7.01**	**1.12 - 1.35**	**3.56 - 3.71**	**0.56 - 0.71**	**1.0 - 1.2**
Date	**9/16/2014**	**9/16/2014**	**9/16/2014**	**9/16/2014**	**9/16/2014**	**11/12/2014**	**9/17/2014**	**9/17/2014**	**9/17/2014**	**9/17/2014**
Metals										
Arsenic	-	-	-	-	-	-	-	-	-	-
Cadmium	0.295	0.403	-	0.303	-	-	0.209	0.23	0.202	0.255
Chromium	56.2	56.3	43.9	**116**	24.1	**93.1**	19.9	14.2	17.3	15.7
Chromium (Trivalent)	-	-	-	**116**	-		-	-	-	-
Zinc	48.2	22.5	-	86.8	-	-	47.1	24.5	27.8	25.5

NOTES:

#1	Schedule 10 Substance
#2	Standard is pH dependant
-	Not analyzed, not applicable data, or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 12

Table 1: Soil Analytical Results - Metals

Parameter	Unit	Protocol 11	Protocol 4	CSR CL and IL - Intake of Contaminated Soil	CSR CL and IL - GW flow to marine used by aquatic life	CSR CL and IL - Toxicity to soil invertebrates and plants	TT EBA APEC/AEC	AEC 3			AEC 4												
							Borehole	BH09-23			14BH24			14BH25						14BH32			
							Field ID	BH09-23-1	BH09-23-2	BH09-23-3	14BH24-1	14BH24-2	14BH24-3	14BH25-1	14BH25-2	DUP 11	14BH25-3	14BH25-4	14BH25-5	14BH32-1	14BH32-2	14BH32-3	14BH32-5
							Depth	0.3 - 0.5	0.8 - 0.9	2.3 - 2.4	0.63 - 0.75	1.2 - 1.25	2.13 - 2.29	1.05 - 1.25	1.85 - 2.1		2.72 - 2.84	3.73 - 3.85		0.5 - 0.67	1.25 - 1.4	2.5 - 2.67	4.27 - 4.42
							Date	4/7/2009	4/7/2009	4/7/2009	9/18/2014	9/18/2014	9/18/2014	9/18/2014	9/18/2014		9/18/2014	9/18/2014	9/18/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014
Metals																							
Arsenic	mg/kg	1,000	10	300	25	100		-	**27**	8.6	-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	1,000	0.35	100	2#2	500		-	-	-	0.349	0.307	0.238	**4.23**	**4.77**	**4.11**	0.207	0.462	-	0.308	0.361	0.467	-
Chromium	mg/kg	3,000	90	300	60	700		-	-	-	54.8	-	-	-	46.7	49.3	-	**123**	**99.7**	-	-	44.6	17.8
Chromium (Trivalent)	mg/kg	-	90	-	95	700		-	-	-	-	-	-	-	-	-	-	**123**	-	-	-	-	-
Zinc	mg/kg	6,000	100	30000	150#2	600		-	-	-	69	48	85.6	**1460**	**1950**	**1750**	140	146	-	60	172	69.6	-

NOTES:

#1	Schedule 10 Substance
#2	Standard is pH dependant
-	Not analyzed, not applicable data, or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 12

Table 1: Soil Analytical Results - Metals

Parameter	Unit	Protocol 11	Protocol 4	CSR CL and IL - Intake of Contaminated Soil	CSR CL and IL - GW flow to marine used by aquatic life	CSR CL and IL - Toxicity to soil invertebrates and plants	TT EBA APEC/AEC						APEC 12					APEC 13		
							Borehole	14BH33					14BH28		14BH29		14BH30	14BH31		
							Field ID	14BH33-2	DUPD	14BH33-3	14BH33-5	14BH33-6	14BH28-2	14BH28-4	14BH29-1	14BH29-3	14BH30-2	14BH31-1	DUPC	14BH31-4
							Depth	1.1 - 1.24		2.4 - 2.55	4.27 - 4.42	5.74 - 6.02	0.8 - 0.95	3.88 - 4.0	0.4 - 0.5	2.35 - 2.49	1.98 - 2.13	0.5 - 0.7		3.35 - 3.51
							Date	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014	11/13/2014
Metals																				
Arsenic	mg/kg	1,000	10	300	25	100		-	-	-	-	-	-	-	-	-	-	-	-	-
Cadmium	mg/kg	1,000	0.35	100	$2^{\#2}$	500		0.2	0.164	0.173	-	-	0.326	0.238	0.296	0.234	0.16	0.352	0.393	0.132
Chromium	mg/kg	3,000	90	300	60	700		-	-	-	**91.6**	63.4	39.2	**92.9**	48.7	73	81	**109**	**102**	15.2
Chromium (Trivalent)	mg/kg	-	90	-	95	700		-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	mg/kg	6,000	100	30000	$150^{\#2}$	600		39.8	37.8	40.2	-	-	14.5	70.9	45.6	93.5	63.6	108	100	28.4

NOTES:

#1	Schedule 10 Substance
#2	Standard is pH dependant
-	Not analyzed, not applicable data, or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commerical Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil. - Toxicity to soil invertebrates and plants. - Groundwater flow to surface water used by marine aquatic life. Most stringent applicable site specific factor is shown.
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 12

Table 2: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 11	CSR Schedule 4 & 10 - CL/IL	TT EBA APEC/AEC	AEC 2								
				Borehole	BH09-21		00BH07						
				Field ID	BH09-21-2	BH09-21-8	00BH07-3	00BH07-4A	00BH07-4B	14BH05-3	14BH05-5	14BH05-6	14BH05-7
				Depth	0.8 -0.9	4.9 - 5.0	3.8 - 4.4	5.0 - 6.0	5.0 - 6.0	2.36 - 2.54	5.18 - 5.33	5.64 - 6.1	6.93 - 7.21
				Date	4/7/2009	4/7/2009	8/24/2000	8/24/2000	8/24/2000	9/15/2014	9/15/2014	9/15/2014	9/15/2014
Hydrocarbons													
EPH C10-C19	mg/kg	20,000	*		403	**21300**	-	-	-	722	1040	917	<100
EPH C19-C32	mg/kg	50,000	*		423	**6690**	-	-	-	926	1260	817	<100
LEPH	mg/kg	20,000	2000		-	-	810	**3500**	**2000**	714	1030	909	-
HEPH	mg/kg	50,000	5000		-	-	-	-	-	925	1260	817	-
VPH	mg/kg	2,000	200		-	-	-	-	-	-	-	-	-

Parameter	TT EBA APEC/AEC													
	Borehole	14BH06												
	Field ID	14BH06-2	14BH06-3	DUP 6	14BH06-4	14BH06-5	14BH06-6	14BH07-3	14BH07-4	14BH07-5	14BH08-3	14BH08-4	DUP.3	14BH08-5
	Depth	2.12 - 2.22	3.91 - 4.11		4.88 - 5.03	5.59 - 5.79	6.68 - 6.78	3.81 - 3.96	4.88 - 5.03	5.56 - 5.72	3.91 - 4.06	4.57 - 4.88		5.33 - 5.49
	Date	9/17/2014	9/17/2014		9/17/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014	9/16/2014	9/16/2014		9/16/2014
Hydrocarbons														
EPH C10-C19		881	1320	1400	**2340**	182	<100	261	403	<100	372	166	151	<100
EPH C19-C32		1110	950	1020	782	196	<100	340	390	<100	375	209	182	<100
LEPH		868	-	-	**2340**	180	-	259	400	-	-	164	149	-
HEPH		1110	-	-	781	196	-	340	389	-	-	209	181	-
VPH		-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C10-C19 concentrations compared to the LEPH standard and EPH C19-C32 concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commercial Land Use
IL	Industrial Land Use
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 12

Table 2: Soil Analytical Results - Hydrocarbons, PAHs and Glycols

Parameter	Unit	Protocol 11	CSR Schedule 4 & 10 - CL/IL	TT EBA APEC/AEC														AEC 3				
				Borehole								14BH26		14BH27				14BH10			14BH34	14BH35
				Field ID	14BH09-3	14BH09-4	14BH09-5	DUP5	14BH09-6	14BH09-7	14BH09-8	14BH26-4	14BH26-5	14BH27-4	DUPA	14BH27-5	14BH27-6	14BH10-1	14BH10-2	14BH10-3	14BH34-02	14BH35-03
				Depth	4.04 - 4.17	4.77 - 4.90	5.18 - 5.44		6.86 - 7.01	8.31 - 8.46	8.76 - 8.92	4.27 - 4.42	5.1 - 5.25	3.76 - 4.0		5.05 - 5.23	5.72 - 5.84	0.71 - 0.84	1.12 - 1.35	2.18 - 2.44	1.15 - 1.28	2.18 - 2.36
				Date	9/16/2014	9/16/2014	9/16/2014		9/16/2014	9/16/2014	9/16/2014	11/12/2014	11/12/2014	11/12/2014	11/12/2014	11/12/2014	11/12/2014	9/17/2014	9/17/2014	9/17/2014	11/14/2014	11/14/2014
Hydrocarbons																						
EPH C10-C19	mg/kg	20,000	*		493	1400	**10,100**	**10,400**	250	2050	<100	1210	1060	1240	1280	533	105	-	-	-	-	-
EPH C19-C32	mg/kg	50,000	*		558	1420	3090	3330	294	**11,700**	202	1240	1120	1130	1070	409	111	-	-	-	-	-
LEPH	mg/kg	20,000	2000		486	1390	**10,100**	**10,400**	245	-	-	-	-	-	-	-	-	-	-	-	-	-
HEPH	mg/kg	50,000	5000		557	1420	3090	3330	294	-	-	-	-	-	-	-	-	-	-	-	-	-
VPH	mg/kg	2,000	200		-	<10	110	70	-	-	-	-	-	-	-	-	-	-	**320**	**570**	<10	<10

NOTES:

-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
*	EPH C10-C19 concentrations compared to the LEPH standard and EPH C19-C32 concentrations compared to the HEPH standard.
EPHs	Extractable Petroleum Hydrocarbons
LEPHs/HEPHs	Light and Heavy EPHs
PAHs	Polycyclic Aromatic Hydrocarbons
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commercial Land Use
IL	Industrial Land Use
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 1

Table 3: Soil Analytical Results - VOCs and Phenols

Parameter	Unit	Protocol 11	CSR CL and IL - Intake of Contaminated Soil	CSR CL and IL - GW flow to marine used by aquatic life	CSR CL and IL - Toxicity to soil invertebrates and plants	CSR Schedule 4 & 10 - CL/IL	TT EBA APEC/AEC															
							Borehole	BH09-23			BH09-10		BH09-22		14BH10							
							Field ID	BH09-23-1	BH09-23-2	BH09-23-3	BH09-10-2	BH09-10-3	BH09-22-1	BH09-22-2	14BH10-1	14BH10-2	14BH10-3	14BH10-4	14BH10-5	14BH10-6	14BH11-2
							Depth	0.3 - 0.5	0.8 - 0.9	2.3 - 2.4	0.3 - 0.6	1.2 - 1.4	0.3 - 0.5	3.7 - 4.0	0.71 - 0.84	1.12 - 1.35	2.18 - 2.44	3.78 - 3.9	4.98 - 5.13	5.9 - 6.1	0.77 - 0.95
							Date	4/7/2009	4/7/2009	4/7/2009	4/8/2009	4/8/2009	4/7/2009	4/7/2009	9/17/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014	9/17/2014
Phenols																						
2,3,4,6-tetrachlorophenol	mg/kg	50	-	-	-	5		-	-	-	-	-	-	-	0.16	**170**	**57**	1.5	**6.9**	0.14	0.0063
2,4,5-trichlorophenol	mg/kg	50	-	-	-	5		-	-	-	-	-	-	-	0.19	**6.7**	2.8	1.8	2.5	<0.05	<0.005
3,4 Dichlorophenol	mg/kg	50	-	-	-	5		-	-	-	-	-	-	-	1.1	0.34	0.068	4	**10**	<0.1	<0.005
Pentachlorophenol	mg/kg	500	300	0.15	50	-		**0.77**	0.09	-	**0.2**	**1.2**	**0.47**	<0.03	**0.4**	**140**	**25**	**0.87**	**1.4**	0.083	0.035

NOTES:

#1	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil.
	- Toxicity to soil invertebrates and plants.
	- Groundwater flow to surface water used by marine aquatic life.
	Most stringent applicable site specific factor is shown.
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 12

Table 3: Soil Analytical Results - VOCs and Phenols

Parameter	Unit	Protocol 11	CSR CL and IL - Intake of Contaminated Soil	CSR CL and IL - GW flow to marine used by aquatic life	CSR CL and IL - Toxicity to soil invertebrates and plants	CSR Schedule 4 & 10 - CL/IL	TT EBA APEC/AEC	AEC 3																
							Borehole	14BH11		14BH12				14BH13			14BH34		14BH35			14BH14		
							Field ID	14BH11-4	14BH11-6	14BH12-1	14BH12-2	DUP 8	14BH12-4	14BH13-1	14BH13-2	14BH13-4	14BH34-01	14BH34-04	14BH35-02	14BH35-03	14BH35-06	14BH14-1	14BH14-2	14BH14-3
							Depth	3.56 - 3.71	5.3 - 5.49	0.56 - 0.71	1.17 - 1.30		3.91 - 4.04	0.5 - 0.6	1.0 - 1.2	3.53 - 3.61	0.4 - 0.55	3.4 - 3.5	1.32 - 1.45	2.18 - 2.36	4.72 - 4.87	0.3 - 0.43	0.83 - 0.96	2.13 - 2.25
							Date	9/17/2014	9/17/2014	9/17/2014	9/17/2014		9/17/2014	9/17/2014	9/17/2014	9/17/2014	11/14/2014	11/14/2014	11/14/2014	11/14/2014	11/14/2014	9/18/2014	9/18/2014	9/18/2014
Phenols																								
2,3,4,6-tetrachlorophenol	mg/kg	50	-	-	-	5		2.5	0.098	<0.005	0.55	0.81	<0.005	<0.05	<0.005	0.012	<0.005	<0.005	0.037	0.045	<0.025	0.17	<0.005	<0.05
2,4,5-trichlorophenol	mg/kg	50	-	-	-	5		0.44	<0.05	<0.005	0.015	0.029	<0.005	<0.05	<0.005	0.011	<0.005	<0.005	<0.005	<0.005	<0.025	<0.05	<0.005	<0.05
3,4 Dichlorophenol	mg/kg	50	-	-	-	5		1.8	<0.05	<0.005	<0.005	<0.005	<0.005	<0.05	<0.005	0.033	<0.005	<0.005	<0.005	<0.005	<0.077	<0.05	<0.005	<0.05
Pentachlorophenol	mg/kg	500	300	0.15	50	-		**1.5**	0.12	0.0053	0.01	0.012	<0.005	0.061	<0.005	0.052	0.014	<0.005	0.053	0.052	<0.025	**0.27**	0.0064	<0.05

NOTES:

#1	Schedule 10 Substance
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
CL	Commercial Land Use
IL	Industrial Land Use
Site specific factors include:	- Intake of contaminated soil.
	- Toxicity to soil invertebrates and plants.
	- Groundwater flow to surface water used by marine aquatic life.
	Most stringent applicable site specific factor is shown.
Bold and Shaded	Bold and shaded indicates an exceedance of the CSR CL/IL Use Standards.
Bold and Shaded	Bold and shaded indicates an exceedance of Protocol 11 and a complete pathway as per Protocol 12

Table 4: Leachable Soil Analytical Results

Parameter	Units	CSR Schedule 6 - AW	HWR	TT EBA APEC/AEC	AEC 1						AEC 2		AEC 3			AEC 4		APEC 13
				Borehole	14BH01	14BH02	14BH04	14BH18	14BH20		14BH09		14BH10	14BH11	14VP05	14BH25		14BH31
				Sample ID	14BH01-1	14BH02-2	14BH04-2	14BH18-2	14BH20-2	14BH20-4	14BH09-5	14BH09-6	14BH10-2	14BH11-4	14VP05-1	14BH25-2	14BH25-4	14BH31-1
				Date	15/09/2014	15/09/2014	15/09/2014	15/09/2014	16/09/2014	16/09/2014	16/09/2014	16/09/2014	17/09/2014	17/09/2014	14/11/2014	18/09/2014	18/09/2014	14/11/2014
SPLP																		
Arsenic	mg/L	5	NS		-	-	-	-	-	-	-	-	-	-	0.0023	-	-	-
Cadmium (Cd)	mg/L	0.001	NS		-	-	-	-	-	-	-	-	-	-	-	0.000141	-	-
Chromium (Cr)	mg/L	0.15	NS		0.0011	<0.0010	0.0101	-	0.0403	0.0231	-	0.0021	-	-	-	-	0.0411	0.0014
Zinc (Zn)	mg/L	0.1	NS		-	-	-	-	-	-	-	-	-	-	-	0.074	-	-

NOTES:

-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 4, 5 and 10).
AW	Marine Aquatic Life
Bold and Shaded	Bold and shaded indicates an exceedance.

Table 5: Groundwater Analytical Results - Phenols

Parameter	Unit	CSR - AW	Protocol 11 - Upper Cap Concentration	APEC	AEC 1/APEC 13				AEC 2	AEC 3						
				Date	24-Sep-2014	1-Apr-2015	24-Sep-2014	1-Apr-2015	8-Apr-2015	21-Apr-2009	25-Sep-2014	25-Sep-2014	20-Nov-2014	6-Apr-2015	6-Apr-2015	24-Sep-2014
				Location	14MW02	14MW02	14MW19	14MW19	MW00-07	MW09-10	14MW10	DUP3	14MW10	14MW10	DUP5	14MW11
General																
pH (field)	pH Units	-	-		6.59	6.98	6.41	6.80	6.96	-	6.7	-	6.72	6.97	-	7.14
Temperature (field)	°C	-	-		17.3	13.1	20.5	11.2	13.2	-	14	-	13.5	12.5	-	15
Phenols																
2,3- Dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	<0.1	-	-	<0.10	<0.10	<0.1
2,3,4,5-tetrachlorophenol	µg/L	2 - 180 [#1]	20 - 1800 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.3	<0.1	-	-	<20	<20	<0.1
2,3,4,6-tetrachlorophenol	µg/L	2 - 180 [#1]	20 - 1800 [#1]		<0.1	<0.10	<0.1	<0.10	-	**38**	4.2	-	-	**760** [#2]	**850** [#2]	0.24
2,3,4-Trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.2	<0.1	-	-	0.91	0.85	<0.1
2,3,5,6-Tetrachlorophenol	µg/L	2 - 180 [#1]	20 - 1800 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.4	<0.1	-	-	1.4	1.3	<0.1
2,3,5-Trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.3	<0.1	-	-	0.12	0.12	<0.1
2,3,6-Trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	<0.1	-	-	0.26	0.23	<0.1
2,4,5-trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	**2.4**	-	-	-	**35** [#2]	**38** [#2]	<0.1
2,4,6-trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.1	<0.1	-	-	0.75	0.72	<0.1
2,4-dimethylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	<0.5	-	-	-	-	-	-
2,4-dinitrophenol	µg/L	-	-		<0.5	-	<0.5	-	-	<0.5	-	-	-	-	-	-
2,6-dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	<0.1	-	-	<0.10	<0.10	<0.1
2,6-Dimethylphenol	µg/L	-	-		<0.5	<0.50	<0.5	<0.50	-	-	-	-	-	<0.50	<0.50	-
2.4 & 2.5-Dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.2	0.13	-	-	2.8 [#2]	2.9 [#2]	<0.1
2-chlorophenol	µg/L	8.5 - 650 [#1]	85 - 6500 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	<0.1	-	-	<0.10	<0.10	<0.1
2-methylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	<0.5	-	-	-	-	-	-
2-nitrophenol	µg/L	-	-		<0.5	-	<0.5	-	-	<0.5	-	-	-	-	-	-
3 & 4 -Chlorophenol	µg/L	8.5 - 650 [#1]	85 - 6500 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	3.8	-	-	<21	<27	<0.1
3-&4-methylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	<0.5	-	-	-	-	-	-
3,4 Dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.8	5.1	-	-	**85** [#2]	**100** [#2]	<0.1
3,4,5-Trichlorophenol	µg/L	1 - 270 [#1]	10 - 2700 [#1]		<0.1	<0.10	<0.1	<0.10	-	<0.1	<0.1	-	-	**5.4** [#2]	**5.2** [#2]	<0.1
3,4-Dimethylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	-	-	-	-	-	-	-
3,5-Dichlorophenol	µg/L	2.5 - 340 [#1]	25 - 3400 [#1]		<0.1	<0.10	<0.1	<0.10	-	0.2	<0.1	-	-	0.55	0.54	<0.1
4,6-Dinitro-2-methylphenol	µg/L	-	-		<0.5	-	<0.5	-	-	<0.5	-	-	-	-	-	-
4-nitrophenol	µg/L	-	-		<0.5	-	<0.5	-	-	<0.5	-	-	-	-	-	-
Pentachlorophenol	µg/L	1 - 27.5 [#1]	10 - 275 [#1]		<0.1	<0.10	<0.1	<0.10	-	**44**	0.89	0.91	-	**390**	**450**	0.46
Phenol	µg/L	-	-		<0.5	-	<0.5	-	-	<0.5	-	-	-	-	-	-

NOTES:

#1	Standard varies with pH, temperature and substance isomer. Range shown.
#2	Value within CSR standard range. Sample specific standard used based off pH of 6.97 and temperature of 12.5 °C. See Technical Guidance on Contaminated Sites 9, Chlorophenol Aquatic Life Water Quality Standards.
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes and Styrene.
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 6 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014) Table 5.
AW	Marine Aquatic Life Water Use
Bold and Underlined	Bold and underled indicates an exceedence of the applicable CSR AW standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentration.

Table 5: Groundwater Analytical Results - Phenols

Parameter	Unit	CSR - AW	Protocol 11 - Upper Cap Concentration	APEC		AEC 3						AEC 4					
				Date	8-Apr-2015	24-Sep-2014	8-Apr-2015	25-Sep-2014	8-Apr-2015	20-Nov-2014	1-Apr-2015	25-Sep-2014	8-Apr-2015	25-Sep-2014	6-Apr-2015	25-Sep-2014	1-Apr-2015
				Location	14MW11	14MW12	14MW12	14MW13	14MW13	14MW35	14MW35	14MW14	14MW14	14MW15	14MW15	14MW16	14MW16
General																	
pH (field)	pH Units	-	-		7.09	7.12	7.07	7.16	7.10	6.45	-	6.98	7.13	6.41	6.77	6.71	6.75
Temperature (field)	°c	-	-		12.5	15.9	12.0	14.5	12.8	14.32	-	13.6	12.8	13.3	12.0	15.6	14.0
Phenols																	
2,3- Dichlorophenol	µg/L	2.5 - 340 #1	25 - 3400 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2,3,4,5-tetrachlorophenol	µg/L	2 - 180 #1	20 - 1800 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	<0.10	<0.1	<0.10	<0.1	<0.10
2,3,4,6-tetrachlorophenol	µg/L	2 - 180 #1	20 - 1800 #1		0.19	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2,3,4-Trichlorophenol	µg/L	1 - 270 #1	10 - 2700 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	-	<0.10	<0.1	<0.10
2,3,5,6-Tetrachlorophenol	µg/L	2 - 180 #1	20 - 1800 #1		0.12	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2,3,5-Trichlorophenol	µg/L	1 - 270 #1	10 - 2700 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2,3,6-Trichlorophenol	µg/L	1 - 270 #1	10 - 2700 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2,4,5-trichlorophenol	µg/L	1 - 270 #1	10 - 2700 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2,4,6-trichlorophenol	µg/L	1 - 270 #1	10 - 2700 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2,4-dimethylphenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
2,4-dinitrophenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
2,6-dichlorophenol	µg/L	2.5 - 340 #1	25 - 3400 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2,6-Dimethylphenol	µg/L	-	-		<0.50	-	<0.50	-	<0.50	-	<0.50	-	<0.50	-	<0.50	-	<0.50
2.4 & 2.5-Dichlorophenol	µg/L	2.5 - 340 #1	25 - 3400 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2-chlorophenol	µg/L	8.5 - 650 #1	85 - 6500 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
2-methylphenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
2-nitrophenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
3 & 4 -Chlorophenol	µg/L	8.5 - 650 #1	85 - 6500 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
3-&4-methylphenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
3,4 Dichlorophenol	µg/L	2.5 - 340 #1	25 - 3400 #1		0.19	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
3,4,5-Trichlorophenol	µg/L	1 - 270 #1	10 - 2700 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
3,4-Dimethylphenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
3,5-Dichlorophenol	µg/L	2.5 - 340 #1	25 - 3400 #1		<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
4,6-Dinitro-2-methylphenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
4-nitrophenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	µg/L	1 - 27.5 #1	10 - 275 #1		0.15	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10	<0.1	<0.10
Phenol	µg/L	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:

#1	Standard varies with pH, temperature and substance isomer. Range shown.
#2	Value within CSR standard range. Sample specific standard used based off pH of 6.97 and temperature of 12.5 °C. See Technical Guidance on Contaminated Sites 9, Chlorophenol Aquatic Life Water Quality Standards.
BTEXS	Benzene, Toluene, Ethylbenzene, Xylenes and Styrene.
-	Not analyzed or no CSR standard exists.
<	Concentration is less than the laboratory detection limit indicated.
CSR	BC Contaminated Sites Regulation (BC Reg. 375/96, includes amendments up to B.C. Reg. 4/2014 - January 31, 2014 - Schedules 6 and 10).
Protocol 11	Protocol 11 Upper Cap Concentrations for Substances Listed in the Contaminated Sites Regulation Version 2.1 (February 1, 2014) Table 5.
AW	Marine Aquatic Life Water Use
Bold and Underlined	Bold and underlerd indicates an exceedence of the applicable CSR AW standards.
Shaded	Shaded indicates an exceedence of the applicable Protocol 11 Upper Cap concentration.

Table 6 - SOIL LEACHATE AND GROUNDWATER TRANSPORT ASSESSMENT

Taken from BC MOE Protocol 13 - Screening Level Risk Assessment, Appendix A

Site	City of Nanaimo
Parameter	LEPH and EPH C10-19

Determining Soil Leachate Concentrations

Enter the Following Parameters:

η_a =	0.241	n/a	Air filled porosity (default value 0.241)
η_w =	0.119	n/a	Water filled porosity (default value 0.119)
ρ_b =	1.7	g/cm^3	Dry bulk density (default value 1.7 g/cm^3)
H' =	5.70E-02	n/a	Dimensionless Henry's law constant (Table A-1)
K_{oc} =	2500	n/a	Organic carbon partitioning coefficient (Table A-1)
F_{oc} =	0.006	n/a	Fraction of organic carbon (default value 0.006)
C_s =	21,300	mg/kg	Soil concentration

Calculations:

C_L =	**1,412,647**	**µg/L**	**Predicted Soil Leachate Concentration (Equation A-1)**

Calculating Potential Groundwater Concentrations Originating from Leachate

Enter the Following Parameters:

V =	4.70	m/year	Darcy flux or specific discharge
I =	0.55	m/year	Infiltration rate (default value is 0.55 m/yr)
L =	140	m	Contaminant source length parallel to groundwater flow (the contaminant source zone is defined by the extent of contaminated soils above the water table)
d_a =	-	m	Aquifer thickness

Calculations:

d =	0.5	m	Mixing zone depth (default value 0.5 m) or Equation A-4
DF =	1.0	n/a	Dilution Factor (lowest of: 1 for sites where contamination extends below the water table, 20 for sites where groundwater is flowing to a well for drinking water, irrigation water or livestock watering uses, or value from Equation A-3)
C_{GW} =	**1,370,810**	**µg/L**	**Contaminant Concentration in Groundwater Beneath Contaminated Soils (accounts for mixing across the water table) Equation A-2**
Standard =	500	**µg/L**	***CSR guideline groundwater for the protection of aquatic life**

Potential Groundwater Concentrations at Receiving Environments

Enter the Following Parameters:

C_{gw} =	1,370,810	μg/L	Groundwater concentration at the source (Use max. value from above or theoretical solubility if LNAPL accumulations are observed in wells)
x_R =	80	m	Distance from the downgradient edge of the contaminant plume to the receiving environment (property line, highwater line or nearest well - depends on question)
Y =	60	m	Source zone width perpendicular to groundwater flow direction
α_L =	8	m	Longitudinal Dispersivity (10% X or 10m, whichever is less)
α_T =	0.8	m	Transverse Dispersivity (10% α_L)
λ =	0.15	1/years	Degradation Rate (Table A-1 or 0 1/years)
v =	13.4	m/year	average linear groundwater velocity (5 m/yr or site calculated value, whichever is greater)
η_w =	0.3	n/a	Water filled porosity (default value 0.3)
ρ_b =	1.7	g/cm^3	Dry bulk density (default value 1.7 g/cm^3)
K_{oc} =	2500	n/a	Organic carbon partitioning coefficient (Table A-1)
F_{oc} =	0.006	n/a	Fraction of organic carbon (default value 0.006)

Calculations:

R (organic) =	86	n/a	Retardation coefficient for organic compounds
R (inorganic) =	n/a	n/a	Retardation coefficient for inorganic compounds
R =	86	n/a	Retardation Coefficient
$C(x_R)$ =	**1.1E-04**	**μg/L**	**Predicted Groundwater Concentration at the Receiving Environment (Equation A-5)**

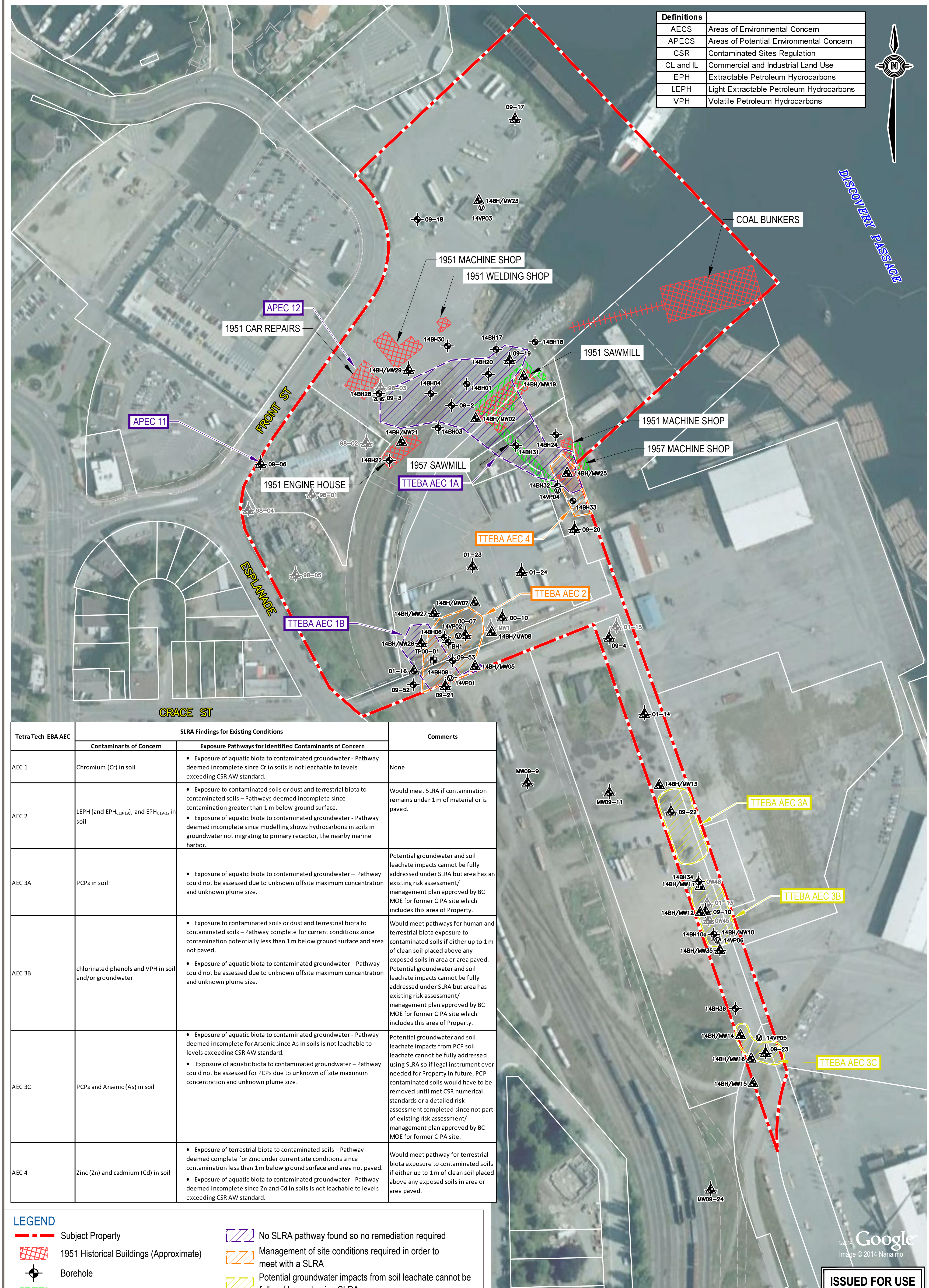
BLUE text - default OR site-specific parameters
Aqua text - chemical specific parameters
RED text - site-specific parameters
BLACK text - calculated parameters

FIGURE

Figure 1

Q:\Vancouver\Drafting\Environmental\ENVIND\ENVIND03511-01\tsk 001\Detailed Site Investigation\ENVIND03511-01.001_FIG 1_R0 - SLRA FEASIBILITY.dwg [FIGURE 1] November 24, 2015 - 2:30:47 pm (BY: FOURNIER, SAMUEL)

Definitions	
AECS	Areas of Environmental Concern
APECS	Areas of Potential Environmental Concern
CSR	Contaminated Sites Regulation
CL and IL	Commercial and Industrial Land Use
EPH	Extractable Petroleum Hydrocarbons
LEPH	Light Extractable Petroleum Hydrocarbons
VPH	Volatile Petroleum Hydrocarbons



Tetra Tech EBA AEC	SLRA Findings for Existing Conditions		Comments
	Contaminants of Concern	Exposure Pathways for Identified Contaminants of Concern	
AEC 1	Chromium (Cr) in soil	• Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since Cr in soils is not leachable to levels exceeding CSR AW standard.	None
AEC 2	LEPH (and EPH_{C10-19}), and EPH_{C19-32} in soil	• Exposure to contaminated soils or dust and terrestrial biota to contaminated soils – Pathways deemed incomplete since contamination greater than 1 m below ground surface. • Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since modelling shows hydrocarbons in soils in groundwater not migrating to primary receptor, the nearby marine harbor.	Would meet SLRA if contamination remains under 1 m of material or is paved.
AEC 3A	PCPs in soil	• Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed due to unknown offsite maximum concentration and unknown plume size.	Potential groundwater and soil leachate impacts cannot be fully addressed under SLRA but area has an existing risk assessment/ management plan approved by BC MOE for former CIPA site which includes this area of Property.
AEC 3B	chlorinated phenols and VPH in soil and/or groundwater	• Exposure to contaminated soils or dust and terrestrial biota to contaminated soils – Pathway complete for current conditions since contamination potentially less than 1 m below ground surface and area not paved. • Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed due to unknown offsite maximum concentration and unknown plume size.	Would meet pathways for human and terrestrial biota exposure to contaminated soils if either up to 1 m of clean soil placed above any exposed soils in area or area paved. Potential groundwater and soil leachate impacts cannot be fully addressed under SLRA but area has existing risk assessment/ management plan approved by BC MOE for former CIPA site which includes this area of Property.
AEC 3C	PCPs and Arsenic (As) in soil	• Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete for Arsenic since As in soils is not leachable to levels exceeding CSR AW standard. • Exposure of aquatic biota to contaminated groundwater – Pathway could not be assessed for PCPs due to unknown offsite maximum concentration and unknown plume size.	Potential groundwater and soil leachate impacts from PCP soil leachate cannot be fully addressed using SLRA so if legal instrument ever needed for Property in future, PCP contaminated soils would have to be removed until met CSR numerical standards or a detailed risk assessment completed since not part of existing risk assessment/ management plan approved by BC MOE for former CIPA site.
AEC 4	Zinc (Zn) and cadmium (Cd) in soil	• Exposure of terrestrial biota to contaminated soils – Pathway deemed complete for Zinc under current site conditions since contamination less than 1 m below ground surface and area not paved. • Exposure of aquatic biota to contaminated groundwater - Pathway deemed incomplete since Zn and Cd in soils is not leachable to levels exceeding CSR AW standard.	Would meet pathway for terrestrial biota exposure to contaminated soils if either up to 1 m of clean soil placed above any exposed soils in area or area paved.

LEGEND

- Subject Property
- 1951 Historical Buildings (Approximate)
- Borehole
- 1957 Historical Buildings (Approximate)
- Monitoring Well
- Borehole & Monitoring Well
- Test Pit
- Destroyed Monitoring Well
- Vapour Probe
- No SLRA pathway found so no remediation required
- Management of site conditions required in order to meet with a SLRA
- Potential groundwater impacts from soil leachate cannot be fully addressed using SLRA

SCALE 1:2500

20 0 20 60 100m

NOTE
LOCATIONS SHOWN ARE APPROXIMATE.

CLIENT
CITY OF NANAIMO
THE HARBOUR CITY

SLRA FEASIBILITY
1 PORT DRIVE, NANAIMO, BC

SLRA FEASIBILITY RESULTS

TETRA TECH EBA

PROJECT NO.	DWN	CKD	REV
ENVIND03511-01.006	SF	KG	0
OFFICE	DATE		
VANC	January 22, 2015		

Figure 1

APPENDIX A

TETRA TECH EBA'S GENERAL CONDITIONS

GENERAL CONDITIONS

GEOENVIRONMENTAL REPORT

This report incorporates and is subject to these "General Conditions".

1.0 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of Tetra Tech EBA's client. Tetra Tech EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than Tetra Tech EBA's Client unless otherwise authorized in writing by Tetra Tech EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of Tetra Tech EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where Tetra Tech EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed Tetra Tech EBA's instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by Tetra Tech EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of Tetra Tech EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except Tetra Tech EBA. The Client warrants that Tetra Tech EBA's instruments of professional service will be used only and exactly as submitted by Tetra Tech EBA.

Electronic files submitted by Tetra Tech EBA have been prepared and submitted using specific software and hardware systems. Tetra Tech EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

3.0 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by Tetra Tech EBA in its reasonably exercised discretion.

4.0 INFORMATION PROVIDED TO TETRA TECH EBA BY OTHERS

During the performance of the work and the preparation of the report, Tetra Tech EBA may rely on information provided by persons other than the Client. While Tetra Tech EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, Tetra Tech EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

APPENDIX B
SLRA QUESTIONNAIRE

Screening Level Risk Assessment (SLRA) Questionnaire

		Yes	No	Note
GENERAL				
Complete problem formulation.				
Check for any exemptions and preclusions that may apply.				
HUMAN EXPOSURE SCENARIOS				
Exposure to Contaminated Soils or Dust (HS-1 to 3)				
HS-1	Do substance concentrations in soil exceed the applicable standards?	☐	X	1,2
HS-2	Are contaminated soils located within 1 m of ground or an excavation surface?	☐	☐	3
HS-3	Is the ground surface above contaminated soils uncovered?	☐	☐	4
Exposure to Contaminant Vapours (HV-1 to 2)				
HV-1	Do substance concentrations in soil vapour exceed the applicable criteria (for wildlands land use only)?	N/A		5
HV-2	Are humans present on the site for greater than 2 hours per day, 1 day per week?	☐	☐	6
Exposure to Contaminated Groundwater (HW-1 to 3)				
HW-1	Does drinking water use apply at the site?	☐	X	7
HW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of drinking water?			8,2
HW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to an onsite well used for drinking water or beyond the property line, at concentrations greater than the drinking water standards?	☐	☐	9
ECOLOGICAL EXPOSURE SCENARIOS				
Terrestrial Exposure to Contaminated Soils (TS-1 to 5)				
TS-1	Do substance concentrations in soil exceed the applicable standards?	☐	X	10
TS-2	Are contaminated soils located within 1 m of ground surface?	☐	☐	3
TS-3	Is the ground surface above contaminated soils uncovered?	☐	☐	4
TS-4	Is there *potential terrestrial habitat* present? [This question to be completed by a Professional Biologist (RPBio)]	☐	☐	11
TS-5	Does the site contain suitable habitat for specific local species? [This question to be completed by a Professional Biologist (RPBio]	☐	☐	12
Exposure of aquatic biota to contaminated groundwater (AW-1 to 3)				
AW-1	Does aquatic life water use apply at the site?	X	☐	7
AW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of aquatic life?	X	☐	13,2
AW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to downgradient surface water bodies, at concentrations greater than the Aquatic Life water standards?	☐	X	9
Exposure of crops to contaminated groundwater (IW-1 to 3)				
IW-1	Does irrigation water use apply at the site?	☐	X	7
IW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of irrigation watering?	☐	☐	14,2
IW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to a well used for irrigation watering, at concentrations greater than the Irrigation water standards?	☐	☐	9

Screening Level Risk Assessment (SLRA) Questionnaire (Continued)

Exposure of livestock to contaminated groundwater (LW-1 to 3)				
LW-1	Does livestock water use apply at the site?	☐	X	7
LW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of livestock watering?	☐	☐	15,2
LW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to a well used for livestock watering, at concentrations greater than the livestock water standards?	☐	☐	9
DEFAULT STANDARDS				
DF-1	Do substance concentrations in groundwater exceed the default generic numerical water standards for VH_{w6-10} or EPH_{w10-19}?	☐	X	
DF-2	Is there the potential for soil leachate or contaminated groundwater to migrate offsite, at concentrations greater than the VH_{w6-10} or EPH_{w10-19} water standards?	☐	☐	9

SLRA Questionnaire Notes

1. Use the applicable land use standards in *Schedule 4, Schedule 5 (Intake of contaminated soil)* or *Schedule 10.*
2. Any applicable Directors' interim standards or criteria must also be applied.
3. Cross-sections showing the vertical extent of soil contamination must be provided to support a "no" response to this question. Environmental consultants must also consider the potential for exposure of construction workers/utility workers to contaminated soils (e.g. within a temporary excavation, utility corridor).
4. This question evaluates if there is a permanent barrier (e.g. pavement or concrete) at ground surface, above the contaminated soils, to prevent potential exposure to contaminants. A scaled plan map showing the lateral extent of contaminated soils, barriers present, and absence of bare or vegetated soil at ground surface must be provided to support a "no" response to this question.
5. Use the criteria provided in the draft *Director's Interim Air Concentration Criteria* [1]. This pathway may only be applied at sites where wildlands land use applies (i.e., may not be applied where agricultural, urban park, residential, commercial or industrial land uses apply).
6. This question evaluates the potential for vapour exposures to humans at wildlands sites. At such sites, human exposure during limited periods of the year (i.e., hunting camps) may be compared to the prescribed exposure threshold of 2 hours/day, 1 day/week by averaging total annual exposure over a 90 day period. Actual human exposure must be indicated in the SLRA report.
7. For evaluation of water uses, refer to Technical Guidance document 6, "Applying Water Quality Standards to Groundwater and Surface Water."
8. For soils, use the applicable land use standards in *Schedule 4, Schedule 5 (Groundwater used for drinking water)* or *Schedule 10.* For groundwater, use standards in *Schedule 6 (Column V – Drinking Water)* or *Schedule 10 (Column VI – Drinking Water (DW) Water Standard)*.
9. This question is answered by evaluating: (a) soil leachate concentrations (**Form A-1**); and (b) contaminant transport along a groundwater flow path to the respective receptor (**Form A-2**). The forms, and details on how to complete them, are provided in **Appendix A.** Provide completed forms (**Form A-1** and **A-2**) to support a "no" response to this question. See Figure 3 for graphical depiction of the soil leachate and groundwater transport assessment process.
10. Use the applicable land use standards in *Schedule 4* or *Schedule 5 (Toxicity to soil invertebrates and plants, Livestock ingesting soil and fodder or Major microbial functional impairment*).
11. This question must be answered by a registered professional biologist (RPBio.). See Section 2 (Definitions) for a definition of *potential terrestrial habitat*. See Figure 4 for graphical depiction of the potential terrestrial habitat evaluation process.
12. This question must be answered by a registered professional biologist (RPBio.). This question is answered by: (1) determining possible site receptors based on land use (**Form B-1**); (2) selecting appropriate receptors (**Form B-2**); and (3) assessing habitat suitability for each receptor (**Form B-3**). The forms, and details on how to complete them, are provided in **Appendix B**. Provide completed forms (**Form B-1** through **B-3**) to support a "no" response to this question.
13. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater flow to surface water used by aquatic life)*. For groundwater, use standards in *Schedule 6 (Column II – Aquatic Life)* and Protocol 10.
14. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater used for irrigation watering)*. For groundwater, use standards in *Schedule 6 (Column III – Irrigation)*.
15. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater used for livestock watering)*. For groundwater, use standards in *Schedule 6 (Column IV – Livestock)*.

Screening Level Risk Assessment (SLRA) Questionnaire

		Yes	No	Note
GENERAL				
Complete problem formulation.				
Check for any exemptions and preclusions that may apply.				
HUMAN EXPOSURE SCENARIOS				
Exposure to Contaminated Soils or Dust (HS-1 to 3)				
HS-1	Do substance concentrations in soil exceed the applicable standards?	X	☐	1,2
HS-2	Are contaminated soils located within 1 m of ground or an excavation surface?	☐	X	3
HS-3	Is the ground surface above contaminated soils uncovered?	☐	☐	4
Exposure to Contaminant Vapours (HV-1 to 2)				
HV-1	Do substance concentrations in soil vapour exceed the applicable criteria (for wildlands land use only)?	N/A		5
HV-2	Are humans present on the site for greater than 2 hours per day, 1 day per week?	☐	☐	6
Exposure to Contaminated Groundwater (HW-1 to 3)				
HW-1	Does drinking water use apply at the site?	☐	X	7
HW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of drinking water?			8,2
HW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to an onsite well used for drinking water or beyond the property line, at concentrations greater than the drinking water standards?	☐	☐	9
ECOLOGICAL EXPOSURE SCENARIOS				
Terrestrial Exposure to Contaminated Soils (TS-1 to 5)				
TS-1	Do substance concentrations in soil exceed the applicable standards?	X	☐	10
TS-2	Are contaminated soils located within 1 m of ground surface?	☐	X	3
TS-3	Is the ground surface above contaminated soils uncovered?	☐	☐	4
TS-4	Is there *potential terrestrial habitat* present? [This question to be completed by a Professional Biologist (RPBio)]	☐	☐	11
TS-5	Does the site contain suitable habitat for specific local species? [This question to be completed by a Professional Biologist (RPBio]	☐	☐	12
Exposure of aquatic biota to contaminated groundwater (AW-1 to 3)				
AW-1	Does aquatic life water use apply at the site?	X	☐	7
AW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of aquatic life?	X	☐	13,2
AW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to downgradient surface water bodies, at concentrations greater than the Aquatic Life water standards?	☐	X	9
Exposure of crops to contaminated groundwater (IW-1 to 3)				
IW-1	Does irrigation water use apply at the site?	☐	X	7
IW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of irrigation watering?	☐	☐	14,2
IW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to a well used for irrigation watering, at concentrations greater than the Irrigation water standards?	☐	☐	9

Screening Level Risk Assessment (SLRA) Questionnaire (Continued)

Exposure of livestock to contaminated groundwater (LW-1 to 3)				
LW-1	Does livestock water use apply at the site?	☐	X	7
LW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of livestock watering?	☐	☐	15,2
LW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to a well used for livestock watering, at concentrations greater than the livestock water standards?	☐	☐	9
DEFAULT STANDARDS				
DF-1	Do substance concentrations in groundwater exceed the default generic numerical water standards for VH_{w6-10} or EPH_{w10-19}?	☐	X	
DF-2	Is there the potential for soil leachate or contaminated groundwater to migrate offsite, at concentrations greater than the VH_{w6-10} or EPH_{w10-19} water standards?	☐	☐	9

SLRA Questionnaire Notes

1. Use the applicable land use standards in *Schedule 4, Schedule 5 (Intake of contaminated soil)* or *Schedule 10.*
2. Any applicable Directors' interim standards or criteria must also be applied.
3. Cross-sections showing the vertical extent of soil contamination must be provided to support a "no" response to this question. Environmental consultants must also consider the potential for exposure of construction workers/utility workers to contaminated soils (e.g. within a temporary excavation, utility corridor).
4. This question evaluates if there is a permanent barrier (e.g. pavement or concrete) at ground surface, above the contaminated soils, to prevent potential exposure to contaminants. A scaled plan map showing the lateral extent of contaminated soils, barriers present, and absence of bare or vegetated soil at ground surface must be provided to support a "no" response to this question.
5. Use the criteria provided in the draft *Director's Interim Air Concentration Criteria* [1]. This pathway may only be applied at sites where wildlands land use applies (i.e., may not be applied where agricultural, urban park, residential, commercial or industrial land uses apply).
6. This question evaluates the potential for vapour exposures to humans at wildlands sites. At such sites, human exposure during limited periods of the year (i.e., hunting camps) may be compared to the prescribed exposure threshold of 2 hours/day, 1 day/week by averaging total annual exposure over a 90 day period. Actual human exposure must be indicated in the SLRA report.
7. For evaluation of water uses, refer to Technical Guidance document 6, "Applying Water Quality Standards to Groundwater and Surface Water."
8. For soils, use the applicable land use standards in *Schedule 4, Schedule 5 (Groundwater used for drinking water)* or *Schedule 10.* For groundwater, use standards in *Schedule 6 (Column V – Drinking Water)* or *Schedule 10 (Column VI – Drinking Water (DW) Water Standard)*.
9. This question is answered by evaluating: (a) soil leachate concentrations (**Form A-1**); and (b) contaminant transport along a groundwater flow path to the respective receptor (**Form A-2**). The forms, and details on how to complete them, are provided in **Appendix A.** Provide completed forms (**Form A-1** and **A-2**) to support a "no" response to this question. See Figure 3 for graphical depiction of the soil leachate and groundwater transport assessment process.
10. Use the applicable land use standards in *Schedule 4* or *Schedule 5 (Toxicity to soil invertebrates and plants, Livestock ingesting soil and fodder or Major microbial functional impairment*).
11. This question must be answered by a registered professional biologist (RPBio.). See Section 2 (Definitions) for a definition of *potential terrestrial habitat*. See Figure 4 for graphical depiction of the potential terrestrial habitat evaluation process.
12. This question must be answered by a registered professional biologist (RPBio.). This question is answered by: (1) determining possible site receptors based on land use (**Form B-1**); (2) selecting appropriate receptors (**Form B-2**); and (3) assessing habitat suitability for each receptor (**Form B-3**). The forms, and details on how to complete them, are provided in **Appendix B**. Provide completed forms (**Form B-1** through **B-3**) to support a "no" response to this question.
13. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater flow to surface water used by aquatic life)*. For groundwater, use standards in *Schedule 6 (Column II – Aquatic Life)* and Protocol 10.
14. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater used for irrigation watering)*. For groundwater, use standards in *Schedule 6 (Column III – Irrigation)*.
15. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater used for livestock watering)*. For groundwater, use standards in *Schedule 6 (Column IV – Livestock)*.

Screening Level Risk Assessment (SLRA) Questionnaire

		Yes	No	Note
GENERAL				
Complete problem formulation.				
Check for any exemptions and preclusions that may apply.				
HUMAN EXPOSURE SCENARIOS				
Exposure to Contaminated Soils or Dust (HS-1 to 3)				
HS-1	Do substance concentrations in soil exceed the applicable standards?	X		1,2
HS-2	Are contaminated soils located within 1 m of ground or an excavation surface?	X		3
HS-3	Is the ground surface above contaminated soils uncovered? Road Right-a-way		X	4
Exposure to Contaminant Vapours (HV-1 to 2)				
HV-1	Do substance concentrations in soil vapour exceed the applicable criteria (for wildlands land use only)?	N/A		5
HV-2	Are humans present on the site for greater than 2 hours per day, 1 day per week?			6
Exposure to Contaminated Groundwater (HW-1 to 3)				
HW-1	Does drinking water use apply at the site?		X	7
HW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of drinking water?			8,2
HW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to an onsite well used for drinking water or beyond the property line, at concentrations greater than the drinking water standards?			9
ECOLOGICAL EXPOSURE SCENARIOS				
Terrestrial Exposure to Contaminated Soils (TS-1 to 5)				
TS-1	Do substance concentrations in soil exceed the applicable standards?	X		10
TS-2	Are contaminated soils located within 1 m of ground surface?	X		3
TS-3	Is the ground surface above contaminated soils uncovered? Road Right-a-way		X	4
TS-4	Is there *potential terrestrial habitat* present? [This question to be completed by a Professional Biologist (RPBio)]			11
TS-5	Does the site contain suitable habitat for specific local species? [This question to be completed by a Professional Biologist (RPBio]			12
Exposure of aquatic biota to contaminated groundwater (AW-1 to 3)				
AW-1	Does aquatic life water use apply at the site?	X		7
AW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of aquatic life?	X		13,2
AW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to downgradient surface water bodies, at concentrations greater than the Aquatic Life water standards?		X	9
Exposure of crops to contaminated groundwater (IW-1 to 3)				
IW-1	Does irrigation water use apply at the site?		X	7
IW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of irrigation watering?			14,2
IW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to a well used for irrigation watering, at concentrations greater than the Irrigation water standards?			9

Screening Level Risk Assessment (SLRA) Questionnaire (Continued)

Exposure of livestock to contaminated groundwater (LW-1 to 3)				
LW-1	Does livestock water use apply at the site?	☐	X	7
LW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of livestock watering?	☐	☐	15,2
LW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to a well used for livestock watering, at concentrations greater than the livestock water standards?	☐	☐	9
DEFAULT STANDARDS				
DF-1	Do substance concentrations in groundwater exceed the default generic numerical water standards for VH_{w6-10} or EPH_{w10-19}?	☐	X	
DF-2	Is there the potential for soil leachate or contaminated groundwater to migrate offsite, at concentrations greater than the VH_{w6-10} or EPH_{w10-19} water standards?	☐	☐	9

SLRA Questionnaire Notes

1. Use the applicable land use standards in *Schedule 4, Schedule 5 (Intake of contaminated soil)* or *Schedule 10.*
2. Any applicable Directors' interim standards or criteria must also be applied.
3. Cross-sections showing the vertical extent of soil contamination must be provided to support a "no" response to this question. Environmental consultants must also consider the potential for exposure of construction workers/utility workers to contaminated soils (e.g. within a temporary excavation, utility corridor).
4. This question evaluates if there is a permanent barrier (e.g. pavement or concrete) at ground surface, above the contaminated soils, to prevent potential exposure to contaminants. A scaled plan map showing the lateral extent of contaminated soils, barriers present, and absence of bare or vegetated soil at ground surface must be provided to support a "no" response to this question.
5. Use the criteria provided in the draft *Director's Interim Air Concentration Criteria* [1]. This pathway may only be applied at sites where wildlands land use applies (i.e., may not be applied where agricultural, urban park, residential, commercial or industrial land uses apply).
6. This question evaluates the potential for vapour exposures to humans at wildlands sites. At such sites, human exposure during limited periods of the year (i.e., hunting camps) may be compared to the prescribed exposure threshold of 2 hours/day, 1 day/week by averaging total annual exposure over a 90 day period. Actual human exposure must be indicated in the SLRA report.
7. For evaluation of water uses, refer to Technical Guidance document 6, "Applying Water Quality Standards to Groundwater and Surface Water."
8. For soils, use the applicable land use standards in *Schedule 4, Schedule 5 (Groundwater used for drinking water)* or *Schedule 10.* For groundwater, use standards in *Schedule 6 (Column V – Drinking Water)* or *Schedule 10 (Column VI – Drinking Water (DW) Water Standard)*.
9. This question is answered by evaluating: (a) soil leachate concentrations (**Form A-1**); and (b) contaminant transport along a groundwater flow path to the respective receptor (**Form A-2**). The forms, and details on how to complete them, are provided in **Appendix A.** Provide completed forms (**Form A-1** and **A-2**) to support a "no" response to this question. See Figure 3 for graphical depiction of the soil leachate and groundwater transport assessment process.
10. Use the applicable land use standards in *Schedule 4* or *Schedule 5 (Toxicity to soil invertebrates and plants, Livestock ingesting soil and fodder or Major microbial functional impairment*).
11. This question must be answered by a registered professional biologist (RPBio.). See Section 2 (Definitions) for a definition of *potential terrestrial habitat*. See Figure 4 for graphical depiction of the potential terrestrial habitat evaluation process.
12. This question must be answered by a registered professional biologist (RPBio.). This question is answered by: (1) determining possible site receptors based on land use (**Form B-1**); (2) selecting appropriate receptors (**Form B-2**); and (3) assessing habitat suitability for each receptor (**Form B-3**). The forms, and details on how to complete them, are provided in **Appendix B**. Provide completed forms (**Form B-1** through **B-3**) to support a "no" response to this question.
13. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater flow to surface water used by aquatic life)*. For groundwater, use standards in *Schedule 6 (Column II – Aquatic Life)* and Protocol 10.
14. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater used for irrigation watering)*. For groundwater, use standards in *Schedule 6 (Column III – Irrigation)*.
15. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater used for livestock watering)*. For groundwater, use standards in *Schedule 6 (Column IV – Livestock)*.

Screening Level Risk Assessment (SLRA) Questionnaire

		Yes	No	Note
GENERAL				
Complete problem formulation.				
Check for any exemptions and preclusions that may apply.				
HUMAN EXPOSURE SCENARIOS				
Exposure to Contaminated Soils or Dust (HS-1 to 3)				
HS-1	Do substance concentrations in soil exceed the applicable standards?	☐	X	1,2
HS-2	Are contaminated soils located within 1 m of ground or an excavation surface?	☐	☐	3
HS-3	Is the ground surface above contaminated soils uncovered?	☐	☐	4
Exposure to Contaminant Vapours (HV-1 to 2)				
HV-1	Do substance concentrations in soil vapour exceed the applicable criteria (for wildlands land use only)?	N/A		5
HV-2	Are humans present on the site for greater than 2 hours per day, 1 day per week?	☐	☐	6
Exposure to Contaminated Groundwater (HW-1 to 3)				
HW-1	Does drinking water use apply at the site?	☐	X	7
HW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of drinking water?			8,2
HW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to an onsite well used for drinking water or beyond the property line, at concentrations greater than the drinking water standards?	☐	☐	9
ECOLOGICAL EXPOSURE SCENARIOS				
Terrestrial Exposure to Contaminated Soils (TS-1 to 5)				
TS-1	Do substance concentrations in soil exceed the applicable standards?	X	☐	10
TS-2	Are contaminated soils located within 1 m of ground surface?	X	☐	3
TS-3	Is the ground surface above contaminated soils uncovered?	X	☐	4
TS-4	Is there *potential terrestrial habitat* present? [This question to be completed by a Professional Biologist (RPBio)]	**unknown at this time**		11
TS-5	Does the site contain suitable habitat for specific local species? [This question to be completed by a Professional Biologist (RPBio]	☐	☐	12
Exposure of aquatic biota to contaminated groundwater (AW-1 to 3)				
AW-1	Does aquatic life water use apply at the site?	X	☐	7
AW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of aquatic life?	X	☐	13,2
AW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to downgradient surface water bodies, at concentrations greater than the Aquatic Life water standards?	☐	X	9
Exposure of crops to contaminated groundwater (IW-1 to 3)				
IW-1	Does irrigation water use apply at the site?	☐	X	7
IW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of irrigation watering?	☐	☐	14,2
IW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to a well used for irrigation watering, at concentrations greater than the Irrigation water standards?	☐	☐	9

Screening Level Risk Assessment (SLRA) Questionnaire (Continued)

Exposure of livestock to contaminated groundwater (LW-1 to 3)				
LW-1	Does livestock water use apply at the site?	☐	X	7
LW-2	Do substance concentrations in soil or groundwater exceed the standards for the protection of livestock watering?	☐	☐	15,2
LW-3	Is there the potential for soil leachate or contaminated groundwater to migrate to a well used for livestock watering, at concentrations greater than the livestock water standards?	☐	☐	9
DEFAULT STANDARDS				
DF-1	Do substance concentrations in groundwater exceed the default generic numerical water standards for VH_{w6-10} or EPH_{w10-19}?	☐	X	
DF-2	Is there the potential for soil leachate or contaminated groundwater to migrate offsite, at concentrations greater than the VH_{w6-10} or EPH_{w10-19} water standards?	☐	☐	9

SLRA Questionnaire Notes

1. Use the applicable land use standards in *Schedule 4, Schedule 5 (Intake of contaminated soil)* or *Schedule 10.*
2. Any applicable Directors' interim standards or criteria must also be applied.
3. Cross-sections showing the vertical extent of soil contamination must be provided to support a "no" response to this question. Environmental consultants must also consider the potential for exposure of construction workers/utility workers to contaminated soils (e.g. within a temporary excavation, utility corridor).
4. This question evaluates if there is a permanent barrier (e.g. pavement or concrete) at ground surface, above the contaminated soils, to prevent potential exposure to contaminants. A scaled plan map showing the lateral extent of contaminated soils, barriers present, and absence of bare or vegetated soil at ground surface must be provided to support a "no" response to this question.
5. Use the criteria provided in the draft *Director's Interim Air Concentration Criteria* [1]. This pathway may only be applied at sites where wildlands land use applies (i.e., may not be applied where agricultural, urban park, residential, commercial or industrial land uses apply).
6. This question evaluates the potential for vapour exposures to humans at wildlands sites. At such sites, human exposure during limited periods of the year (i.e., hunting camps) may be compared to the prescribed exposure threshold of 2 hours/day, 1 day/week by averaging total annual exposure over a 90 day period. Actual human exposure must be indicated in the SLRA report.
7. For evaluation of water uses, refer to Technical Guidance document 6, "Applying Water Quality Standards to Groundwater and Surface Water."
8. For soils, use the applicable land use standards in *Schedule 4, Schedule 5 (Groundwater used for drinking water)* or *Schedule 10.* For groundwater, use standards in *Schedule 6 (Column V – Drinking Water)* or *Schedule 10 (Column VI – Drinking Water (DW) Water Standard)*.
9. This question is answered by evaluating: (a) soil leachate concentrations (**Form A-1**); and (b) contaminant transport along a groundwater flow path to the respective receptor (**Form A-2**). The forms, and details on how to complete them, are provided in **Appendix A.** Provide completed forms (**Form A-1** and **A-2**) to support a "no" response to this question. See Figure 3 for graphical depiction of the soil leachate and groundwater transport assessment process.
10. Use the applicable land use standards in *Schedule 4* or *Schedule 5 (Toxicity to soil invertebrates and plants, Livestock ingesting soil and fodder or Major microbial functional impairment*).
11. This question must be answered by a registered professional biologist (RPBio.). See Section 2 (Definitions) for a definition of *potential terrestrial habitat*. See Figure 4 for graphical depiction of the potential terrestrial habitat evaluation process.
12. This question must be answered by a registered professional biologist (RPBio.). This question is answered by: (1) determining possible site receptors based on land use (**Form B-1**); (2) selecting appropriate receptors (**Form B-2**); and (3) assessing habitat suitability for each receptor (**Form B-3**). The forms, and details on how to complete them, are provided in **Appendix B**. Provide completed forms (**Form B-1** through **B-3**) to support a "no" response to this question.
13. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater flow to surface water used by aquatic life)*. For groundwater, use standards in *Schedule 6 (Column II – Aquatic Life)* and Protocol 10.
14. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater used for irrigation watering)*. For groundwater, use standards in *Schedule 6 (Column III – Irrigation)*.
15. For soils, use the applicable land use standards in *Schedule 4* or *Schedule 5 (Groundwater used for livestock watering)*. For groundwater, use standards in *Schedule 6 (Column IV – Livestock)*.