Phase I Environmental Assessment

3661 Piercy Rd., Denman Island, BC

(PID: 000-252-069)

PREPARED ON

MAY 31, 2024

UPDATED JULY 12, 2024

PREPARED FOR

DENMAN HOUSING ASSOCIATION

PREPARED BY

STEPHAN BORAKS P.BIO. & DUSTY SILVESTER, R.P.BIO.

current ENVIRONMENTAL
558 England Ave
Courtenay, BC V9N 2N3
p: 250.871.1944
w: currentenvironmental.ca

EXECUTIVE SUMMARY

This Phase I Environmental Site Assessment (ESA) is intended to identify any Areas of Potential Environmental Concern (APECs) associated with the property at 3661 Piercy Road, Denman Island, BC[1] in support of Denman Housing Association's potential acquisition of a portion of land that is proposed to be subdivided from the subject property. The proposed subdivided section is a strip of land approximately 35m wide along the western fence line. This ESA has been written in accordance with Canadian Mortgage Housing Corporation (CMHC) Interpretation Guidelines that incorporate the requirements from the *CMHC Policy for Managing Environmental Risks* (1994), *Canadian Standards Association (CSA) Phase I Environmental Site Assessment Information Product Z768-01* (2016), and Section 58 of the BC *Contaminated Sites Regulation* (CSR).

This Environmental Site Assessment is limited to an investigation of existing contaminant indicators observed at the time of assessment and thorough review of historical documents and interview. The conclusions and recommendations made in this report are based on the best available knowledge at the time of assessment. The scope of work of this Phase I ESA includes a historical review of existing documents, government/non-government databases, and a site visit conducted on Oct. 11, 2023. At the time of assessment, 3661 Piercy Rd. was observed to be primarily an operational base for roadworks equipment with two unoccupied residences, a salt storage shed, and a fuel storage shed.

Evidence of an AST (above-ground petroleum product containment tank) was observed during the site visit near the residences and the office building. A historic contamination event near the southern boundary of the property from an UST (under-ground petroleum product containment tank) has been documented in a 2002 report by Seacor (Appendix G). A post-remediation groundwater investigation included in this report found that several wells contained dissolved metal and/or chlorine concentrations in excess of CSR drinking water and/or aquatic life standards.
An Environmental Risk Information Services (ERIS) report produced for the subject property and a 250 m surrounding radius listed 26 records, which are described in section 5.7 and can be viewed in Appendix H.

[1] Legal Description: LOT 1, SECTION 18, DENMAN ISLAND, NANAIMO DISTRICT, PLAN 33612 (PID: 000-252-069)

Table 1. Areas of Potential Environmental Concern (APEC) identified on 3661 Piercy during the site visit on October 11th, 2023.

APEC Number	Type	Notes
1	AST	1 large diesel tank and fuel barrels in north of lot.
2	UST	Historic tank that leaked, was then removed and remediated in 2002.
3	Salt Storage	Likely a stockpile of road salt.
4	Wash bay	Potential source of groundwater contamination, presence of oil water separator however maintenance record is unknown. Outflow into ditch at north of property.
5	Maintenance Area	Vehicle maintenance area, no longer used.
6	Building-Office	Potential presence of hazardous materials.
7	Building-Residence 1	Potential presence of hazardous materials.
8	Building-Residence 2	Potential presence of hazardous materials.
9	Building- Fuel Storage shed	Potential presence of hazardous materials.
10	Septic	Existing septic field of unknown status near residence 1. A grey/black water connection to the septic was also observed.
11	Soil and veg stockpile	Soils and veg removed from ditches across Denman are being stored on south of property. Contaminants present in the soil stockpile.

On-site APECs were identified for the property and consisted of: ASTs, historic spill records , a salt storage shed, potentially hazardous building materials and soil stockpiles. The topographic profile of the subject property indicates that surficial water would drain from the roadworks operation base and material storage, towards the proposed subdivision. Due to the existence of these APECs, **this review concludes that a Phase II ESA is recommended.**

TABLE OF CONTENTS

1.0 INTRODUCTION

The purpose of this Phase I Environmental Site Assessment (ESA) is to identify any Areas of Potential Environmental Concern (APECs) associated with the property at 3661 Piercy Road, Denman Island, to aid Denman Housing Association in its potential acquisition of a portion of land that is proposed to be subdivided from the subject property. The proposed subdivided section (portion of interest) is a strip of land approximately 35m wide along the western fence line.

This Phase I ESA provides historical and current information on land-use of the subject property and of surrounding areas (Figure 1 & 2). Historical information was obtained from a land title search, aerial photos, and research from a variety of government and non-government environmental databases. Ground-level site investigations were conducted on the property by Current Environmental Ltd. (CEL) on Oct 11, 2023.

This ESA has been written in accordance with Canadian Mortgage Housing Corporation (CMHC) Interpretation Guidelines that incorporate the requirements from the *CMHC Policy for Managing Environmental Risks* (1993) and *Canadian Standards Association (CSA) Phase I Environmental Site Assessment Information Product Z768-01* (2022), and Section 58 of the BC *Contaminated Sites Regulation* (CSR).

2.0 SCOPE OF WORK & LIMITATIONS

This report has been prepared for the exclusive use of Denman Housing Association (the "Client") and should not be reproduced without the written consent of CEL and the Client. Use of this report by other parties than the Client is prohibited.

Information obtained for this Phase I ESA includes historical public record reviews, site reconnaissance, and information provided by the Client. The conclusions and recommendations made in this report are provided based on the best available knowledge and information at the time of the assessment. Should additional information become available, or site conditions change, the conclusions and recommendations of this report may be subject to change. Events occurring on the subject property after the date of the site assessment are beyond the scope of work for this report.

Environmental conditions may exist which were undetectable given the limited nature of the inquiry CEL was contracted to undertake with respect to the site. This report forms no more than an opinion of the actual conditions of the site at the time the site was visited and may not be representative of former or current conditions.

CEL is not responsible for any activity or environmental impacts that may have occurred on the site since the report was prepared or any change in the financial valuation of the property arising from the consultant's findings, conclusions, or recommendations.

The conclusions and recommendations made in this report are provided based on the best available knowledge and information at the time of the assessment. Should additional information become available, or site conditions change, the conclusions and recommendations of this report may be subject to change. Events occurring on the subject property after the date of the site assessment are beyond the scope of work for this report.

3.0 SUBJECT PROPERTY

The assessed property at 3661 Piercy Road, Denman Island is centered approximately at Lat/Long coordinates 49.537137584° N -124.8190675° W, bearing legal description LOT 1, SECTION 18, DENMAN ISLAND, NANAIMO DISTRICT, PLAN 33612 (PID: 000-252-069). According to the Island's Trust Denman Island mapping resources[2] the subject property is zoned Industrial (IN(1)). According to BC Assessment,[3] 3661 Piercy Road covers 2.861 acres.

At the time of assessment, 3661 Piercy Rd. was observed to be primarily an operational base for roadworks equipment with an office, two unoccupied residential buildings and material storage sheds (see Figure 4. for existing development locations) . The lot also contains evidence of its use as a storage yard for materials removed from various roadside locations on Denman Island. The lot has historically been used for maintenance of vehicles associated with roadworks, and contains a vehicle lift and washdown station. Fuel for vehicles and building propane is stored on site in above-ground petroleum product containment tanks (Section 6.2).

The property is bounded by Piercy Rd. to the north, and Northwest Rd. to the east. Two developed residential properties border the subject lot to the south, and a medical clinic to the west. The lot was cleared in the late 70s, at which time it was developed into its current state: as a roadworks operation yard with residential structures in the west. The lot generally slopes towards the southwest corner, and surface water appears to drain into either a ditch along the north boundary of the property or a wetland to the south of the property.

Canadian Climate Normals from 1981 to 2010 at nearby station "Mud Bay," shows an annual average of 169 cm of precipitation for the area, with the majority falling between the months of October and March, and a daily average temperature of 9.7°C.[4] The BC interactive iMap identifies aquifer 740 below the site.[5] The unnamed aquifer is a 47.7 km^2 fractured sedimentary rock with low productivity and high vulnerability.

[2] https://islandstrust.bc.ca/mapping-resources/mapping/denman/
[3] https://www.bcassessment.ca//Property/Info/QTAwMDBLU0ZQNA==
[4]https://climate.weather.gc.ca/climate_normals/results_1981_2010_e.html?searchType=stnProx&txtRadius=25&selCity=&selPark=&txtCentralLatDeg=&txtCentralLatMin=0&txtCentralLatSec=0&txtCentralLongDeg=&txtCentralLongMin=0&txtCentralLongSec=0&optProxType=decimal&txtLatDecDeg=49.5362&txtLongDecDeg=-124.8185&stnID=187&dispBack=0
[5] https://apps.nrs.gov.bc.ca/gwells/

4.0 ADJACENT PROPERTIES

Directly west and across Northwest Rd. to the east, the subject property is bordered by lots zoned Industrial and Industrial (3). Residential neighbourhoods surround the subject property to the south zoned as Residential 1, and 4 (1). The neighbouring property to the south contains a wetland and an area of imported fill that had supported a business until it was burnt in a fire in 2020 and later demolished.

Historical records pertaining to past site uses and environmental risks assessed for adjacent properties have been included in Section 5.7 and in the Environmental Risk Information Services (ERIS) report provided in Appendix G.

5.0 HISTORICAL REVIEW

Historical research of past land use on the subject property and surrounding areas includes the following sources:

a) A review of historical aerial photographs (Appendix A).
b) Land Title search (Appendix B).
c) Historical Reports Review.
d) BC Assessment property details listing (Appendix C).
e) BC Online Site Registry (Appendix D).
f) Federal Contaminated Sites (Appendix E).
g) Water Well Search (Appendix F).
h) ERIS report (Appendix G).
i) Interview.

5.1 AERIAL PHOTOGRAPH REVIEW

An aerial photograph review was conducted for aerial images using the Government of British Columbia Air Photos database,[6] Google Earth imagery, and the CVRD iMap.[7] Copies of aerial photographs can be found in Appendix A with results outlined in Table 1 below.

Table 1: Results of the Aerial Photograph Review

1972 (BC Air Photos)	Onsite	Lot is forested with no visible alteration to the landscape.
	Surrounding	Lots surrounding the subject property appear undeveloped and have undergone varying degrees of logging. The ferry dock is present to the southwest of the

[6] https://a100.gov.bc.ca/ext/mtec/public/products/airPhoto.
[7] https://mapviewer.imaptoo.ca/secure/.

		property and main roads in the area are in present-day locations. There are a few buildings present on the property directly to the east, across Northwest Rd. Agricultural land is present northwest of the site.
1980 (BC Air Photos)	Onsite	The subject property is cleared and appears to be developed into an operations yard for roadworks.
	Surrounding	Changes to the ferry dock are visible.
1995 (BC Air Photos)	Onsite	Same as previous.
	Surrounding	Similar to previous, with some increase in residential development in surrounding areas to the south and west.
2005 (Google Earth)	Onsite	Salt storage shed added on south of property, AST for fuel and vehicle wash station added in north
	Surrounding	Same as previous.
2019 (Google Earth)	Onsite	Same as previous.
	Surrounding	Similar to previous with development to west of formerly forested lot into a medical clinic Upgrades to the ferry dock area are visible.
2020 (CVRD iMap)	Onsite	Same as previous.
	Surrounding	The main building situated on the lot to the south burnt down and was demolished.
2022 (Google Earth)	Onsite	Same as previous.
	Surrounding	Same as previous.

5.2 LAND TITLE SEARCH

A land title search of current and cancelled information was conducted on May 21 2024 (Appendix B). At the time the land title was acquired, the registered owner was Emcon Services Inc.). Charges, Liens, and Interests applied to the subject lot exist for undersurface rights to the province of BC and Henry Pering Crease, and right of way to BC Hydro and Power Authority.

5.3 PREVIOUS ESA REPORTS

An independent remediation report is associated with 3661 Piercy Road; Si*te Remedial Program Denman Island Highways Yard, 3661 Piercy Road, Denman Island BC*. Prepared by Seacor for British Columbia Buildings Corporation. April 26, 2002. 174 pp.

This remediation report (April 26, 2002) describes the procedures and results of Seacor's remediation work associated with a leaking UST on the subject property. Post-remediation groundwater investigation included in this report found that several wells contained dissolved metal and/or chlorine concentrations in excess of CSR drinking water and/or aquatic life standards.

5.4 BC Site Registry

The BC Sites Registry database was accessed on May 23, 2024. Government records were queried through the BC Site Registry database that returned a "nil" result (Appendix D) meaning there are no records retained by the provincial government regarding the environmental condition of the land. No additional records were found that indicate past or present environmental concerns associated within the subject property.

5.5 Federal Contaminated Sites

Review of the Federal Contaminated Sites Inventory hosted by the Treasury Board of Canada Secretariat showed that the nearest recorded "Suspected" contaminated site is 553 m southwest of the subject property (Site #00021312) and the nearest "Closed" contaminated site is 600 m northwest of the property (Appendix E). These sites are not of concern to the subject property.

5.6 Water Well Search

A water well search for the area within 250 m of the center of the subject property indicates 26 groundwater wells near the property in addition to one existing well on the subject property (Appendix F). These wells would be sensitive to the effects of contamination if current or historical contamination exists on the subject property or neighboring lots. Historic contamination has been documented at the subject property, and the post-remediation 2002 Seacor report found elevated dissolved metal and/or chlorine concentrations.

5.7 ERIS Report

An ERIS database report was acquired for the site on October 5, 2023. Results include 2 previous ERIS searches, 1 Site Registry, and 23 groundwater wells for the site and the surrounding properties within a 250 m buffer. The single site registry was a notice of independent remediation submitted by Seacor Environmental Engineering as noted in section 5.3. No un-plottable sites were reported in the ERIS report. The complete ERIS report is provided in Appendix G.

5.8 Property Disclosure Statement

A Property Disclosure Statement has not been made available for the subject property.

6.0 SITE INSPECTION

During the site visit October 10th, 2023, the site was characterized in terms of existing environmental features and developed areas. The subject lot has been historically cleared and primarily consists of buildings and infrastructure, gravel and invasive species. Eleven Areas of Potential Environmental Concern (APEC) were identified on the subject property listed in Table 1 below, discussed in further detail in sections 6.2 to 6.7, and identified on a map in Figure 4.

Table 1. Areas of Potential Environmental Concern (APEC) were identified on 3661 Piercy during the site visit on October 11th, 2023.

APEC Number	Type	Notes
1	AST	1 large diesel tank and fuel barrels in north of lot.
2	UST	Historic tank that leaked, was then removed and remediated in 2002.
3	Salt Storage	Likely a stockpile of road salt.
4	Wash bay	Potential source of groundwater contamination, presence of oil water separator however maintenance record is unknown. Outflow into ditch at north of property.
5	Maintenance Area	Vehicle maintenance area, no longer used.
6	Building-Office	Potential presence of hazardous materials.
7	Building-Residence 1	Potential presence of hazardous materials.
8	Building-Residence 2	Potential presence of hazardous materials.
9	Building- Fuel Storage shed	Potential presence of hazardous materials.
10	Septic	Existing septic field of unknown status near residence 1. A grey/black water connection to the septic was also observed.
11	Soil and veg stockpile	Soils and veg removed from ditches across Denman are being stored on south of property. Contaminants present in the soil stockpile.

6.1 INTERVIEWS

An in-person interview was completed on site with operational staff member Rod MacCuspic on October 11, 2023. Rod MacCuspic has operated the yard works at the subject property for the past few years on behalf of Mainroad Contracting. Mainraod Contracting is leasing the property from Emcom (landowner). He stated that he was not aware of any current or historical contamination issues on the subject property or adjacent lots nor did he have records of any remediation efforts in proximity to the property. He was also unaware of any past Environmental Site Assessments having been completed for the property. Rod MacCuspic provided information regarding the fuel storage tanks and the potential for hazardous building materials (see Sections 6.2 & 6.3). He also indicated that the residence on the west of the property and fuel storage location at the north of the property are to be removed winter 2023/24, the vehicle inspection lift was no longer in use, and could not provide a maintenance record for the oil/water separator near the vehicle wash pad. He indicated that a pile of vegetation and soils in the south-west of the property consisted of material removed from ditches around Denman Island. These materials could contain invasive species or invasive species seeds. He mentioned that surficial drainage from the property was significant in the winter months and resulted in an accumulation of water in the south-west of the property for portions of the year.

6.2 UNDERGROUND STORAGE TANK (UST) OR ABOVE GROUND STORAGE TANK (AST)

A historic UST is described in Seacor's 2002 remediation report, and ASTs associated with fuel and propane tanks were identified during site level reconnaissance (Figure 4).

1. Two AST containing propane are located near the office building (Photo 1).
2. One large diesel storage container located near north boundary of the property (Photo 2).
3. Propane connections for AST were identified on the first residential building located on west of the lot; however, no tanks were present (Photo 3).
4. Propane connections for AST were identified on the second residential building located to west of the office; however, no tanks were present (Photo 4).

6.3 SALT STORAGE SHED

A salt storage shed is located in the south of the subject lot and appeared to contain road salt (Photo 5). A catch basin is located to the west of the salt storage shed presumably installed to intercept rainwater run-off from the salt storage shed (Photo 6). Field staff were not able to identify the location of the catch basin discharge. This structure is not fully enclosed and further investigation woul dbe required to determine if soils in the adjacent area contains elevated sodium and/or chloride concentrations.

6.4 VEHICLE MAINTENANCE

Two locations were identified as vehicle maintenance areas: a wash pad and a vehicle lift station. Both of these locations are potential sources of contamination from vehicle fluids. The wash pad drained into an oil-water separator, then to a ditch along the north of the property (Photos 2 & 7). The ditch flows westward along the north boundaries of the adjacent properties.

6.5 SEPTIC SYSTEM

Residential buildings on the subject property are differentiated using a numerical suffix (see Figure 4. for locations of each residential structure). A septic system was identified in the north-west of the property and is believed to have been installed to service the residential building 1 (Photo 8) An RV lot (Photo 9) was identified adjacent to the residential building 1, and a ABS connection to the septic system was visually identified (photo 10).

6.6 HAZARDOUS BUILDING MATERIALS

Asbestos containing materials (ACM) are commonly found in building materials such as ceiling tile, pipe insulation, and floor tiles manufactured prior to 1980. Mercury containing materials including florescent light ballasts and furnace thermostats were also common building materials pre-1980. Lead, other heavy metals, CFCs, PCBs, and other toxic, flammable or explosive materials, may be present in buildings of this age as well. Based on a review of aerial photos, the two residential buildings, the fuel storage building, and the office was originally built in the late 1970s and could contain hazardous building materials. It is recommended that if any buildings are planned for modification or removal/demolition, it be preceded by a hazardous building materials inspection and report.

We have been informed by Paul Beauchemin of Denman Housing Association, that buildings present in the western portion of the property during the October 10th site visit have been removed (Photo 12-14).

6.7 STOCKPILED MATERIALS

A material stockpile was identified in the south-west of the subject property, which consisted of unknown soils and vegetation (Photo 11). The stockpile source was identified as ditches located around Denman Island during an interview with Rod MacCuspic. Because of the mixed composition of the stockpile from various unidentified sources, it is unknown the specific origin or composition of the stockpiled materials.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Review of the subject property at 3661 Piercy Road, Denman Island from historical records, ground-level site reconnaissance and investigation, and aerial photo review showed that the site has been used as a roadworks operations yard with two residences since the late 70s.

The historical review revealed a historic UST that leaked, was removed and a remediation report was created by Seacor in 2002. The site inspection showed the presence of ASTs on the subject property, as well as a chemical storage area, vehicle maintenance areas, a septic system of unknown status, the potential for hazardous building materials on site and stockpiled soils and vegetation from across Denman Island. All of these APECs were located on or at a higher elevation than the proposed subdivision at the west of the subject property and some could be a source of off-site migration. Based on an interview and topographic observations, surficial drainage appeared to move from the east of the property in a south-westerly direction. Twenty-three wells are located within 250 m of the center of the subject property, the majority of which are at a lower elevation than the subject property.

The APECs identified onsite and during the historical review result warrant that **a Phase II Site Assessment is conducted for the site**.

Prepared by:	Reviewed by:
	
Stephan Boraks, P.Bio.	Dusty Silvester, RPBio
CURRENT ENVIRONMENTAL	CURRENT ENVIRONMENTAL

8.0 DISCLAIMER

This report was prepared exclusively for Denman Housing Association (the "Client") by Current Environmental Ltd. The quality of information, conclusions and estimates contained herein is consistent with the level of effort expended and is based on: i) information available at the time of preparation; ii) data collected by the authors and/or supplied by outside sources; and iii) the assumptions, conditions and qualifications set forth in this report. This report is intended to be used by the Client only, subject to the terms and conditions of its contract or understanding with Current Environmental Ltd. Other use or reliance on this report by any third party is at that party's sole risk.

9.0 FIGURES

Figure 1: Overview map showing the location of the subject lot (red star) on Denman Island (Source: ERIS).

Figure 2: Site map showing the location of the subject lot in reference to surrounding properties (Source: CVRD iMap).

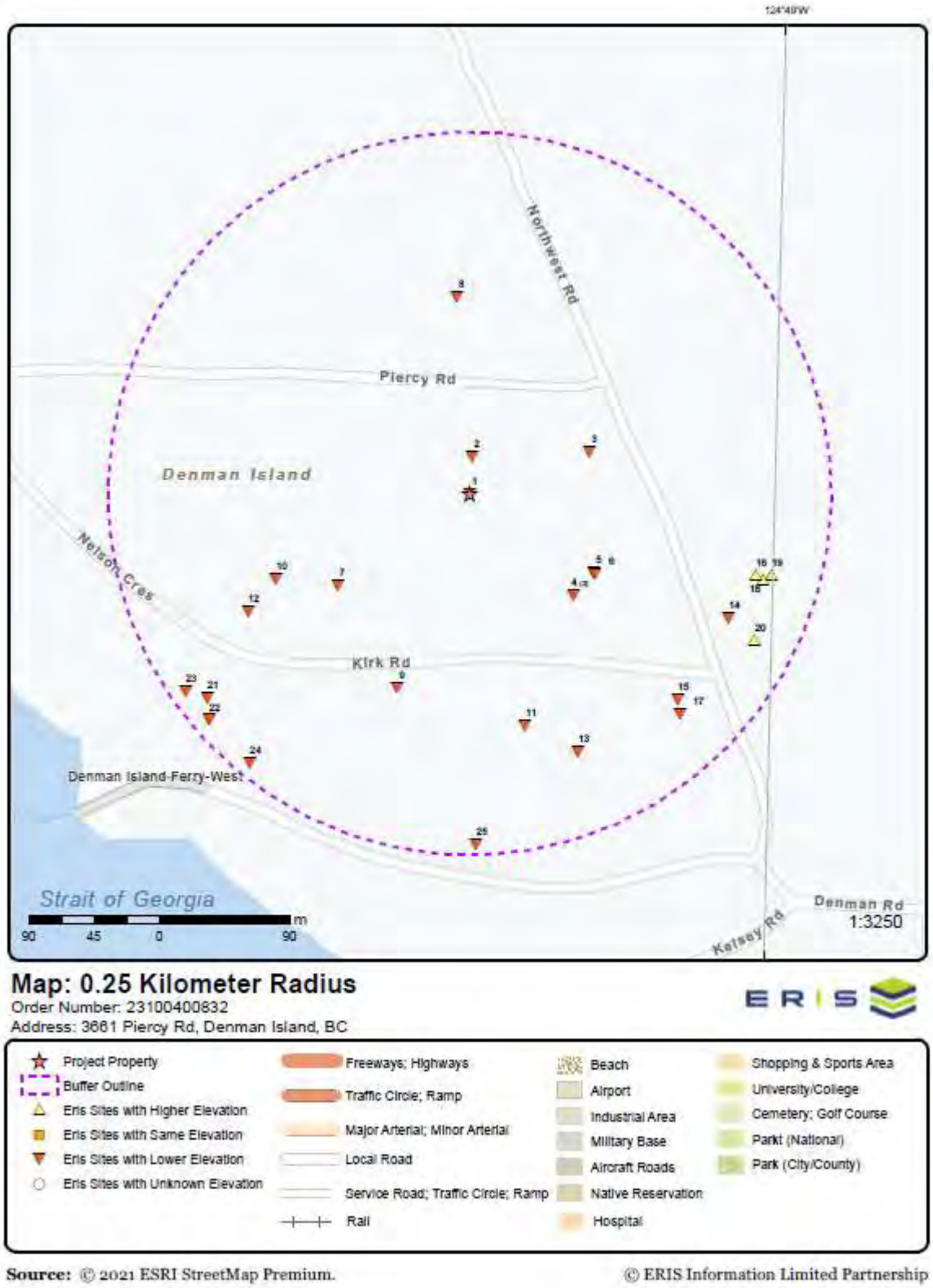


Figure 3. Location of the subject property (center point) and adjacent properties with records of ERIS records from the database search within 250 m of the center of the subject lot (Source: ERIS).

Figure 4. Location of APECs on the subject property and adjacent properties. APECs are listed in Table 1 (Section 6.0).

10.0 PHOTOS

Photo 1. Two propane tanks located next to an office building

Photo 2. A fuel storage location with a diesel AST and fuel barrels. Vehicle wash pad located in the foreground.

Photo 3. Disconnected propane AST connection on first residential building at the north-west of the property.

Photo 4. Disconnected propane AST connection on second residential building at the north-west of the property.

Photo 5. A salt storage shed located near the south boundary of the property. Mainroads identified the white stockpile (left in photo) as road salt. The brown pile appeared to be road gravel.

Photo 6. A manhole and catch basin located west of the salt storage shed, at a lower elevation. Presumably this feature was installed to intercept rainwater run off from the chemical storage shed.

Photo 7. A manhole at the oil-water separator for the vehicle wash pad at the north of the subject lot.

Photo 8. A septic bed located in the north-west of the subject lot.

Photo 9. An RV pad located in the north-west of the subject lot.

Photo 10. An ABS connection at the septic system located in the north-west of the subject lot. Potentially a connection for an adjacent pad that appeared to have an RV historically parked.

Photo 11. A ditch material stockpile with rubble beside it. Located in the south-west of the subject property.

Photo 12. A photo of the area proposed to be subdivided from the subject property with structures (Residence 1) that were present during the field visit. (May 31, 2024)

Photo 13. A photo of the area proposed to be subdivided from the subject property with structures (Residence 1) that were present during the field visit. Residence 2 is in the background, and not on the area proposed to be subdivided (May 31, 2024).

Photo 14. A photo of the area proposed to be subdivided from the subject property without structures (Residence 1) that were present during the field visit. Residence 2 can be seen in the left of the image and is not located on the area proposed for acquisition. Photo supplied by Paul Beauchemin on June 8, 2024

APPENDIX A – AERIAL PHOTOGRAPHS

1972 Aerial Photograph (Source: British Columbia Air Photos).

1980 Aerial Photograph (Source: British Columbia Air Photos).

1995 Aerial Photograph (Source: British Columbia Air Photos).

2005 Aerial Photograph (Source: Google Earth).

2019 Aerial Photograph (Source: Google Earth).

2020 Aerial Photograph (Source: CVRD iMap).

2022 Aerial Photograph (Source: Google Earth).

APPENDIX B – LAND TITLE SEARCH

TITLE SEARCH PRINT 2024-05-21, 11:55:36
File Reference: Requestor: Stephan Boraks
Declared Value $ 130000

CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN

Land Title District	VICTORIA
Land Title Office	VICTORIA
Title Number	EV152118
From Title Number	J38111
Application Received	2003-12-12
Application Entered	2004-01-19

Registered Owner in Fee Simple
Registered Owner/Mailing Address: EMCON SERVICES INC., INC.NO. 345823
3105 - 1121 MCFARLANE WAY
MERRITT, BC
V1K 1B9

Taxation Authority Courtenay Assessment Area

Description of Land
Parcel Identifier: 000-252-069
Legal Description:
LOT 1, SECTION 18, DENMAN ISLAND, NANAIMO DISTRICT, PLAN 33612

Legal Notations
COAL TSN DF 41413 (29/09/1938) FORFEITED TO CROWN (23/10/1939)
DF 45974

Charges, Liens and Interests

Nature:	UNDERSURFACE RIGHTS
Registration Number:	117553G
Registration Date and Time:	1945-03-08 10:00
Registered Owner:	HENRY PERING CREASE
Remarks:	INTER ALIA DD 22030I SEE S13099

Nature:	RIGHT OF WAY
Registration Number:	288733G
Registration Date and Time:	1964-01-31 14:46
Registered Owner:	BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
Remarks:	INTER ALIA

TITLE SEARCH PRINT 2024-05-21, 11:55:36

File Reference: Requestor: Stephan Boraks

Declared Value $ 130000

Nature:	UNDERSURFACE RIGHTS
Registration Number:	S13099
Registration Date and Time:	1987-02-19 09:00
Remarks:	INTER ALIA FORFEITED TO CROWN ALL MINERALS EXCEPT COAL, GOLD & SILVER
Duplicate Indefeasible Title	NONE OUTSTANDING
Transfers	NONE
Pending Applications	NONE

APPENDIX C – BC ASSESSMENT

3661 PIERCY RD DENMAN ISLAND V0R 1T0

Area-Jurisdiction-Roll: 06-771-07333.300

Favourite Compare Print

Total value	$448,400
2024 assessment as of July 1, 2023	
Land	$367,000
Buildings	$81,400
Previous year value	$487,200
Land	$409,000
Buildings	$78,200

Questions about this property assessment? Visit our Property assessment FAQ or Contact us if you have questions.

Visit our BC Assessment interactive market trends maps for assessed value changes in your area, and our Property tax page to learn what your assessment value change means for your property taxes.

Find out more about BC Assessment's Data Services

Property information Are the property details correct?

Year built	1975
Description	Office
Bedrooms	
Baths	
Carports	
Garages	
Land size	2.861 Acres
First floor area	
Second floor area	
Basement finish area	
Strata area	
Building storeys	9
Gross leasable area	
Net leasable area	
No.of apartment units	

Legal description and parcel ID

LOT 1, PLAN VIP33612, SECTION 18, NANAIMO LAND DISTRICT

PID: 000-252-069

Sales history (last 3 full calendar years)

No sales history for the last 3 full calendar years

Manufactured home

Width

Length

Total area

current ENVIRONMENTAL

Site Registry - Land Title Parcel Identifier (PID) Search

BC Registries and Online Services

No records from the Site Registry that match the search criteria provided:

Folio:

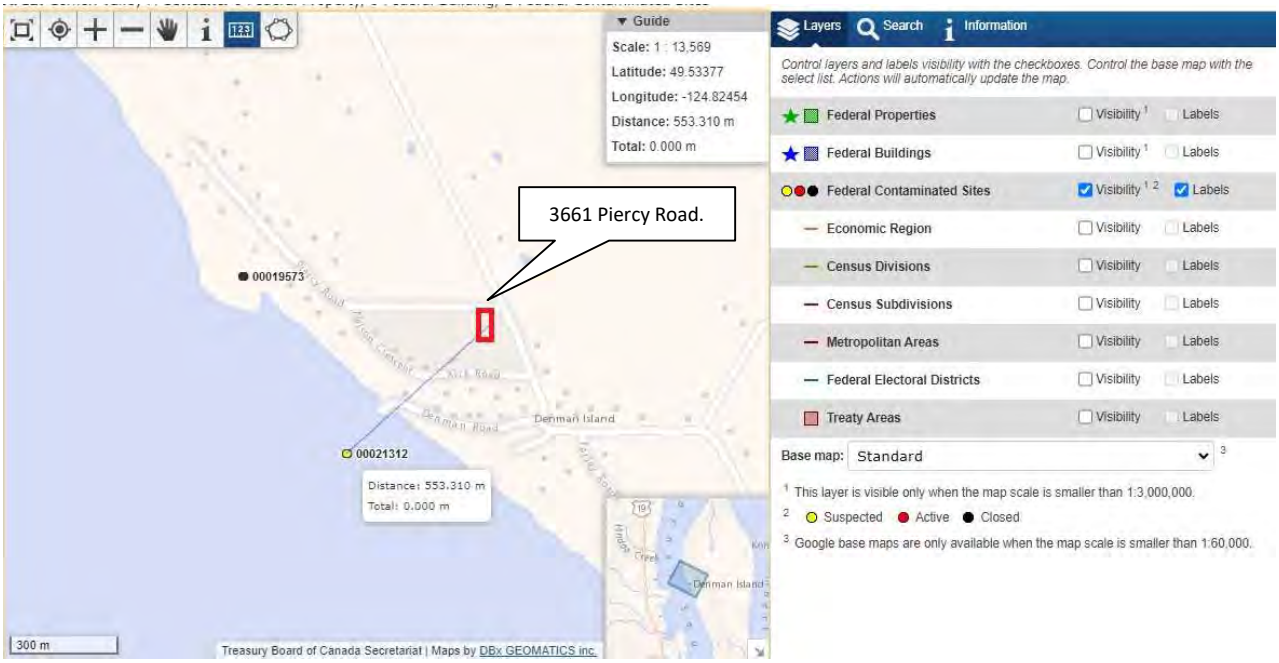
Land Title PID: 000252069

You have been charged for this information.

Sites may be revealed by searching with alternate search methods. For example, a site not revealed in an Area search may be revealed by searching with another piece of information such as PID, PIN, address, or Crown Lands File Number.

Disclaimer: Site Registry information has been filed in accordance with the provisions of the *Environmental Management Act*. While we believe the information to be reliable, BC Registries and Online Services and the Province of British Columbia make no representation or warranty as to its accuracy or completeness. Persons using this information do so at their own risk.

APPENDIX E – FEDERAL CONTAMINATED SITES



APPENDIX F – WATER WELL SEARCH

APPENDIX G- SEACOR REPORT

Following 174 pages

SITE REMEDIAL PROGRAM
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, BC

FOR

BRITISH COLUMBIA BUILDINGS CORPORATION
527 MICHIGAN STREET
VICTORIA, BC
V8V 1S1

SEACOR PROJECT NUMBER: 202.01263.004

APRIL 26, 2002

CONFIDENTIAL

SEACOR™
ENVIRONMENTAL INC.

SEACOR
ENVIRONMENTAL INC.

9 - 6421 Applecross Road
Nanaimo, BC Canada
V9V 1N1
Tel: (250) 390-5050
Fax: (250) 390-5042
www.seacorcanada.com

SITE REMEDIAL PROGRAM
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, BC

SEACOR PROJECT NO: 202.01263.004

Submitted by
SEACOR Environmental Inc.

For
British Columbia Buildings Corporation
527 Michigan Street
Victoria, BC
V8V 1S1

April 26, 2002

Prepared by:

Brad Halsey, B.Sc.
Environmental Scientist

Reviewed by:

Applied Science Technologists and Technicians of British Columbia
16475
ROBERT CHAISSON
CTech

Robert Chaisson, C.Tech.
Manager, Vancouver Island

CONFIDENTIAL

Distribution: 5 copies - British Columbia Buildings Corporation
1 copy - SEACOR

EXECUTIVE SUMMARY

SEACOR Environmental Inc. (SEACOR) was retained by the British Columbia Buildings Corporation (BCBC) to provide engineering consulting services during a supplemental investigative and environmental remediation program at the Denman Island Highways Yard, located at 3661 Piercy Road on Denman Island, BC. The field activities were completed between November 6, 2000 and December 5, 2001.

The supplemental investigative program was conducted on November 6, 2000. Eleven test pits were advanced along the southern property boundary in an area reputed to contain buried animal remains. No evidence of animal remains were located within the test pits, hence, no soil samples were submitted for analysis.

SEACOR, along with HAZCO Environmental Services Ltd. (HAZCO) conducted a remedial program at the Denman Island Highways Yard between June 19 and July 4, 2001. Remedial activities were conducted at four locations on the site: vehicle service hoist area, heating oil above-ground storage tank (AST) area, leaking drums area and former underground storage tank (UST) nest area. Approximately 369 m^3 of soil in excess of the Contaminated Sites Regulation (CSR) *Commercial* and *Residential* standards, and the *Special Waste* standards, was excavated from the aforementioned areas and transported off-site by HAZCO for treatment. In addition, four drums of oily water and bilge water located near the southern property boundary were removed off-site for disposal. The results of confirmatory soil samples collected from the excavation limits indicated concentrations of arsenic in excess of the CSR *Commercial* standard in two soil samples collected from the former UST nest excavation. As arsenic concentrations in the two soil samples exceeded the CSR *Commercial* standard, the Special Waste Extraction Procedure analyses was conducted on the samples to determine the potential leachability of arsenic into the groundwater. The results of the analyses indicated both soil samples were below the analytical detection limits and therefore the Special Waste *Leachate Quality* standards for all regulated leachable metals concentrations. All remaining soil samples were below the CSR *Commercial* and *Residential* standards for all analyzed hydrocarbon and metals parameters.

SEACOR, along with BECK Drilling and Environmental Services Ltd. (BECK) of Richmond, BC conducted a post-remediation investigation at the site on November 28 and 29, 2001. Nine boreholes were advanced across the site, and all completed as groundwater monitoring wells. The results of the post-remediation soil investigation indicated hydrocarbon and metals parameters below the CSR *Commercial* standards. A groundwater monitoring and sampling event was conducted on December 5, 2001 for the nine newly installed groundwater wells, as well as two pre-existing monitoring wells from the previous investigations. The results of the post-remediation groundwater investigation indicated dissolved metals and/or chloride concentrations in excess of the CSR *Drinking Water* and/or the *Aquatic Life* standards in several groundwater monitoring wells located across the site; dissolved hydrocarbon concentrations were below the CSR *Drinking Water* standards.

TABLE OF CONTENTS

TABLES

FIGURES

PHOTOGRAPHS

APPENDICES

1.0 INTRODUCTION

SEACOR Environmental Inc. (SEACOR) was retained by the British Columbia Buildings Corporation (BCBC) to provide engineering consulting services during an environmental remediation program at the Denman Island Highways Yard, located at 3661 Piercy Road on Denman Island, BC.

SEACOR, along with HAZCO Environmental Services Ltd. (HAZCO) conducted a site remedial program between June 19 and July 4, 2001. Approximately 369 m^3 of hydrocarbon-impacted soils in excess of the Contaminated Sites Regulation (CSR) *Commercial* (267 m^3) and *Residential* standards (100 m^3), as well as the *Special Waste* standards (2 m^3) were excavated from four distinct locations on the highways yard property and transported off-site for disposal/treatment at HAZCO's bioremediation facility located near Cumberland, BC. Four drums of oily water and bilge water were also transported off-site for treatment and disposal.

A post-remediation assessment program was conducted between November 28 and December 5, 2001. Nine boreholes were advanced across the site, and all were completed as groundwater monitoring wells. Groundwater samples were submitted for dissolved hydrocarbon, metals and chloride analyses.

The results of the remedial activities are outlined in the subsequent sections of this report. Site plans and photographs are presented for reference following the text. Borehole logs are included in Appendix A, analytical chemistry reports are included in Appendix B and supplemental information is provided in Appendix C. Additionally, the notification of independent remediation and BC Environment response letter are included in Appendix D and the Protocol 5 documentation is provided in Appendix E for reference.

2.0 BACKGROUND

2.1 SITE DETAILS

The site location map, topographical map and surrounding land use plan are illustrated on Figures 1 to 3, respectively. The site details are summarized in Table 1 below.

TABLE 1: SITE DETAILS

REGISTERED OWNER	British Columbia Buildings Corporation	
SITE ADDRESS	3661 Piercy Road, Denman Island, BC	
LEGAL DESCRIPTION	Lot 1, Section 18, Denman Island, Nanaimo District, Plan 33612	
PARCEL IDENTIFICATION NO	000-252-069	
LATITUDE/LONGITUDE	N 49° 32' 12"	W 124° 49' 3"
ZONING	Public Use	
PROPERTY SIZE	1.132 hectares	
PERCENTAGE ASPHALT COVER	Approximately 5% (600 m^2)	
BUILDING INFORMATION	Structures present at the site include: • Office trailer • Garage • Oil storage shed • Service ramp	• Salt shed* • Storage sheds • Pump house • *Note: a new salt shed was constructed adjacent to the southern property boundary in winter 2000/2001, replacing the salt shed formerly adjacent to the eastern property boundary.
TANK INFORMATION	Present: AST #1 1 x 2,200 litre, above ground, steel, gasoline AST #2 1 x 6,800 litre, above ground, steel, diesel AST #3 1 x 2,200 litre, above ground, steel, waste oil 1 x 1,140 L heating oil AST Former: UST #1 1 x 9,000 litre, underground, steel, gasoline (removed October 1995) UST #2 1 x 9,000 litre, underground, steel, diesel (removed October 1995)	
PROTECTION SYSTEMS	Cathodic Protection: Monitoring Wells: Catch Basins: Oil/Water Separator:	None currently. Utilized on former underground storage tanks Eleven No Yes
SURROUNDING LAND USE (REFER TO FIGURE 3)	North Northeast East Southeast South Southwest West Northwest	Piercy Road, vacant lot Piercy Road/Northwest Road intersection, vacant Northwest Road, vacant Northwest Road, community hall Convenience store Vacant Vacant Piercy Road, vacant
PRECIPITATION	Annual Rainfall: Annual Snowfall: Annual Precipitation:	1091.4 mm 91.4 cm 1187.6 mm
STRATIGRAPHY	Sand and gravel fill overlying silt and sand and/or silt and clay to approximately 2.7 m (bedrock)	

TABLE 1: SITE DETAILS (cont)		
TOPOGRAPHY AND HYDROGEOLOGY	Topography: Flood potential: Groundwater: Groundwater Gradient: Surface Water: Surface Drainage: Water Wells: Water Supply:	Site slopes to the south/southwest None 0.14 m to 1.06 m below ground surface (December 5, 2001) Southwest towards Baynes Sound Baynes Sound, approximately 375 m southwest South/southwest A minimum of sixty groundwater wells were identified within a 1.5 km radius of the site. Water well at northeast corner of site. Reportedly, this well is used solely for the sinks and washrooms; on-site staff import bottled water for drinking.
NOTES	UST #1 and UST #2 were removed in October 1995. The tanks were reportedly observed to be in good condition, however, no documentation has been provided to SEACOR for review.	

Notes:
- - Precipitation data from Comox Airport, page 36, "Canadian Climate Normals, 1961 - 1990, volume 1", Minister of Supply and Services Canada, 1993

2.2 PREVIOUS WORKS CONDUCTED

The Denman Island Highways Yard is located at 3661 Piercy Road on Denman Island, BC. A Stage 1 and 2 Preliminary Site Investigation (PSI) was conducted on the site in January 1999 by AMEC Earth and Environmental Limited (AMEC) with a subsequent Detailed Site Investigation (DSI), also conducted by AMEC, in July 1999. The former site plan, illustrating the PSI and DSI sampling locations, is illustrated on Figure 4.

The Stage 1 and 2 PSI included the advancement of a total of five boreholes, with two completed as groundwater monitoring wells. In addition, four shallow hand dug test pits were advanced, to a maximum depth of 0.1 m, in various areas of the site to determine surficial soil quality. A soil sample collected from a test pit advanced in the area of the former fuel storage area exceeded the comparable Contaminated Sites Regulation (CSR) *Commercial* standards for light and heavy extractable petroleum hydrocarbons (LEPH/HEPH). One soil sample collected from the test pit advanced in the area of the service ramp exceeded the comparable CSR *Commercial* standard for HEPH and equaled the comparable CSR *Commercial* standard for LEPH; this sample also exceeded the CSR *Commercial* standard for zinc concentrations. One test pit was also advanced in the area of a leaking drum near the southern property boundary of the site, and the sample collected from the test pit exceeded the *Special Waste* standards for mineral oil and grease and the comparable CSR *Commercial* standards for LEPH and HEPH. One groundwater sample collected from a monitoring well completed adjacent to the former diesel and gasoline underground storage tank (UST) nest area exceeded the comparable CSR *Aquatic Life* standard for LEPH and the CSR *Drinking Water* standard for ethylbenzene. MW-02, advanced west of the salt shed, exceeded the CSR *Drinking Water* standard for dissolved chloride in groundwater.

The DSI included the advancement of eight boreholes, with six boreholes completed as groundwater monitoring wells. Two shallow test pits were also advanced in the area of the former fuel shed. One borehole advanced in the centre of the former UST nest exceeded the comparable CSR *Commercial* standard for LEPH

and the CSR *Commercial* standard for volatile petroleum hydrocarbons (VPH). Groundwater samples collected from four on-site groundwater monitoring wells were below the CSR *Drinking Water* standards for all regulated hydrocarbon parameters.

The results of the PSI and DSI suggested that approximately 213 m^3 of soil in excess of the CSR *Commercial* standards for various hydrocarbon-related parameters would require remediation.

2.3 POTENTIAL OFF-SITE CONTAMINANTS OF CONCERN

Based on the PSI and DSI programs, potential contaminants of concern (PCOC) identified at the site included benzene, ethylbenzene, toluene xylenes (BETX), VPH, LEPH, and polycyclic aromatic hydrocarbons (PAH) related to fuels, LEPH, HEPH and PAH related to motor oils, lubricants and hydraulic fluids and heavy metals related to fill soils. A review of properties adjacent to the Denman Island Highways Yard site was also undertaken. Properties adjacent to the site may have also been sources of LEPH, HEPH and PAH contamination. Figure 5 illustrates the locations and PCOC's identified on the Denman Island Highways Yard and the adjacent properties.

2.4 REMEDIAL ACTION PLAN

SEACOR submitted a remedial action plan entitled *"Environmental Remedial Action Plan, Denman Island Highways Yard"*, dated January 4, 2001 (the RAP) to BCBC outlining the proposed methods for remediation of the specific target areas as outlined in the document entitled *"Request for Proposal - Remediation, Denman Island Highways Yard"*, dated July 27, 2000 (the RFP). The RAP was a compilation of BCBC recommendations for remediation within the RFP, and following review of the PSI and DSI reports, SEACOR provided additional recommendations for further investigation/remediation. The remedial action plan is summarized below and on the following pages.

2.4.1 Request for Proposal

Four target areas were identified by BCBC in the RFP at the Cassidy Highways Yard requiring further investigation and/or remediation to less than CSR *Commercial* standards for soil and CSR *Drinking Water* standards for groundwater. The locations of the target areas are illustrated on Figure 6. These areas included:

Target Area #1 - Former Diesel and Gasoline UST Area - The ex-situ remedial methodologies envisaged included excavation of the > CSR *Commercial* hydrocarbon-impacted soils (approximately 200 m^3 as determined by AMEC) and treatment in a temporary on-site, engineered biocell or transported off-site for disposal.

Target Area #2 - Former Fuel Storage Area - approximately 2 m^3 of soil in excess of the CSR *Commercial* standards for LEPH and HEPH. SEACOR recommended remediation of this area to be undertaken in conjunction with target area #1, and the remedial technologies (ex-situ remediation and biocell treatment or off-site disposal) to be utilized for the soils removed from this area.

Target Area #3 - Vehicle Service Ramp - approximately 10 m^3 of soil in excess of the comparable *Commercial* standards for LEPH and HEPH, and the CSR *Commercial* standard for zinc; SEACOR recommended the soils be removed off-site to a permitted facility

Target Area #4 - Leaking Drum - approximately 1 m^3 of soil in excess of the *Special Waste* standards for mineral oil and grease, and the comparable CSR *Commercial* standard for LEPH and HEPH. Due to the high concentration of mineral oil and grease in this area (> *Special Waste* standard) and the presence of a leaking drum, SEACOR recommended the drum and the contaminated soils (estimated at 1 m^3) be removed off-site to a permitted facility for disposal.

It was SEACOR's understanding that BCBC required a Certificate of Compliance (COC) for the site. Due to the increased time and costs involved in the implementation of an in-situ remedial system, SEACOR recommended that on-site contamination be remediated by means of ex-situ remedial technologies. The areas to be excavated were limited in size and volume, and ex-situ remediation could be accomplished in a period of days to weeks versus months to years with an in-situ remedial system.

2.4.2 Supplemental Investigative/Remedial Works

As requested by BCBC, SEACOR provided recommendations for further investigative/remedial work necessary to complete remediation planning for the subject site. Accordingly, SEACOR recommended supplemental works for the following additional target areas as outlined below, with proposed investigative procedures and remedial options, if deemed necessary following the investigation.

Target Area #5 - Removal of animal carcasses - It was noted in the AMEC PSI that animal carcasses had been buried along the southern property boundary of the site. SEACOR recommended investigation of this area and subsequent removal of the animal carcasses and the advancement of one borehole/monitoring well in the excavation area to determine water quality as it relates to possible bacterial contamination (fecal coliform counts).

Target Area #6 - Cold Mix Asphalt Area - SEACOR recommended further investigation in this area to determine the presence/absence of surficial contamination from the storage of cold mix.

Target Area #7 - Storage Shed along southern property boundary - During the PSI works, AMEC noted that a shed near the southern property boundary had poor chemical storage. Depending upon field observations, SEACOR recommended delineation of the extent of the surficial contamination and submission of soil samples for analyses dependent on the type of chemical stored.

3.0 SOIL SAMPLING METHODOLOGY AND REGULATORY STANDARDS

3.1 SOIL SAMPLING AND FIELD SCREENING METHODOLOGY

Soil sampling and field screening procedures were performed in accordance with the SEACOR's Standard Field Procedures and general environmental standards of practice.

Soil samples collected during the site remedial program were classified according to soil type, structure and colour. All samples were field-screened for the presence of combustible organic vapours using a fixed-volume headspace technique with a Gastech Model 1238ME with the methane elimination feature activated. The Gastech was calibrated each day to two points prior to field use: 43% lower explosive limit (LEL) and 443 parts per million volumetric (ppmv) of hexane. A ziploc bag was partially filled with soil prior to puncturing the bag and analyzing the headspace. The detector recorded the concentration of combustible organic vapours in ppmv. Duplicate samples were retained for laboratory analyses; the soil samples were placed in laboratory-prepared glass jars (125 mL), which were labeled and stored in an ice-filled cooler. The samples and a completed chain-of-custody form were subsequently transported to ALS for chemical analyses.

3.2 DRILLING METHODOLOGY AND GROUNDWATER SAMPLING

The post remediation groundwater quality assessment activities included the advancement of nine boreholes across the site. Boreholes were completed utilizing a truck-mounted rotary head drill rig. Boreholes were advanced utilizing a hollow stem auger, with select boreholes drilled to a maximum depth of 3.1 m below grade. Representative soil samples were collected during the drilling from split spoon sampling tubes. All soil samples were field-screened in accordance with the above-described procedures. Prior to implementing the drilling investigation, a site-specific health and safety review was conducted.

Fifty-millimetre diameter, #010 slot polyvinyl chloride (PVC) monitoring wells were installed all nine boreholes to allow characterization of groundwater quality and to determine the presence or absence of any free-phase product. The annulus surrounding the screened section of each monitoring well was backfilled with silica sand and a bentonite seal was installed above the screened section to prevent cross-contamination; all monitoring wells were capped with lockable well caps and steel roadboxes, installed flush with surface grade. Reference should be made to Appendix A for borehole logs and specific monitoring well construction details.

3.3 ANALYTICAL TESTING AND REGULATORY STANDARDS

The Contaminated Sites Regulation (CSR) of the Waste Management Act is the principal document addressing contaminated sites in British Columbia. The CSR came into effect on April 1, 1997 and was amended on July 19, 1999 and February 4, 2002. The CSR provides for both numerical and risk-based approaches to managing site contamination and outlines the procedural requirements for site assessment, remediation and application for environmental closure of a property.

The numerical standards for soils are presented in two schedules. The Schedule 4 Generic Numerical Soil Standards include a variety of inorganic and organic substances and are compared to five classes of land use: *Agricultural, Urban Park, Residential, Commercial* and *Industrial*. The Schedule 5 Matrix Numerical Soil Standards address a number of contaminants from both a land use and risk-based receptor perspective. On the basis of present land use defined for the Denman Island Highways Yard, *Commercial* Generic Numerical Soil Standards apply and the most conservative of the following site-specific factors for *Commercial* land use were assumed to apply for determining applicable Matrix Numerical Soil Standards: *human intake of contaminated soil, toxicity to soil invertebrates and plants, groundwater flow to surface water used by aquatic life* (marine), and *groundwater used for drinking water*. The presence/absence of *Special Waste* soil at the site is determined as per the Special Waste Regulation and Section 13 of the CSR.

Groundwater quality in the CSR is referenced to four classes of water use (*Aquatic Life, Irrigation, Livestock* and *Drinking Water*). Based on the potential for groundwater transport to Baynes Sound, located approximately 375 m southwest of the site, and groundwater wells with the 1.5 km default radius, SEACOR has assumed that the *Aquatic Life* standards to protect marine aquatic life, and *Drinking Water* standards, as referenced in the CSR, would apply at the site. On the basis of current land use, *Irrigation* and *Livestock* standards would not apply at this site.

The First Stage Amendments to the CSR were implemented on July 19, 1999. The amendments included the new Schedule 6 water quality standards which were discussed in a supplemental document titled Regulation of Petroleum Hydrocarbons in Water under the Contaminated Sites and Special Waste Regulations (Protocol 7). The Schedule 6 water quality standards for volatile hydrocarbons and extractable hydrocarbons (VH_w and EH_w, respectively) apply at all sites in BC irrespective of water use. Under the advisement of the BC Ministry of Water, Land and Air Protection (WLAP) regarding similar sites, and for the purpose of this investigation and remedial program, SEACOR has not compared analytical data to the Special Waste Regulation Leachate Quality standards.

The Second Stage Amendments to the CSR were implemented on February 4, 2002. The amendments included new generic numerical soil (Schedule 4) and water (Schedule 6) standards, standards for triggering contaminated soil relocation agreements (Schedule 7), and modifications to the existing matrix numerical soil standards including the addition of three new matrix numerical soil standards (Schedule 5). Select parameters contained in the Schedule 5 site specific factor of *groundwater flow to surface water used by aquatic life* and

the Schedule 6 *Aquatic Life* standards were partitioned to address both marine environments and freshwater environments independently.

Soil and groundwater samples retained for analyses were submitted to ALS for selective quantification of one or more of the following parameters:

- BETX[a,b] - benzene, ethylbenzene, toluene, xylenes
- VPH[a] - volatile petroleum hydrocarbons, exclusive of BETX constituents
- VPHw[b] - volatile petroleum hydrocarbons in water
- LEPH[a]/HEPH[a] - light and heavy extractable petroleum hydrocarbons
- LEPHw[b] - light extractable petroleum hydrocarbons in water
- PAH[a b] - polycyclic aromatic hydrocarbons
- EPH - extractable petroleum hydrocarbons, C_{10-19} and C_{19-32}
- Metals[a,b] - total heavy metals (soil), dissolved metals (water)
- Dis.Cl.[b] - dissolved chloride (water)
- SWEP - Special Waste Extraction Procedure

[a] - indicates a regulated parameter in soil [b] - indicates a regulated parameter in groundwater

It should be noted that soil samples may have been submitted for EPH analysis in place of LEPH/HEPH analysis; EPH results are, by definition, more conservative than LEPH/HEPH results for the purpose of gross parameter testing.

4.0 SUPPLEMENTAL INVESTIGATIVE PROGRAM

As summarized in SEACOR's letters entitled *"Review of Investigative Reports, Denman Island Highways Yard, 3661 Piercy Road, Denman Island, BC"*, dated October 16, 2000 and *"Environmental Remedial Action Plan, Denman Island Highways Yard, 3661 Piercy Road, Denman Island, BC"*, dated January 4, 2001, SEACOR recommended additional investigation be conducted at three areas on the Denman Island Highways Yard. The three areas included the cold mix asphalt area (Target Area #5), buried animal carcasses along the southern property boundary (Target Area #6) and the storage shed area (Target Area #7). Following a reconnaissance visit of the site, further investigation was deemed not to be necessary for Target Areas #5 and #7, however, Target Area #6 would require supplemental investigation. Figure 6 illustrates the locations of Target Areas #5, #6 and #7.

4.1 SOIL FIELD OBSERVATIONS

Eleven test pits were advanced along the southern property boundary in areas reputed to contain buried animal carcasses to investigate the potential for soil contamination from animal tissue decomposition. The soil field observations as recorded during the sample collection are summarized in Table 2 below. Figure 7 illustrates the test pit locations advanced along the southern property boundary.

TABLE 2: SOIL OBSERVATIONS - TARGET AREA #6 SUPPLEMENTAL INVESTIGATION PROGRAM
November 6, 2000

Sample ID	Depth Below Grade (metres)	Location	Soil Stratigraphy
Target Area #6 - Buried Animal Carcasses - November 6, 2001			
TP1-SA1	0.7	West of storage sheds	High organic content, wet
TP1-SA2	1.6	West of storage sheds	Silt and clay, gray, wet
TP2-SA1	0.6	West of storage sheds	Sand and gravel, brown, damp
TP2-SA2	1.6	West of storage sheds	Sand, gray
TP3-SA1	0.6	West of storage sheds	Sand and gravel
TP3-SA2	1.6	West of storage sheds	Sand and gravel
TP4-SA1	0.7	West of storage sheds	Topsoil, damp
TP4-SA2	1.6	West of storage sheds	Sandy silt, brown, damp
TP5-SA1	0.7	West of storage sheds	High organic content, brown, wet
TP5-SA2	1.6	West of storage sheds	Silty sand, gray, wet
TP6-SA1	0.7	West of storage sheds	Sand and gravel, brown, moist
TP6-SA2	1.6	West of storage sheds	Silt, brown, wet
TP7-SA1	0.8	East of storage sheds	Silt, moist
TP7-SA2	1.5	East of storage sheds	Silt (hardpan)
TP8-SA1	0.7	East of storage sheds	Silt, damp
TP8-SA2	1.6	East of storage sheds	Silt (hardpan)
TP9-SA1	0.8	East of storage sheds	Silt
TP9-SA2	1.5	East of storage sheds	Silt (hardpan)
TP10-SA1	0.7	East of storage sheds	Silt
TP10-SA2	1.3	East of storage sheds	Silt (hardpan)
TP11-SA1	0.7	East of storage sheds	Silt
TP11-SA2	1.4	East of storage sheds	Silt (hardpan)

No animals, or the remains of such, were encountered during the test pitting investigation, therefore, no samples were submitted to the laboratory for analysis.

5.0 SITE REMEDIAL PROGRAM

SEACOR, along with HAZCO conducted a remedial excavation program at the Denman Island Highways Yard between June 19 and July 4, 2001. Approximately 267 m^3 of soil suspected to be in excess of the CSR *Commercial* standards, 100 m^3 of soil suspected to be in excess of the CSR *Residential* standards and 2 m^3 of soil in excess of the *Special Waste* standards was excavated from four areas on the site. The works conducted at each area are summarized each of the four sections below, along with field observations and analytical chemistry data. Figure 8 illustrates the locations of each of the four excavation areas. Analytical chemistry reports have been included in Appendix B for reference.

5.1 TARGET AREA #3 - VEHICLE SERVICE HOIST EXCAVATION PROGRAM

Approximately 6 m^3 of soil in excess of the CSR *Commercial* standards for HEPH and zinc was excavated from the vehicle service hoist area on June 19, 2001. Following excavation of the impacted soils, the area was re-instated to it's original condition. The sections below and on the following page summarize the field observations recorded during sample collection and the analytical chemistry data. Figure 9 illustrates the confirmatory soil sample locations.

5.1.1 Soil Field Observations

Eleven confirmatory soil samples were collected from the vehicle service hoist excavation limits and the field observations recorded during sample collection are summarized in Table 3 below.

TABLE 3: SOIL OBSERVATIONS - VEHICLE SERVICE HOIST AREA - June 19, 2001

Sample ID	Depth Below Grade (metres)	Location	Combustible Vapour Level (ppmv)	Analytical Schedule
SA1	0.2	South wall	35	EPH
SA2	0.3	East wall	20	-
SA3	0.6	South base	25	LEPH, HEPH, PAH, Metals
SA4	0.3	West wall	20	-
SA5	0.3	East wall	15	-
SA6	0.6	Centre base	20	EPH
SA7	0.3	West wall	15	EPH
SA8	0.3	East wall	10	-
SA9	0.6	North base	30	EPH, Metals
SA10	0.3	West wall	15	-
SA11	0.2	North wall	10	-

Notes:
- ppmv - parts per million volumetric
- EPH - extractable petroleum hydrocarbons; LEPH - light extractable petroleum hydrocarbons; HEPH - heavy extractable petroleum hydrocarbons; PAH - polycyclic aromatic hydrocarbons
- "-" -sample not submitted for analysis

Combustible vapour levels ranged from 10 ppmv in SA8 and SA11 to 35 ppmv in SA1. Soil samples were collected at depths ranging from 0.2 m to 0.6 m below ground surface.

5.1.2 Soil Chemistry Results

Five select soil samples were submitted to ALS for hydrocarbon analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 4 below.

TABLE 4: SOIL EPH, LEPH/HEPH AND PAH CHEMISTRY (ppm)
VEHICLE SERVICE HOIST EXCAVATION PROGRAM - CONFIRMATORY SOIL SAMPLES - June 19, 2001

Parameter	SA1	SA3	SA6	SA7	SA9	BC Standards	
						CSR *Residential*	CSR *Commercial*
Extractables							
EPH (C_{10-19})	<200	<200	<200	<200	<200	*1000[a]	*2000[a]
EPH (C_{19-32})	<200	<200	<200	<200	<200	*1000[a]	*5000[a]
LEPH	-	<200	-	-	-	1000[a]	2000[a]
HEPH	-	<200	-	-	-	1000[a]	5000[a]
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	-	<0.01	-	-	-	n.s.	n.s.
Acenaphthylene	-	<0.01	-	-	-	n.s.	n.s.
Anthracene	-	<0.01	-	-	-	n.s.	n.s.
Benz(a)anthracene	-	<0.01	-	-	-	1[a]	10[a]
Benzo(a)pyrene	-	<0.01	-	-	-	1[b]	10[b]
Benzo(b)fluoranthene	-	<0.01	-	-	-	1[a]	10[a]
Benzo(k)fluoranthene	-	<0.01	-	-	-	1[a]	10[a]
Benzo(g,h,i)perylene	-	<0.01	-	-	-	n.s.	n.s.
Chrysene	-	<0.01	-	-	-	n.s.	n.s.
Dibenz(a,h)anthracene	-	<0.01	-	-	-	1[a]	10[a]
Fluoranthene	-	<0.01	-	-	-	n.s.	n.s.
Fluorene	-	<0.01	-	-	-	n.s.	n.s.
Indeno(1,2,3-c,d)pyrene	-	<0.01	-	-	-	1[a]	10[a]
Naphthalene	-	<0.01	-	-	-	5[a]	50[a]
Phenanthrene	-	<0.01	-	-	-	5[a]	50[a]
Pyrene	-	<0.01	-	-	-	10[a]	100[a]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- EPH - extractable petroleum hydrocarbons; PAH - polycyclic aromatic hydrocarbons
- LEPH and HEPH - light and heavy extractable petroleum hydrocarbons
- < - less than laboratory detection limit indicated
- "-" indicates sample not analyzed for specified parameter
- n.s. - no standard currently listed
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Soil Standards
- [b] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- * - indicates comparable standards for LEPH and HEPH which are defined as EPH (C_{10-19}) - nine specific PAHs and EPH (C_{19-32}) - nine specific PAHs, respectively; EPH is not a regulated parameter in soil

The results of the analyses indicated all soil samples were below the analytical detection limit and the CSR *Residential* and *Commercial* standards for all analyzed hydrocarbon parameters.

Two soil samples from the vehicle service hoist excavation were also submitted to ALS for metals analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 5 below.

TABLE 5: SOIL METALS CHEMISTRY (ppm)
VEHICLE SERVICE HOIST EXCAVATION PROGRAM - CONFIRMATORY SOIL SAMPLES - June 19, 2001

Parameter	SA3	SA9	BC Standards	
			CSR *Residential*	CSR *Commercial*
PHYSICAL TEST				
pH	5.92	6.88	n.s.	n.s.
METALS				
Antimony	<20	<20	20[a]	40[a]
Arsenic	7	<5	15[b]	15[b]
Barium	220	73	500[a]	2000[a]
Beryllium	<0.5	<0.5	4[a]	8[a]
Cadmium	<0.5	<0.5	1.5[1,b] or 2[1,c]	1.5[1,b] or 2[1,c]
Chromium	46	30	60[b]	60[b]
Cobalt	15	13	50[a]	300[a]
Copper	50	42	150[d]	200[2,c] or 250[2,d]
Lead	<50	<50	100[3,b] or 500[3,e]	100[3,b] or 1000[3,e]
Mercury	0.021	0.017	15[e]	40[e]
Molybdenum	<4	<4	10[a]	40[a]
Nickel	32	28	100[a]	500[a]
Selenium	<2	<2	3[a]	10[a]
Silver	<2	<2	20[a]	40[a]
Tin	<10	<10	50[a]	300[a]
Vanadium	139	117	200[a]	n.s.
Zinc	56	44	150[4,c] or 300[4,c]	150[4,c] or 300[4,c]

Notes:
- all results expressed as milligrams per dry kilogram (ppm - parts per million)
- < - less than the laboratory detection limit
- n.s. - no standard listed
- pH used to determine some standards
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Standards
- [b] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [c] - Matrix Numerical Soil Standards - groundwater flow to surface water used by aquatic life (marine)
- [d] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [e] - Matrix Numerical Soil Standards - intake of contaminated soil
- [1] Cadmium: pH of 5.92, standard is 1.5; pH of 6.88, standard is 2
- [2] Copper: pH of 5.92, standard is 200; pH of 6.88, standard is 250
- [3] Lead: pH of 5.92, standard is 100; pH of 6.88, standard is 500 for CSR *Residential* and 1000 for CSR *Commercial*
- [4] Zinc: pH of 5.92, standard is 150; pH of 6.88, standard is 300

The results of the analyses indicated both soil samples were below the CSR *Residential* and *Commercial* standards for all regulated metals parameters.

5.2 TARGET AREA #2 - HEATING OIL AST AREA EXCAVATION PROGRAM

Approximately 1 m^3 of soil in excess of the CSR *Commercial* standard for HEPH was excavated from the heating oil above ground storage tank (AST) area on June 19, 2001. Following excavation of the impacted soils, the area was re-instated to it's original condition. The sections below and on the following page summarize the field observations recorded during sample collection and the analytical chemistry data. Figure 10 illustrates the confirmatory soil sample locations.

5.2.1 Soil Field Observations

Three confirmatory soil samples were collected from the heating oil AST excavation limits and the field observations recorded during sample collection are summarized in Table 6 below.

TABLE 6: SOIL OBSERVATIONS - HEATING OIL AST EXCAVATION PROGRAM - June 19, 2001

Sample ID	Depth Below Grade (metres)	Location	Combustible Vapour Level (ppmv)	Analytical Schedule
SA12	0.2	Base	15	-
SA13	0.2	Base	15	EPH, Metals
SA14	0.1	Wall	5	-

Notes:
- ppmv - parts per million volumetric
- EPH - extractable petroleum hydrocarbons
- "-" -sample not submitted for analysis

5.2.2 Soil Chemistry Results

One soil sample collected from the base of the excavation was submitted to ALS for EPH analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 7 below.

TABLE 7: SOIL EPH CHEMISTRY (ppm)
HEATING OIL AST EXCAVATION PROGRAM - CONFIRMATORY SOIL SAMPLE - June 19, 2001

Parameter	SA13	BC Standards	
		CSR *Residential*	CSR *Commercial*
EPH (C_{10-19})	<200	*1000[a]	*2000[a]
EPH (C_{19-32})	659	*1000[a]	*5000[a]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- EPH - extractable petroleum hydrocarbons
- < - less than laboratory detection limit indicated
- CSR *Residential*- BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Soil Standards
- * - indicates comparable standards for LEPH and HEPH which are defined as EPH (C_{10-19}) - nine specific PAHs and EPH (C_{19-32}) - nine specific PAHs, respectively; EPH is not a regulated parameter in soil

The results of the analyses indicated soil sample SA13 was below the comparable CSR *Residential* and *Commercial* standards for EPH constituents.

Soil sample SA13 was also submitted to ALS for metals analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 8 below.

TABLE 8: SOIL METALS CHEMISTRY (ppm)
HEATING OIL AST EXCAVATION PROGRAM - CONFIRMATORY SOIL SAMPLE - June 19, 2001

Parameter	SA13	BC Standards	
		CSR *Residential*	CSR *Commercial*
PHYSICAL TEST			
pH	6.04	n.s.	n.s.
METALS			
Antimony	<20	20[a]	40[a]
Arsenic	<5	15[b]	15[b]
Barium	120	500[a]	2000[a]
Beryllium	<0.5	4[a]	8[a]
Cadmium	<0.5	1.5[b]	1.5[b]
Chromium	39	60[b]	60[b]
Cobalt	15	50[a]	300[a]
Copper	55	150[c]	250[c]
Lead	<50	250[b]	250[b]
Mercury	0.012	15[d]	40[d]
Molybdenum	<4	10[a]	40[a]
Nickel	23	100[a]	500[a]
Selenium	<2	3[a]	10[a]
Silver	<2	20[a]	40[a]
Tin	<10	50[a]	300[a]
Vanadium	96	200[a]	n.s.
Zinc	380	450[c]	600[c]

Notes:
- all results expressed as milligrams per dry kilogram (ppm - parts per million)
- < - less than the laboratory detection limit
- n.s. - no standard listed
- pH used to determine some standards
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Standards
- [b] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [c] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [d] - Matrix Numerical Soil Standards - intake of contaminated soil

The results of the analyses indicated sample SA13 was below the CSR *Residential* standards for total metals concentrations.

5.3 TARGET AREA #4 - LEAKING DRUMS AREA EXCAVATION PROGRAM

Approximately 2 m^3 of soil in excess of the Special Waste standards for mineral oil and grease was excavated from the leaking drums area on June 19 and 20, 2001. Following excavation of the impacted soils, the area was re-instated to it's original condition. The sections below and on the following page summarize the field observations recorded during sample collection and the analytical chemistry data. Figure 10 illustrates the confirmatory soil sample locations.

5.3.1 Soil Field Observations

One excavated and five confirmatory soil samples were collected from the leaking drums excavation limits and the field observations recorded during sample collection are summarized in Table 9 below.

TABLE 9: SOIL OBSERVATIONS - LEAKING DRUMS AREA - June 19 and 20, 2001

Sample ID	Depth Below Grade (metres)	Location	Combustible Vapour Level (ppmv)	Analytical Schedule
Excavated Soil Sample				
SA16	0.5	North wall	130	-
Confirmatory Soil Samples				
SA15	1.1	Base	40	LEPH, HEPH, PAH
SA17	0.5	East wall	45	-
SA18	0.5	South wall	40	EPH
SA19	0.5	West wall	40	-
SA20	0.5	North wall	15	-

Notes:
- ppmv - parts per million volumetric
- LTDL - less than detection limit of field instrument
- LEPH - light extractable petroleum hydrocarbons; HEPH - heavy extractable petroleum hydrocarbons; PAH - polycyclic aromatic hydrocarbons; EPH - extractable petroleum hydrocarbons
- "--" - not analyzed

Combustible vapour levels ranged from 15 ppmv in soil sample SA20 to 45 ppmv in sample SA17. Samples were collected at depths of 0.5 m and 1.1 m below ground surface.

5.3.2 Soil Chemistry Results

Two soil samples were submitted to ALS for hydrocarbon analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 10 below.

TABLE 10: SOIL EPH, LEPH/HEPH AND PAH CHEMISTRY (ppm)
LEAKING DRUMS AREA EXCAVATION PROGRAM - CONFIRMATORY SOIL SAMPLES - June 19, 2001

Parameter	SA15	SA18	BC Standards	
			CSR *Residential*	CSR *Commercial*
Extractables				
EPH (C_{10-19})	<200	<200	*1000[a]	*2000[a]
EPH (C_{19-32})	<200	596	*1000[a]	*5000[a]
LEPH	<200	-	1000[a]	2000[a]
HEPH	<200	-	1000[a]	5000[a]
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	<0.01	-	n.s.	n.s.
Acenaphthylene	<0.01	-	n.s.	n.s.
Anthracene	<0.01	-	n.s.	n.s.
Benz(a)anthracene	<0.01	-	1[a]	10[a]
Benzo(a)pyrene	<0.01	-	1[b]	10[b]
Benzo(b)fluoranthene	<0.01	-	1[a]	10[a]
Benzo(k)fluoranthene	<0.01	-	1[a]	10[a]
Benzo(g,h,i)perylene	<0.01	-	n.s.	n.s.
Chrysene	<0.01	-	n.s.	n.s.
Dibenz(a,h)anthracene	<0.01	-	1[a]	10[a]
Fluoranthene	<0.01	-	n.s.	n.s.
Fluorene	<0.01	-	n.s.	n.s.
Indeno(1,2,3-c,d)pyrene	<0.01	-	1[a]	10[a]
Naphthalene	<0.01	-	5[a]	50[a]
Phenanthrene	<0.01	-	5[a]	50[a]
Pyrene	<0.01	-	10[a]	100[a]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- EPH - extractable petroleum hydrocarbons; PAH - polycyclic aromatic hydrocarbons
- LEPH and HEPH - light and heavy extractable petroleum hydrocarbons
- < - less than laboratory detection limit indicated
- "-" indicates sample not analyzed for specified parameter
- n.s. - no standard currently listed
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Soil Standards
- [b] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- * - indicates comparable standards for LEPH and HEPH which are defined as EPH (C_{10-19}) - nine specific PAHs and EPH (C_{19-32}) - nine specific PAHs, respectively; EPH is not a regulated parameter in soil

The results of the analyses indicated both soil samples were below the CSR *Residential* standards for all analyzed hydrocarbon parameters.

5.4 TARGET AREA #1 - FORMER UST NEST EXCAVATION PROGRAM

Approximately 360 m^3 of soil in excess of the CSR *Residential* and *Commercial* standards was excavated from the former UST nest area between June 20 and 25, 2001. Following excavation of the impacted soils, the area was re-instated to it's original condition. The sections below and on the following page summarize the field observations recorded during sample collection and the analytical chemistry data.

5.4.1 Excavated Soil Samples

- **Soil Field Observations**

Fifteen soil samples were collected of soil excavated from the former UST nest area and the field observations recorded during sample collection are summarized in Table 11 below.

TABLE 11: SOIL OBSERVATIONS - FORMER UST NEST EXCAVATION PROGRAM
EXCAVATED SOIL SAMPLES - June 20 - 22, 2001

Sample ID	Depth Below Grade (metres)	Location	Combustible Vapour Level (ppmv)	Analytical Schedule
SA21	2.7	Southeast corner	15	-
SA22	1.5	Southeast corner	LTDL	-
SA23	2.5	Southeast corner	10	-
SA24	1.4	Southeast corner	10	-
SA27	1.8	Former tank nest	660	BETX/VPH, LEPH, HEPH, PAH
SA41	-	-	15	BETX/VPH, EPH
SA42	-	-	10	EPH
SA44	-	Former tank nest	550	BETX/VPH, EPH
SA45	-	Former tank nest	660	BETX/VPH, EPH
SA46	-	Former tank nest	165	-
SA49	-	Former tank nest	105	-
SA64	2.7	West wall	30	-
SA65	1.4	West wall	40	-
SA66	1.5	Southwest excavation	190	-
SA69	1.5	Southwest excavation	500	BETX/VPH, EPH

Notes:
- ppmv - parts per million volumetric
- LTDL - less than detection limit of field instrument
- BETX - benzene, ethylbenzene, toluene, xylenes; VPH - volatile petroleum hydrocarbons;
- LEPH - light extractable petroleum hydrocarbons; HEPH – heavy extractable petroleum hydrocarbons; PAH - polycyclic aromatic hydrocarbons; EPH - extractable petroleum hydrocarbons
- "--" - not analyzed/not applicable

Soil samples were collected at depths ranging from 1.4 m to 2.7 m below ground surface. Combustible vapour levels ranged from LTDL in SA22 to 660 ppmv in SA27 and SA45.

- **Soil Chemistry Results**

Six excavated soil samples were submitted to ALS for hydrocarbon analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 12 below.

TABLE 12: SOIL BETX/VPH, EPH, LEPH/HEPH CHEMISTRY (ppm) - FORMER UST NEST EXCAVATION PROGRAM - EXCAVATED SOIL SAMPLES - June 20 - 22, 2001

Sample ID	Benzene	Ethylbenzene	Toluene	Xylenes	VPH	EPH (C_{10-19})	EPH (C_{19-32})	LEPH	HEPH
SA27	<0.04	<0.05	<0.05	0.28	176	962	245	961	245
SA41	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA42	-	-	-	-	-	<200	<200	-	-
SA44	<0.04	0.28	<0.05	2.08	**306**	**1790**	521	-	-
SA45	<0.04	0.63	<0.05	**7.33**	191	**4120**	**1030**	-	-
SA69	<0.04	<0.05	<0.05	<0.10	<100	**1780**	483	-	-
CSR *Residential*	0.04[a]	1[b]	1.5[b]	5[b]	200[c]	*1000[c]	*1000[c]	1000[c]	1000[c]
CSR *Commercial*	0.04[a]	7[a]	2.5[a]	20[a]	200[c]	*2000[c]	*5000[c]	2000[c]	5000[c]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- BETX - benzene, ethylbenzene, toluene, xylenes; VPH - volatile petroleum hydrocarbons
- EPH - extractable petroleum hydrocarbons
- LEPH and HEPH - light and heavy extractable petroleum hydrocarbons
- < - less than laboratory detection limit indicated
- "-" - indicates sample not analyzed for specified parameter
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [b] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [c] - Generic Numerical Soil Standards
- * - indicates comparable standards for LEPH and HEPH which are defined as EPH (C_{10-19}) - nine specific PAHs and EPH (C_{19-32}) - nine specific PAHs, respectively; EPH is not a regulated parameter in soil
- **bold** - indicates concentrations in excess of the CSR *Residential* standard
- **bold and underlined** - indicates concentrations in excess of the CSR *Commercial* standard

The results of the analyses indicated SA44 exceeded the CSR *Commercial* standard for VPH and the comparable CSR *Residential* standard for EPH (C_{10-19}). SA45 exceeded the comparable CSR *Commercial* standard for EPH (C_{10-19}), the CSR *Residential* standard for xylenes and the comparable CSR *Residential* standard for EPH (C_{19-32}). SA69 exceeded the comparable CSR *Residential* standard for EPH (C_{10-19}).

One soil sample was submitted to ALS for PAH analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 13 below.

TABLE 13: SOIL PAH CHEMISTRY (ppm) - FORMER UST NEST EXCAVATION PROGRAM EXCAVATED SOIL SAMPLES - June 19, 2001

Parameter	SA27	BC Standards	
		CSR *Residential*	CSR *Commercial*
Acenaphthene	<0.04	n.s.	n.s.
Acenaphthylene	<0.01	n.s.	n.s.
Anthracene	<0.03	n.s.	n.s.
Benz(a)anthracene	<0.01	1[a]	10[a]
Benzo(a)pyrene	<0.01	1[b]	10[b]
Benzo(b)fluoranthene	<0.01	1[a]	10[a]
Benzo(k)fluoranthene	<0.01	1[a]	10[a]
Benzo(g,h,i)perylene	<0.01	n.s.	n.s.
Chrysene	<0.01	n.s.	n.s.
Dibenz(a,h)anthracene	<0.01	1[a]	10[a]
Fluoranthene	<0.01	n.s.	n.s.
Fluorene	0.06	n.s.	n.s.
Indeno(1,2,3-c,d)pyrene	<0.01	1[a]	10[a]
Naphthalene	0.80	5[a]	50[a]
Phenanthrene	0.18	5[a]	50[a]
Pyrene	0.08	10[a]	100[a]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- PAH - polycyclic aromatic hydrocarbons
- < - less than laboratory detection limit indicated
- n.s. - no standard currently listed
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Soil Standards
- [b] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants

The results of the analyses indicated sample SA27 was below the CSR *Residential* and *Commercial* standards for all regulated PAH parameters.

5.4.2 Confirmatory Soil Samples

- **Soil Field Observations**

Fifty-six confirmatory soil samples were collected from the former UST nest excavation limits and the field observations recorded during sample collection are summarized in Table 14 below. Figure 11 illustrates the confirmatory soil sample locations.

TABLE 14: SOIL OBSERVATIONS - FORMER UST NEST EXCAVATION PROGRAM
CONFIRMATORY SOIL SAMPLES - June 20 - 25, 2001

Sample ID	Depth Below Grade (metres)	Location	Combustible Vapour Level (ppmv)	Analytical Schedule
SA25	2.5	East wall	20	-
SA26	1.4	East wall	15	BETX/VPH, EPH
SA28	2.7	North wall	15	-
SA29	1.4	North wall	10	-
SA30	2.8	Northwest corner wall	5	EPH
SA31	2.7	West wall	15	-
SA32	1.4	West wall	5	-
SA33	2.8	North wall	10	-
SA34	1.4	North wall	10	-
SA35	2.6	Northeast corner wall	10	BETX/VPH, EPH
SA36	1.4	Northeast corner wall	25	-
SA37	2.5	East wall	15	-
SA38	1.4	East wall	15	-
SA39	2.4	Corner wall	15	BETX/VPH, EPH
SA40	1.4	Corner wall	15	-
SA47	2.8	West wall	20	-
SA48	1.4	West wall	15	BETX/VPH, EPH
SA50	2.7	West wall	25	-
SA51	1.4	West wall	10	-
SA54	2.7	West wall	35	EPH
SA55	1.4	West wall	LTDL	-
SA56	2.6	South wall	35	-
SA57	1.3	South wall	35	-
SA58	2.7	South wall	20	BETX/VPH, EPH
SA59	2.7	East wall	15	BETX/VPH, EPH, Metals, SWEP
SA60	2.5	North wall	20	-
SA61	2.6	South wall	15	BETX/VPH, EPH, Metals, SWEP
SA62	1.4	South wall	15	-
SA63	2.2	West wall	20	-
SA67	2.7	Northwest wall	50	-
SA68	1.5	Northwest wall	45	-
SA70	3.2	West base	50	BETX/VPH, LEPH, HEPH, PAH, Metals
SA71	2.5	Northwest wall	60	BETX/VPH, EPH
SA72	3.0	West base	50	-
SA73	2.7	West wall	60	-
SA74	1.5	West wall	45	BETX/VPH, EPH
SA75	2.7	West wall	45	-
SA76	1.5	West wall	55	-
SA77	2.6	South centre corner	40	Metals
SA78	1.5	South centre corner	20	-
SA79	2.0	Base	45	-
SA80	2.0	Southwest corner wall	60	BETX/VPH, EPH
SA81	2.0	Southwest corner wall	55	-
SA82	1.2	Southwest corner wall	40	-
SA83	2.0	South wall	15	-
SA84	1.2	South wall	65	-
SA85	2.2	Southwest base	35	-
SA86	2.5	Southwest base	15	BETX/VPH, EPH

TABLE 14: SOIL OBSERVATIONS - FORMER UST NEST EXCAVATION PROGRAM CONFIRMATORY SOIL SAMPLES - June 20 - 25, 2001				
Sample ID	Depth Below Grade (metres)	Location	Combustible Vapour Level (ppmv)	Analytical Schedule
SA87	2.5	South wall	35	-
SA88	1.5	South wall	15	BETX/VPH, EPH
SA89	2.5	South wall - corner	15	BETX/VPH, EPH
SA90	2.7	East wall	60	-
SA91	2.6	South wall - corner	50	BETX/VPH, EPH
SA92	2.2	South wall	55	-
SA93	1.5	South wall	45	-
SA94	2.7	South centre base	25	-

Notes:

- ppmv - parts per million volumetric
- LTDL - less than detection limit of field instrument
- BETX - benzene, ethylbenzene, toluene, xylenes; VPH - volatile petroleum hydrocarbons
- LEPH - light extractable petroleum hydrocarbons; HEPH - heavy extractable petroleum hydrocarbons; EPH - extractable petroleum hydrocarbons; PAH - polycyclic aromatic hydrocarbons
- SWEP - Special Waste Extraction Procedure
- "-" - not analyzed

Combustible vapour levels ranged from LTDL in sample SA55 to 65 ppmv in SA84. Samples were collected at depths ranging from 1.2 metres to 3.2 metres below ground surface. Bedrock was present across approximately 75% of the base of the excavation, therefore, a limited number of base soil samples were collected.

- **Soil Chemistry Results**

Seventeen confirmatory soil samples were submitted to ALS for hydrocarbon analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 15 below.

TABLE 15: SOIL BETX/VPH CHEMISTRY (ppm) - FORMER UST NEST EXCAVATION PROGRAM CONFIRMATORY SOIL SAMPLES - June 20 - 25, 2001

Sample ID	Benzene	Ethylbenzene	Toluene	Xylenes	VPH	EPH (C_{10-19})	EPH (C_{19-32})	LEPH	HEPH
SA26	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA30	-	-	-	-	-	<200	<200	-	-
SA35	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA39	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA48	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA54	-	-	-	-	-	<200	<200	-	-
SA58	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA59	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA61	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA70	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	<200	<200
SA71	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA74	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA80	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA86	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA88	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA89	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
SA91	<0.04	<0.05	<0.05	<0.10	<100	<200	<200	-	-
CSR *Residential*	0.04[a]	1[b]	1.5[b]	5[b]	200[c]	*1000[c]	*1000[c]	1000[c]	1000[c]
CSR *Commercial*	0.04[a]	7[a]	2.5[a]	20[a]	200[c]	*2000[c]	*5000[c]	2000[c]	5000[c]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- BETX - benzene, ethylbenzene, toluene, xylenes; VPH - volatile petroleum hydrocarbons
- EPH - extractable petroleum hydrocarbons
- LEPH and HEPH - light and heavy extractable petroleum hydrocarbons
- < - less than laboratory detection limit indicated
- "-" - indicates sample not analyzed for specified parameter
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [b] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [c] - Generic Numerical Soil Standards
- * - indicates comparable standards for LEPH and HEPH which are defined as EPH (C_{10-19}) - nine specific PAHs and EPH (C_{19-32}) - nine specific PAHs, respectively; EPH is not a regulated parameter in soil

The results of the analyses indicated all soil samples were below the analytical detection limits and the CSR *Residential* and *Commercial* soil standards for all analyzed hydrocarbon parameters.

One soil sample was submitted to ALS for PAH analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 16 below.

TABLE 16: SOIL PAH CHEMISTRY (ppm) - FORMER UST NEST EXCAVATION PROGRAM CONFIRMATORY SOIL SAMPLES - June 22, 2001

Parameter	SA70	BC Standards	
		CSR *Residential*	CSR *Commercial*
Acenaphthene	<0.01	n.s.	n.s.
Acenaphthylene	<0.01	n.s.	n.s.
Anthracene	<0.01	n.s.	n.s.
Benz(a)anthracene	<0.01	1[a]	10[a]
Benzo(a)pyrene	<0.01	1[b]	10[b]
Benzo(b)fluoranthene	0.02	1[a]	10[a]
Benzo(k)fluoranthene	<0.01	1[a]	10[a]
Benzo(g,h,i)perylene	0.01	n.s.	n.s.
Chrysene	0.01	n.s.	n.s.
Dibenz(a,h)anthracene	<0.01	1[a]	10[a]
Fluoranthene	0.02	n.s.	n.s.
Fluorene	<0.01	n.s.	n.s.
Indeno(1,2,3-c,d)pyrene	<0.01	1[a]	10[a]
Naphthalene	0.08	5[a]	50[a]
Phenanthrene	0.05	5[a]	50[a]
Pyrene	0.02	10[a]	100[a]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- PAH - polycyclic aromatic hydrocarbons
- < - less than laboratory detection limit indicated
- n.s. - no standard currently listed
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Soil Standards
- [b] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plant

The results of the analyses indicated soil sample SA70 was below the CSR *Residential* and *Commercial* standards for all regulated PAH parameters.

Four soil samples were submitted to ALS for metals analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 17 below.

TABLE 17: SOIL METALS CHEMISTRY (ppm) - FORMER UST NEST AREA EXCAVATION PROGRAM CONFIRMATORY SOIL SAMPLES - June 21 and 22, 2001

Parameter	SA59	SA61	SA70	SA77	BC Standards	
					CSR *Residential*	CSR *Commercial*
PHYSICAL TEST						
pH	6.48	7.17	7.73	6.07	n.s.	n.s.
METALS						
Antimony	<20	<20	<10	<10	20[a]	40[a]
Arsenic	**20**	**16**	14	12	15[b]	15[b]
Barium	**869**	402	324	324	500[a]	2000[a]
Beryllium	1.2	1.0	<1	0.5	4[a]	8[a]
Cadmium	<0.5	<0.5	<0.5	<0.5	1.5[1,b], 3.5[1,c], 35[1,c]	1.5[1,b], 3.5[1,c], 35[1,c]
Chromium	41	51	37	32	60[b]	60[b]
Cobalt	16	20	15	24	50[a]	300[a]
Copper	41	51	48	44	150[d]	250[d]
Lead	<50	<50	<100	<50	250[2,b], 500[2,e]	250[2,b] 1000[2,e]
Mercury	0.114	0.088	0.09	0.08	15[e]	40[e]
Molybdenum	<4	<4	<8	<4	10[a]	40[a]
Nickel	52	53	41	46	100[a]	500[a]
Selenium	<2	<2	<2	<2	3[a]	10[a]
Silver	<2	<2	<4	<2	20[a]	40[a]
Tin	<10	<10	<6	<5	50[a]	300[a]
Vanadium	120	131	58	61	200[a]	n.s.
Zinc	123	141	111	118	150[3,c], 450[3,d]	150[3,c], 600[3,d]

Notes:
- all results expressed as milligrams per dry kilogram (ppm - parts per million)
- < - less than the laboratory detection limit
- n.s. - no standard listed
- pH used to determine some standards
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Standards
- [b] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [c] - Matrix Numerical Soil Standards - groundwater flow to surface water used by aquatic life (marine)
- [d] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [e] - Matrix Numerical Soil Standards - intake of contaminated soil
- [1] Cadmium: pH of 6.07 and 6.48, standard is 1.5; pH of 7.17, standard is 3.5; pH of 7.73, standard is 35
- [2] Lead: pH of 6.07 and 6.48, standard is 250; pH of 7.17 and 7.73, standard is 500 for CSR *Residential* and 1000 for CSR *Commercial*
- [3] Zinc: pH of 6.07 and 6.48, standard is 150; pH of 7.17 and 7.73, standard is 450 for CSR *Residential* and 600 for CSR *Commercial*
- **bold** - indicates concentration in excess of the CSR *Residential* standard
- **bold an underlined** - indicates concentration in excess of the CSR *Commercial* standard

The results of the analyses indicated SA59 and SA61 exceeded the CSR *Commercial* standard for arsenic. SA59 also exceeded the CSR *Residential* standard for barium. All remaining regulated metals parameters were below the CSR *Residential* and *Commercial* standards.

As arsenic concentrations in soil samples SA59 and SA61 exceeded the CSR *Commercial* standard, the Special Waste Extraction Procedure was conducted for SA59 and SA61 to determine the leachability of arsenic into the groundwater. The results of the analyses, along with the applicable standards, are summarized in Table 18 below.

TABLE 18: SOIL SWEP CHEMISTRY - FORMER UST NEST AREA EXCAVATION PROGRAM CONFIRMATORY SOIL SAMPLES - June 21, 2001

Parameter	SA59	SA61	BC Standards *SWEP*
Arsenic	<0.2	<0.2	5.0
Barium	<0.05	<0.05	100
Boron	<0.1	<0.1	500
Cadmium	<0.01	<0.01	0.5
Chromium	<0.01	<0.01	5.0
Copper	<0.01	<0.01	100
Lead	<0.05	<0.05	5.0
Mercury	<0.00005	<0.00005	0.1
Selenium	<0.2	<0.2	1.0
Silver	<0.01	<0.01	5.0
Zinc	<0.05	<0.05	500

Notes:
- all concentrations expressed as milligrams per litre (ppm - parts per million)
- < - less than laboratory detection limit indicated
- *SWEP* - Special Waste *Leachate Quality* standards

The results of the analyses indicated both soil samples were below the analytical detection limits and the Special Waste *Leachate Quality* standards for all regulated leachable metals concentrations. Based on these results, the concentrations of arsenic in soil are therefore considered to pose a minimal risk to the groundwater.

5.5 CLEAN OVERBURDEN AND IMPORTED FILL

5.5.1 Soil Field Observations

Three soil samples of "clean" overburden material and four soil samples of imported fill material were collected and the field observations recorded during sample collection are summarized in Table 19 below.

TABLE 19: SOIL OBSERVATIONS - CLEAN OVERBURDEN AND IMPORTED FILL - June 21 and 25, 2001

Sample ID	Depth Below Grade (metres)	Location	Combustible Vapour Level (ppmv)	Analytical Schedule
SA43	-	Overburden	20	BETX/VPH, EPH
SA52	-	Overburden	30	-
SA53	-	Overburden	30	BETX/VPH, EPH
SA95	-	Imported Fill	-	EPH, Metals
SA96	-	Imported Fill	-	-
SA97	-	Imported Fill	-	EPH, Metals
SA98	-	Imported Fill	-	-

Notes:
- ppmv - parts per million volumetric
- LTDL - less than detection limit of field instrument
- BETX - benzene, ethylbenzene, toluene and xylenes; VPH - volatile petroleum hydrocarbons; EPH - extractable petroleum hydrocarbons
- "--" - not analyzed/not recorded

5.5.2 Soil Chemistry Results

Two soil samples of segregated overburden materials (SA43 and SA53) and two samples of imported fill materials (SA95 and SA97) were submitted to ALS for hydrocarbon analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 20 below.

TABLE 20: SOIL BETX/VPH AND EPH CHEMISTRY - CLEAN OVERBURDEN AND IMPORTED FILL
June 21 and 25, 2001

Sample ID	Benzene	Ethylbenzene	Toluene	Xylenes	VPH	EPH (C_{10-19})	EPH (C_{19-32})
SA43	<0.04	<0.05	<0.05	<0.10	<100	<200	<200
SA53	<0.04	<0.05	<0.05	<0.10	<100	<200	<200
SA95	-	-	-	-	-	<200	<200
SA97	-	-	-	-	-	<200	<200
CSR *Residential*	0.04[a]	1[b]	1.5[b]	5[b]	200[c]	*1000[c]	*1000[c]
CSR *Commercial*	0.04[a]	7[a]	2.5[a]	20[a]	200[c]	*2000[c]	*5000[c]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- BETX - benzene, ethylbenzene, toluene, xylenes; VPH - volatile petroleum hydrocarbons
- EPH - extractable petroleum hydrocarbons
- < - less than laboratory detection limit indicated
- "-" - indicates sample not analyzed for specified parameter
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [b] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [c] - Generic Numerical Soil Standards
- * - indicates comparable standards for LEPH and HEPH which are defined as EPH (C_{10-19}) - nine specific PAHs and EPH (C_{19-32}) - nine specific PAHs, respectively; EPH is not a regulated parameter in soil

The results of the analyses indicated all four soil samples were below the analytical detection limits and the CSR *Residential* and *Commercial* standards for all analyzed hydrocarbon parameters.

Two soil samples collected from the imported fill materials were submitted to ALS for metals analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 21 below.

TABLE 21: SOIL METALS CHEMISTRY - IMPORTED FILL - June 25, 2001

Parameter	SA95	SA97	BC Standards	
			CSR *Residential*	CSR *Commercial*
PHYSICAL TEST				
pH	7.43	7.41	n.s.	n.s.
METALS				
Antimony	<10	<10	20[a]	40[a]
Arsenic	<5	<5	15[b]	15[b]
Barium	14	18	500[a]	2000[a]
Beryllium	<0.5	<0.5	4[a]	8[a]
Cadmium	<0.5	<0.5	3.5[c]	3.5[c]
Chromium	39	38	60[b]	60[b]
Cobalt	22	21	50[a]	300[a]
Copper	136	121	150[d]	250[d]
Lead	<50	<50	500[e]	1000[e]
Mercury	<0.05	<0.05	15[e]	40[e]
Molybdenum	<4	<4	10[a]	40[a]
Nickel	40	39	100[a]	500[a]
Selenium	<3	<3	3[a]	10[a]
Silver	<2	<2	20[a]	40[a]
Tin	<5	<5	50[a]	300[a]
Vanadium	130	122	200[a]	n.s.
Zinc	48	49	450[d]	600[d]

Notes:
- all results expressed as milligrams per dry kilogram (ppm - parts per million)
- < - less than the laboratory detection limit
- n.s. - no standard listed
- pH used to determine some standards
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Standards
- [b] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [c] - Matrix Numerical Soil Standards - groundwater flow to surface water used by aquatic life (marine)
- [d] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [e] - Matrix Numerical Soil Standards - intake of contaminated soil

The results of the analyses indicated both soil samples were below the CSR *Residential* and *Commercial* standards for all regulated metals parameters.

5.6 REMEDIAL PROGRAM SUMMARY

A summary of the remedial works completed within each target area is summarized in the sections below.

Target Area #1 - Former Diesel and Gasoline UST Area

Approximately 360 m^3 of soil in excess of the CSR *Residential* and *Commercial* standards was excavated from the former UST nest area. Confirmatory soil samples collected from the excavation limits and submitted for analysis indicated arsenic in excess of the CSR *Commercial* standard in two soil samples collected from the southeastern portion of the excavation. These samples were, however, below the analytical detection limits for leachable metals. All remaining soil samples were below the CSR *Residential* standards for analyzed hydrocarbon and metals parameters.

Target Area #2 - Former Fuel Storage Area

Approximately 1 m^3 of soil in excess of the CSR *Commercial* standard for HEPH was excavated from the heating oil AST area. A confirmatory soil sample collected from the base of the excavation and submitted for analysis indicated analyzed hydrocarbon and metals concentrations below the CSR *Residential* standards.

Target Area #3 - Vehicle Service Ramp

Approximately 6 m^3 of soil in excess of the CSR *Commercial* standards for HEPH and zinc was excavated from the vehicle service hoist area. Confirmatory soil samples collected and submitted for analysis indicated analyzed hydrocarbon and metals parameters below the CSR *Residential* standards.

Target Area #4 - Leaking Drum

Approximately 2 m^3 of soil in excess of the Special Waste standards for mineral oil and grease was excavated from the leaking drums area. Confirmatory soil samples collected and submitted for analysis indicated analyzed hydrocarbon parameters below the CSR *Residential* standards.

6.0 POST-REMEDIATION GROUNDWATER ASSESSMENT

The post-remediation groundwater assessment program was initiated on November 28, 2001 to confirm soil and groundwater conditions following the decommissioning and remediation activities on the subject site. Nine boreholes were advanced across the property and completed as groundwater monitoring wells. The locations of monitoring wells are illustrated on Figure 12.

Fifty-millimetre diameter, #010 slot polyvinyl chloride (PVC) monitoring wells were installed to allow characterization of groundwater quality and to determine the presence or absence of any phase-separated product. The annulus surrounding the screened section of each monitoring well was backfilled with silica sand and a bentonite seal was installed above the screened section to prevent cross-contamination; all wells were completed with flush-mount roadboxes and lockable well caps.

6.1 SOIL INVESTIGATION RESULTS

Table 22 below summarizes the generalized soil profile encountered during the post-remediation drilling activities. Figure 12 illustrates the transverse cross-section lines, with Figures 13 and 14 presenting two soil cross-section profiles.

TABLE 22: GENERALIZED SOIL PROFILE - POST-REMEDIATION GROUNDWATER ASSESSMENT (Based on BH01-2)

Approximate Depth (metres)	Soil Description
0 - 0.9	SAND AND GRAVEL (Fill) - fine to coarse grained sand, fine to coarse-grained gravel, trace silt, dark brown, damp
0.9 - 1.5	SILT (Native) - trace to some gravel, trace to some sand, trace clay, light brown, damp
1.5 - 2.4	SILTSTONE

The material and depths varied locally and reference should be made to the borehole logs in Appendix A for specific information.

6.1.1 Soil Field Observations - November 28 and 29, 2001

A summary of the combustible vapour levels encountered during the drilling investigation and the analytical schedule is presented in Table 23 below.

TABLE 23: SOIL FIELD OBSERVATIONS - POST-REMEDIATION GROUNDWATER ASSESSMENT
November 28 and 29, 2001

Borehole ID	Completion Depth (metres)	Maximum Combustible Vapour Level and Depth		Analytical Schedule
		Level (ppmv)	Depth (metres)	
BH01-1	3.1	35	1.5 - 2.1	-
BH01-2	2.4	40	1.5 - 1.8	BETX/VPH, EPH (SA2)
BH01-3	2.4	45	0.8 - 1.4	BETX/VPH, EPH (SA1)
BH01-4	2.6	30	2.3 - 2.4	Chloride (SA1)
BH01-5	2.4	50	0.8 - 1.4	Chloride (SA1)
BH01-6	2.6	145	0.8 - 1.4	Chloride, metals (SA1)
BH01-7	2.6	75	0.8 - 1.4	LEPH/HEPH, PAH (SA1)
BH01-8	2.9	110	0.8 - 1.4	Chloride, metals (SA1)
BH01-9	2.6	50	2.3 - 2.6	Chloride, metals (SA1)

Notes:
- ppmv - parts per million volumetric
- BETX - benzene, ethylbenzene, toluene, xylenes; VPH - volatile petroleum hydrocarbons
- EPH - extractable petroleum hydrocarbons; LEPH /HEPH - light/heavy extractable petroleum hydrocarbons
- PAH - polycyclic aromatic hydrocarbons

Maximum combustible vapour levels ranged from 30 ppmv in BH01-4 to 145 ppmv in BH01-6.

6.1.2 Soil Chemistry Results - November 28 and 29, 2001

Three soil samples were submitted to ALS for hydrocarbon analyses. The results of the analyses, along with the applicable environmental standards, are summarized in Table 24 below.

TABLE 24: SOIL BETX/VPH, EPH, LEPH/HEPH AND PAH CHEMISTRY (ppm)
POST-REMEDIATION GROUNDWATER ASSESSMENT - November 28 and 29, 2001

Parameter	BH01-2 SA2	BH01-3 SA1	BH01-7 SA1	BC Standards	
				CSR *Residential*	CSR *Commercial*
Non-Halogenated Volatiles					
Benzene	<0.04	<0.04	-	0.04[a]	0.04[a]
Ethylbenzene	<0.05	<0.05	-	1[b]	7[a]
Toluene	<0.05	<0.05	-	1.5[b]	2.5[a]
Xylenes	<0.10	<0.10	-	5[b]	20[a]
VPH	<100	<100	-	200[c]	200[c]
Extractables					
EPH (C_{10-19})	<200	<200	<200	*1000[c]	*2000[c]
EPH (C_{19-32})	<200	<200	<200	*1000[c]	*5000[c]
LEPH	-	-	<200	1000[c]	2000[c]
HEPH	-	-	<200	1000[c]	5000[c]
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	-	-	<0.01	n.s.	n.s.
Acenaphthylene	-	-	<0.01	n.s.	n.s.
Anthracene	-	-	<0.01	n.s.	n.s.
Benz(a)anthracene	-	-	<0.01	1[c]	10[c]
Benzo(a)pyrene	-	-	<0.01	1[b]	10[b]
Benzo(b)fluoranthene	-	-	<0.01	1[c]	10[c]
Benzo(k)fluoranthene	-	-	<0.01	1[c]	10[c]
Benzo(g,h,i)perylene	-	-	<0.01	n.s.	n.s.
Chrysene	-	-	<0.01	n.s.	n.s.
Dibenz(a,h)anthracene	-	-	<0.01	1[c]	10[c]
Fluoranthene	-	-	<0.01	n.s.	n.s.
Fluorene	-	-	<0.01	n.s.	n.s.
Indeno(1,2,3-c,d)pyrene	-	-	<0.01	1[c]	10[c]
Naphthalene	-	-	<0.01	5[c]	50[c]
Phenanthrene	-	-	0.01	5[c]	50[c]
Pyrene	-	-	<0.01	10[c]	100[c]

Notes:
- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- BETX - benzene, ethylbenzene, toluene, xylenes; VPH - volatile petroleum hydrocarbons
- EPH - extractable petroleum hydrocarbons; PAH - polycyclic aromatic hydrocarbons
- LEPH and HEPH - light and heavy extractable petroleum hydrocarbons
- < - less than laboratory detection limit indicated
- "-" - indicates sample not analyzed for specified parameter
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [b] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [c] - Generic Numerical Soil Standards
- * - indicates comparable standards for LEPH and HEPH which are defined as EPH (C_{10-19}) - nine specific PAHs and EPH (C_{19-32}) - nine specific PAHs, respectively; EPH is not a regulated parameter in soil

The results of the analyses indicated all three soil samples were below the CSR *Residential* and *Commercial* standards for all analyzed hydrocarbon parameters.

Three soil samples were submitted to ALS for metals analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 25 below.

TABLE 25: SOIL METALS CHEMISTRY (ppm) - POST-REMEDIATION GROUNDWATER ASSESSMENT
November 28 and 29, 2001

Parameter	BH01-6 SA1	BH01-8 SA1	BH01-9 SA1	BC Standards	
				CSR *Residential*	CSR *Commercial*
PHYSICAL TEST					
pH	6.21	6.08	6.97	n.s.	n.s.
METALS					
Antimony	<10	<10	<10	20[a]	40[a]
Arsenic	8	<5	6	15[b]	15[b]
Barium	125	225	170	500[a]	2000[a]
Beryllium	<0.5	<0.5	<0.5	4[a]	8[a]
Cadmium	<0.5	<0.5	<0.5	1.5[1,b], 2[1,c]	1.5[1,b], 2[1,c]
Chromium	47	32	36	60[b]	60[b]
Cobalt	12	7	7	50[a]	300[a]
Copper	40	25	16	150[d]	250[d]
Lead	<50	<50	<50	250[2,b], 500[2,e]	250[2,b] 1000[2,e]
Mercury	<0.05	<0.05	<0.05	15[e]	40[e]
Molybdenum	<4	<4	<4	10[a]	40[a]
Nickel	22	16	17	100[a]	500[a]
Selenium	<3	<2	<2	3[a]	10[a]
Silver	<2	<2	<2	20[a]	40[a]
Tin	<5	<5	<5	50[a]	300[a]
Vanadium	123	79	91	200[a]	n.s.
Zinc	43	30	27	150[3,c], 300[3,c]	150[3,c], 300[3,c]

Notes:
- all results expressed as milligrams per dry kilogram (ppm - parts per million)
- < - less than the laboratory detection limit
- n.s. - no standard listed
- pH used to determine some standards
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- [a] - Generic Numerical Standards
- [b] - Matrix Numerical Soil Standards - groundwater used for drinking water
- [c] - Matrix Numerical Soil Standards - groundwater flow to surface water used by aquatic life (marine)
- [d] - Matrix Numerical Soil Standards - toxicity to soil invertebrates and plants
- [e] - Matrix Numerical Soil Standards - intake of contaminated soil
- [1] Cadmium: pH of 6.08 and 6.21, standard is 1.5; pH of 6.97, standard is 2
- [2] Lead: pH of 6.08 and 6.21, standard is 250; pH of 6.97 is 500 for CSR *Residential* and 1000 for CSR *Commercial*
- [3] Zinc: pH of 6.08 and 6.21, standard is 150; pH of 6.97, standard is 300

The analytical results indicated al three soil samples were below the CSR *Residential* and *Commercial* standards for all regulated metals parameters.

Five soil samples were submitted for chloride chemistry and the results of the analyses are summarized in Table 26 below.

TABLE 26: SOIL CHLORIDE CHEMISTRY (ppm)
POST-REMEDIATION GROUNDWATER ASSESSMENT - November 28 and 29, 2001

Sample ID	Chloride
BH01-4 SA1	<5
BH01-5 SA1	12
BH01-6 SA1	10
BH01-8 SA1	14
BH01-9 SA1	<5
CSR *Residential*	n.s.
CSR *Commercial*	n.s.
RBC	33

Notes:

- all concentrations expressed as milligrams per dry kilogram (ppm - parts per million)
- < - less than the laboratory detection limit indicated
- n.s. - no standard currently exists
- CSR *Residential* - BC Contaminated Sites Regulation (CSR) - *Residential* standards
- CSR *Commercial* - BC CSR - *Commercial* standards
- RBC - Vancouver Island Regional Background Concentration (95% confidence interval)

The results of the analyses indicated all five soil samples were below the Vancouver Island Regional Background Concentration (RBC) of 33 parts per million for chloride. No standards are currently available in the CSR for chloride in soil.

6.2 GROUNDWATER MONITORING AND SAMPLING PROGRAM

All boreholes were completed as groundwater monitoring wells during the post-remediation assessment program. A basic level survey was completed to obtain relative well head elevations and to subsequently provide an elevation reference for free-surface groundwater levels. An assumed elevation of 100.00 m was assigned to the southwest corner of the oil shed loading dock and all calculated groundwater levels/elevations were referenced to this benchmark.

One groundwater monitoring and sampling program was completed, including all nine monitoring wells installed during the December 2001 post-remediation investigation. In addition, two monitoring wells installed during the earlier investigation events (MW-02 and MW-03) were monitored and sampled, as well as effluent from the washdown pad oil/water separator near the northwestern corner of the property (WD1). The monitoring and sampling results are summarized in following sections.

6.2.1 Groundwater Field Observations - December 5, 2001

All nine newly installed groundwater monitoring wells, as well as the two pre-existing monitoring wells, were monitored for combustible vapours, depth to water and presence/absence of free-phase product, if any. The results of the groundwater monitoring program are summarized in Table 27 below.

TABLE 27: GROUNDWATER FIELD OBSERVATIONS - POST-REMEDIATION GROUNDWATER ASSESSMENT December 5, 2001

Monitoring Well ID	Screen Interval From Grade (m)	Elevation (m)		Phase-separated Product Thickness (cm)	Depth to Groundwater (m)		Groundwater Elevation (m)	Monitoring Well Vapour Level (ppmv)
		Top of Well Casing	Grade		Top of Well Casing	Grade		
BH01-1	0.9 - 3.1	99.93	100.20	none	0.72	0.99	99.21	25
BH01-2	0.9 - 2.4	99.63	99.79	none	0.77	0.93	98.86	>11,000
BH01-3	0.9 - 2.4	99.55	99.84	none	0.27	0.56	99.28	550
BH01-4	0.9 - 2.4	99.81	100.02	none	0.46	0.67	99.35	250
BH01-5	0.9 - 2.4	100.69	100.77	none	0.70	0.78	99.99	125
BH01-6	0.9 - 2.4	99.53	99.75	none	0.36	0.58	99.17	15
BH01-7	0.9 - 2.4	98.92	99.05	none	0.43	0.65	98.40	110
BH01-8	0.9 - 2.7	98.37	98.49	none	0.45	0.57	97.92	250
BH01-9	0.9 - 2.3	98.14	98.28	none	0.00	0.14	98.14	n.m.
MW-02	0.7 - 3.0	100.62	100.66	none	0.91	0.95	99.71	120
MW-03	0.8 - 3.0	100.59	100.65	none	1.00	1.06	99.59	125

Notes:
- m - metres
- cm - centimetres
- ppmv - parts per million volumetric
- n.m. - not monitored due to static groundwater elevation

Groundwater depths ranged from 0.14 m below ground surface in BH01-9 to 1.06 m below ground surface in MW-03. Combustible vapour levels ranged from 15 ppmv in BH01-6 to > 11,000 ppmv in BH01-2. Figure 15 illustrates the inferred groundwater contour plan.

6.2.2 Groundwater Chemistry Results - December 5, 2001

Three groundwater samples, as well as one effluent sample from the oil/water separator discharge (WD1) were submitted to ALS for hydrocarbon analyses. The results of the analyses, along with the applicable environmental standards, are summarized in Table 28 below. Figure 16 illustrates the groundwater chemistry results.

TABLE 28: GROUNDWATER BETX/VPHw, EPH, LEPHw/HEPH AND PAH CHEMISTRY (ppb)
POST-REMEDIATION GROUNDWATER ASSESSMENT - December 5, 2001

Parameter	BH01-1	BH01-2	BH01-3	WD1	BC Standards	
					CSR *Drinking Water*	CSR *Aquatic Life*
Non-Halogenated Volatiles						
Benzene	<0.5	<0.5	<0.5	<0.5	5	3000
Ethylbenzene	<0.5	<0.5	<0.5	<0.5	2.4	7000
Toluene	<0.5	0.8	0.5	<0.5	24	3000
Xylenes	<1.0	<1.0	<1.3	<1.0	300	n.s.
VHW	<100	<100	<100	<100	n.s.	1500
VPHw	<100	<100	<100	<100	n.s.	15000
Extractables						
LEPHw	-	<300	-	-	n.s.	500
HEPH	-	<1000	-	-	n.s.	n.s.
EPH (C_{10-19})[1]	<300	<300	<300	<300	n.s.	500*
EPH (C_{19-32})	<1000	<1000	<1000	<1000	n.s.	n.s.
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	-	<0.05	-	-	n.s.	60
Acenaphthylene	-	<0.05	-	-	n.s.	n.s.
Acridine	-	<0.05	-	-	n.s.	0.5
Anthracene	-	<0.05	-	-	n.s.	1
Benz(a)anthracene	-	<0.05	-	-	n.s.	1
Benzo(a)pyrene	-	<0.03	-	-	0.01	0.1
Benzo(b)fluoranthene	-	<0.05	-	-	n.s.	n.s.
Benzo(g,h,i)perylene	-	<0.07	-	-	n.s.	n.s.
Benzo(k)fluoranthene	-	<0.05	-	-	n.s.	n.s.
Chrysene	-	<0.05	-	-	n.s.	1
Dibenz(a,h)anthracene	-	<0.2	-	-	n.s.	n.s.
Fluoranthene	-	<0.05	-	-	n.s.	2
Fluorene	-	<0.05	-	-	n.s.	120
Indeno(1,2,3-c,d)pyrene	-	<0.05	-	-	n.s.	n.s.
Naphthalene	-	<0.05	-	-	n.s.	10
Phenanthrene	-	<0.05	-	-	n.s.	3
Pyrene	-	<0.05	-	-	n.s.	0.2

Notes:
- all concentrations expressed as micrograms per litre (ppb - parts per billion)
- BETX - benzene, ethylbenzene, toluene, xylenes; VPHw - volatile petroleum hydrocarbons in water; EPH - extractable petroleum hydrocarbons; PAH - polycyclic aromatic hydrocarbons
- LEPHw - light extractable petroleum hydrocarbons in water; HEPH - heavy extractable petroleum hydrocarbons
- [1] - laboratory reports EPH (C_{10-19}) as equivalent to EHw_{10-19}
- * - indicates comparable standard for LEPHw
- < - less than laboratory detection limit indicated
- " - " indicates sample not analyzed for specified parameter
- n.s. - no standard currently listed
- CSR *Drinking Water* - BC Contaminated Sites Regulation (CSR) - *Drinking Water* standards
- CSR *Aquatic Life* - BC CSR - *Aquatic Life* standards

The results of the analyses indicated all four samples were below the CSR *Drinking Water* and/or *Aquatic Life* standards for all analyzed hydrocarbon parameters.

Six groundwater samples were submitted to ALS for dissolved metals analyses and the results of the analyses, along with the applicable environmental standards, are summarized in Table 29 below.

TABLE 29: GROUNDWATER DISSOLVED METALS CHEMISTRY (ppb)
POST-REMEDIATION GROUNDWATER ASSESSMENT - December 5, 2001

Parameter	BH01-3	BH01-4	BH01-5	BH01-6	BH01-8	BH01-9	BC Standards	
							CSR *Drinking Water*	CSR *Aquatic Life*
Hardness (mg/L)	135	143	206	336	482	487	n.s.	n.s.
Aluminum	**300**	<100	100	<100	<100	100	200	n.s.
Antimony	<100	<100	<100	<100	<100	<100	6	200
Arsenic	<10	<10	<10	<10	<10	<10	25	120
Barium	<20	130	70	330	250	190	1000	5000
Beryllium	<5	<5	<5	<5	<5	<5	n.s.	1000
Boron	<100	<100	<100	<100	<100	<100	5000	50000
Cadmium	<2	<2	<2	<2	<2	<2	5	1
Chromium	<10	<10	30	<10	**50**	**100**	50	150
Cobalt	<10	<10	<10	**20**	<10	<10	n.s.	9
Copper	<10	<10	10	<10	**20**	**40**	1000	20
Iron	180	<30	**400**	<30	<30	**1130**	300	n.s.
Lead	<10	<10	<10	<10	<10	<10	10	20
Magnesium*	1.1	7.0	<0.1	25.2	34.4	<0.1	100*	n.s
Manganese	<10	**600**	<10	**10800**	**1290**	<10	50	n.s.
Mercury	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1	1
Molybdenum	<10	10	20	<10	30	40	250	10000
Nickel	<50	<50	<50	<50	<50	<50	n.s.	83
Selenium	<10	<10	<10	<10	<10	<10	10	540
Silver	<1	<1	<1	<1	<1	<1	n.s.	0.5
Sodium*	63	52	94	178	155	**207**	200*	n.s.
Thallium	<2	<2	<2	<2	<2	<2	n.s.	3
Uranium	<2	<2	<2	<2	<8	<2	100	3000
Zinc	<50	<50	<50	<50	<50	<50	5000	100

Notes:
- all concentrations expressed as micrograms per litre (ppb - parts per billion), except where noted
- mg/L - milligrams per litre
- < - less than laboratory detection limit indicated
- n.s. - no standard currently listed
- * - concentration expressed as mg/L
- H - hardness (mg/L); used to determine applicable standard
- CSR *Drinking Water* BC Contaminated Sites Regulation (CSR) - *Drinking Water* standards
- CSR *Aquatic Life* - BC CSR - *Aquatic Life* standards (marine)
- **bold** - indicates concentration in excess of the CSR *Drinking Water* standard
- **bold and underlined** - indicates concentration in excess of the CSR *Aquatic Life* standard

The results of the analyses indicated BH01-3 exceeded the CSR *Drinking Water* standard for dissolved aluminum, BH01-4 exceeded the CSR *Drinking Water* standard for dissolved manganese and BH01-5 exceeded the CSR *Drinking Water* standard for dissolved iron. In addition, BH01-6 exceeded the CSR *Aquatic Life* standard for dissolved cobalt and the CSR *Drinking Water* standard for dissolved manganese, BH01-8 equaled the CSR *Drinking Water* standard for dissolved chromium, exceeded the CSR *Drinking Water* standard for dissolved manganese and equaled the CSR *Aquatic Life* standard for dissolved copper, and BH01-9 exceeded the CSR *Drinking Water* standard for dissolved chromium, sodium and iron, and the CSR *Aquatic Life* standard for dissolved copper.

Eight groundwater samples, as well as one sample from the washdown pad oil/water separator effluent (WD1) were submitted to ALS for dissolved chloride analyses. The results of the analyses, along with the applicable environmental standards, are summarized in Table 30 below.

TABLE 30: GROUNDWATER DISSOLVED CHLORIDE CHEMISTRY (ppm) -POST-REMEDIATION GROUNDWATER ASSESSMENT - December 5, 2001

Sample ID	Chloride
BH01-4	25.1
BH01-5	64.5
BH01-6	**280**
BH01-7	**415**
BH01-8	235
BH01-9	36.2
WD1	40.9
MW-02	**1450**
MW-03	**416**
CSR *Drinking Water*	250*
CSR *Aquatic Life*	n.s.

Notes:
- all concentrations expressed as milligrams per litre (ppm - parts per million), except where noted
- mg/L - milligrams per litre
- n.s. - no standard currently listed
- CSR *Drinking Water* BC Contaminated Sites Regulation (CSR) - *Drinking Water* standards
- CSR *Aquatic Life* - BC CSR - *Aquatic Life* standards
- **bold** - indicates concentration in excess of the CSR *Drinking Water* standard

The results of the analyses indicated BH01-6, BH01-7, MW-02 and MW-03 exceeded the CSR *Drinking Water* standard for dissolved chloride concentrations.

7.0 SUPPLEMENTAL INFORMATION

7.1 SITE REGISTRY SEARCH

Based on the assessment requirements, a supplemental review of historical records on file with the BC MWLAP Site Registry was undertaken. The site registry review included a search of contaminated properties within a 0.5 km radius of the Denman Island Highways Yard which may adversely impact the subject site. A search using the coordinates N 49° 32' 12" and W 124° 49' 3" was conducted on February 25, 2002; no sites were located within a 0.5 km radius of the site, however, the site itself was included on the Site Registry, and a copy of the detail report is included in Appendix C for reference.

7.2 GROUNDWATER WELL DATABASE SEARCH

SEACOR conducted a search of the BC MWLAP Groundwater Well Database to determine the presence/absence of groundwater wells within a 1.5 km radius of the site. The results of the groundwater database search indicated a minimum of sixty groundwater wells within a 1.5 km radius of the Denman Island Highways Yard , including one groundwater well on the site itself.

7.3 LAND TITLES

A copy of the most recent land title for the Denman Island Highways Yard is included in Appendix C for reference.

7.4 LEGAL LOT PLAN

A copy of the legal lot plan illustrating Lot 1, Section 18, Denman Island, Nanaimo District, Plan 33612 is included in Appendix C for reference.

7.5 NOTIFICATION OF INDEPENDENT REMEDIATION

A copy of the notification of independent remediation submitted to BC MWLAP on October 16, 2000, as well the response letter dated October 24, 2000, has been included in Appendix D for reference.

8.0 PROTOCOL 5 DOCUMENTATION

SEACOR has summarized the site decommissioning results, as well as results from the previous works conducted, in the format outlined in Protocol 5 of the CSR. The Protocol 5 documentation has been provided in Appendix E.

9.0 DATA SYNTHESIS

SEACOR was retained by BCBC to provide engineering consulting services during a supplemental investigative and environmental remediation program at the Denman Island Highways Yard, located at 3661 Piercy Road on Denman Island, BC. The field activities were completed between November 6, 2000 and December 5, 2001.

The supplemental investigative program was conducted on November 6, 2000. Eleven test pits were advanced along the southern property boundary in an area reputed to contain buried animal remains. No evidence of animal remains were located within the test pits, hence, no soil samples were submitted for analysis.

SEACOR, along with HAZCO conducted a remedial program at the Denman Island Highways Yard between June 19 and July 4, 2001. Remedial activities were conducted at four locations on the site: vehicle service hoist area, heating oil AST area, leaking drums area and former UST nest area. Approximately 369 m^3 of soil in excess of the CSR *Commercial* and *Residential* standards, and the *Special Waste* standards, was excavated from the aforementioned areas and transported off-site by HAZCO for treatment. In addition, four drums of oily water and bilge water located near the southern property boundary were removed off-site for disposal. The results of confirmatory soil samples collected from the excavation limits indicated concentrations of arsenic in excess of the CSR *Commercial* standard in two soil samples collected from the former UST nest excavation. As arsenic concentrations in the two soil samples exceeded the CSR *Commercial* standard, the Special Waste Extraction Procedure analyses was conducted on the samples to determine the potential leachability of arsenic into the groundwater. The results of the analyses indicated both soil samples were below the analytical detection limits and therefore the Special Waste *Leachate Quality* standards for all regulated leachable metals concentrations. All remaining soil samples were below the CSR *Commercial* and *Residential* standards for all analyzed hydrocarbon and metals parameters.

SEACOR, along with BECK conducted a post-remediation investigation at the site on November 28 and 29, 2001. Nine boreholes were advanced across the site, and all completed as groundwater monitoring wells. The results of the post-remediation soil investigation indicated hydrocarbon and metals parameters below the CSR *Commercial* standards. A groundwater monitoring and sampling event was conducted on December 5, 2001 for the nine newly installed groundwater wells, as well as two pre-existing monitoring wells from the previous investigations. The results of the post-remediation groundwater investigation indicated dissolved metals and/or chloride concentrations in excess of the CSR *Drinking Water* and/or the *Aquatic Life* standards in several groundwater monitoring wells located across the site; dissolved hydrocarbon concentrations were below the CSR *Drinking Water* standards.

10.0 CONCLUSIONS

All works described in this site remediation report have been competed in compliance with the Waste Management Act and the Contaminated Sites Regulation. Based on the site works completed, the site has been remediated to meet the CSR *Residential* and CSR *Commercial* soil standards for VPH, LEPH and HEPH. Groundwater at the site complied with the CSR *Drinking Water* and/or the CSR *Aquatic Life* standards for benzene, ethylbenzene, toluene, xylenes, VPHw, LEPHw, and regulated PAH parameters. Select dissolved metals and chloride parameters exceeded the CSR *Drinking Water* and/or the CSR *Aquatic Life* standards.

11.0 CLOSURE

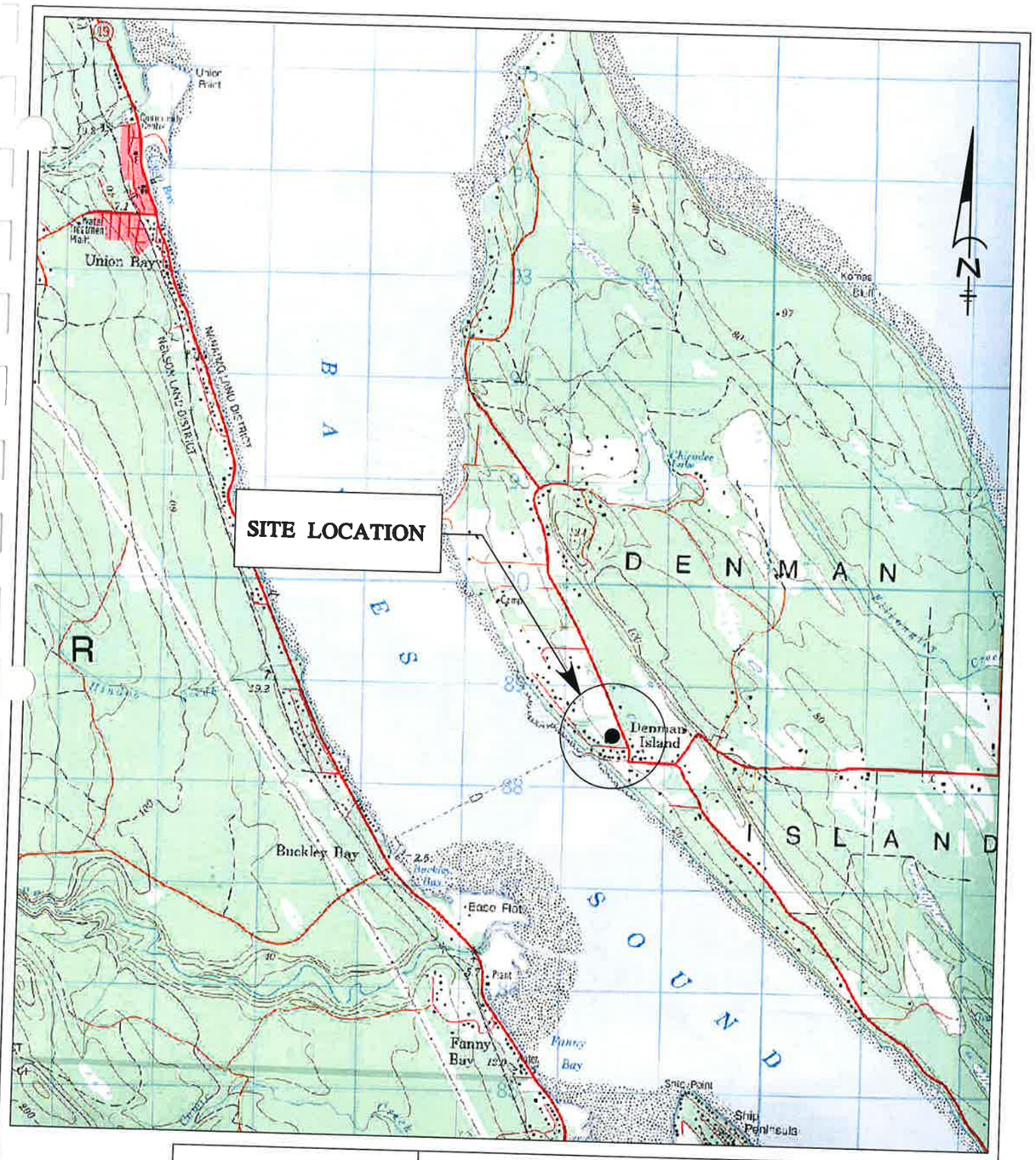
The assessment and conclusions in this document are based on the interpretation of data collected from the field investigation and the results of the laboratory analyses, which were limited to the quantification of common hydrocarbon indicators and metals in select samples. SEACOR expresses no warranty with respect to the accuracy of the laboratory analyses, methodologies used, or presentation of analytical results by the laboratory. Actual hydrocarbon and metal concentrations in the samples submitted may vary according to the extraction and testing procedures used. The evaluation and conclusions reported herein do not preclude the existence of other chemical compounds and/or that variations of conditions within the site may be possible. Hence, this document should be used for informational purposes only and should not be construed as a comprehensive hydrogeological or chemical characterization of the site. Revisions in the regulatory standards may be expected over time and thus SEACOR should be provided with the opportunity to review the conclusions of this document accordingly.

This document is for the exclusive use of the British Columbia Buildings Corporation and their authorized agents. The British Columbia Buildings Corporation may submit this document to the British Columbia Ministry of Water, Land and Air Protection and/or related British Columbia environmental regulatory authorities or persons for review and comment purposes providing that SEACOR receives a copy of all correspondence between the British Columbia Ministry of Water, Land and Air Protection and /or related British Columbia environmental regulatory authorities or persons and the British Columbia Buildings Corporation pertaining to the document or project in question. Third party use of this document or any reliance or decisions made on the information herein by those not in the direct employ of the British Columbia Buildings Corporation, their authorized agents or the British Columbia Water, Land and Air Protection and/or related British Columbia environmental regulatory authorities or persons is at the risk of the third party. SEACOR has no obligation, contractual or otherwise, to any third persons using or relying upon this document for any reason and therefore accepts no responsibility for damage suffered by any third party as a result of decisions made on the basis of information or conclusions in this document.

12.0 PROFESSIONAL STATEMENT

The "Site Remedial Program, Denman Island Highways Yard, 3661 Piercy Road, Denman Island, BC" report, dated April 26, 2002, prepared by SEACOR Environmental Inc. for the subject site, was prepared in accordance with all requirements in the Waste Management Act and the Contaminated Sites Regulation. The authors of the report, Mr. Brad Halsey, B.Sc. and Mr. Robert Chaisson, C.Tech. have over 15 years of combined experience in the assessment and remediation of similar sites and are familiar with the works carried out on the subject site.

C:\PROJECTS\BCBC\202.1263.004 DENMAN\202.01263.004 DENMANrem- rpt.doc



REFERENCED FROM DEP'T OF ENERGY MINES & RESOURCES MAPPING BRANCH COMOX 93 J/4

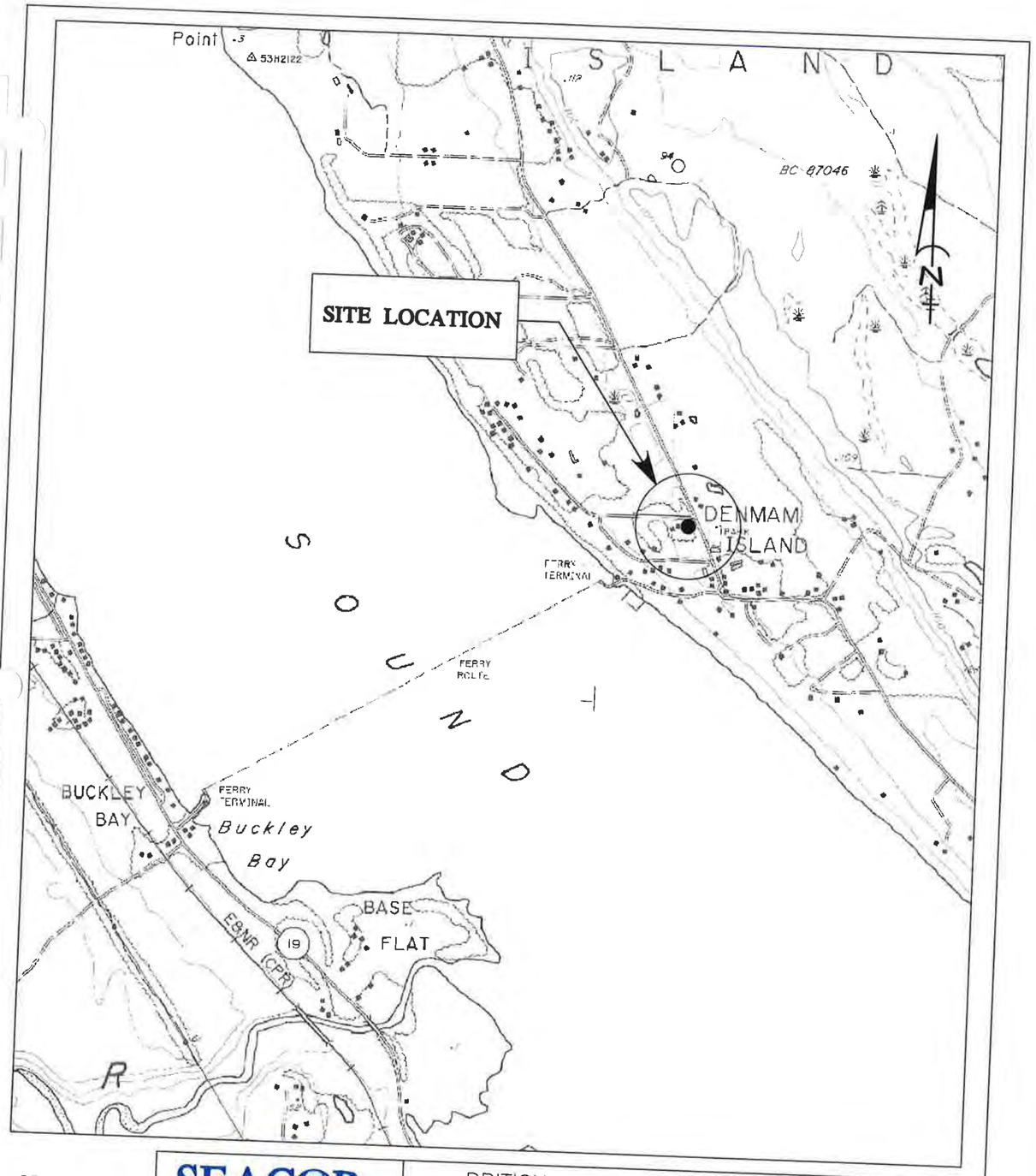
SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

SITE LOCATION MAP

SCALE	DATE	FILE NAME	MADE	CHKD	JOB NO.	FIG
1:50,000	11/01/00	202-01263-A1.DWG	EK	BEH	202.01263	1



REFERENCED FROM MINISTRY OF CROWNS ISLAND SURVEY AND RESOURCE MAPPING BRANCH 92F.056 DIGITAL

SEACOR ENVIRONMENTAL INC.™

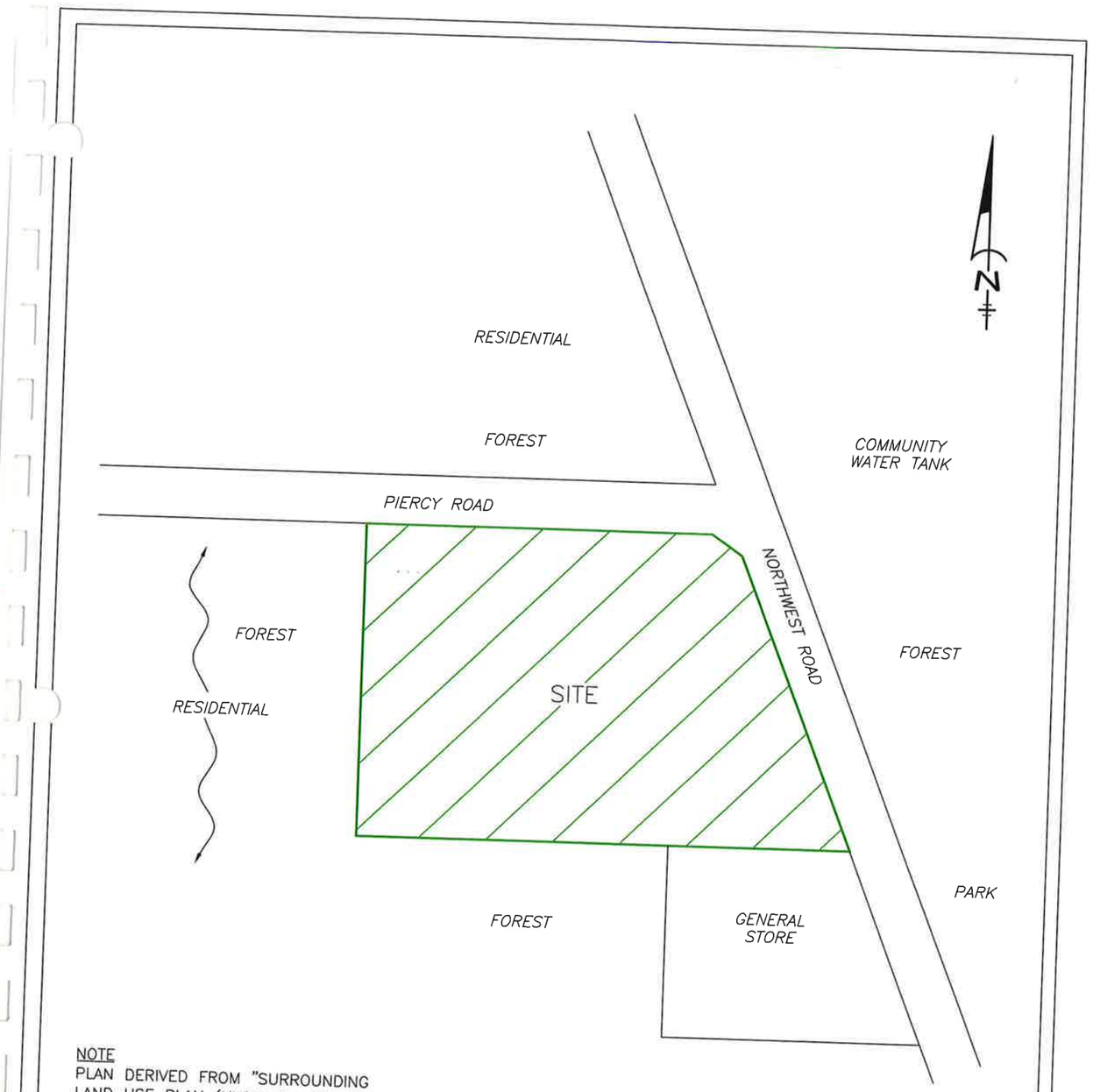
THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

TOPOGRAPHICAL MAP

SCALE	DATE	FILE NAME	MADE	CHKD	JOB NO.	FIG
1:20,000	08/14/01	202-01263-A13.DWG	EK	BEH	202.01263	2



NOTE
PLAN DERIVED FROM "SURROUNDING LAND USE PLAN (NX2018903)" PROVIDED BY AGRA EARTH AND ENVIRONMENTAL LTD.

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

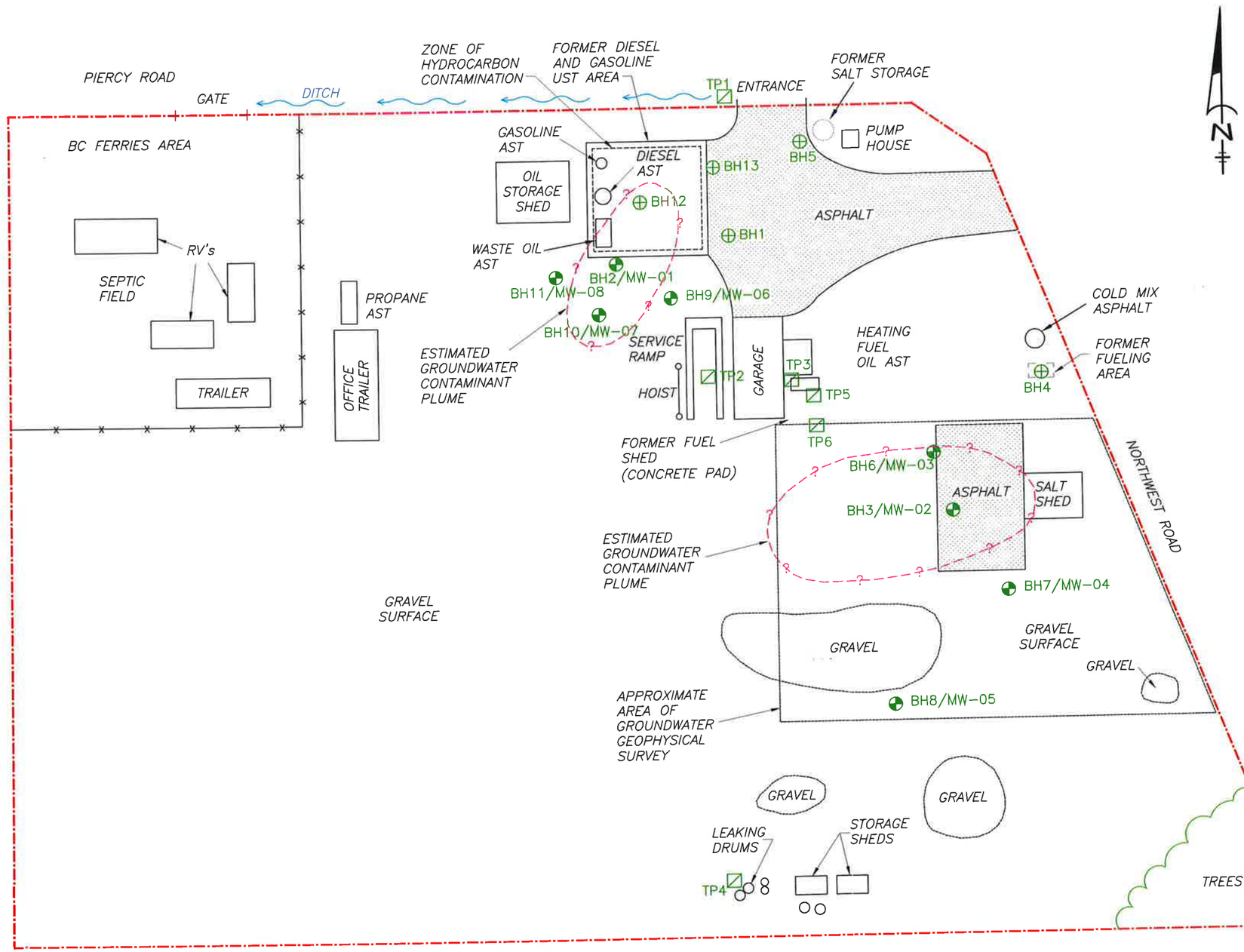
SEACOR ENVIRONMENTAL INC.™

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

SURROUNDING LAND USE PLAN

SCALE	DATE	FILE NAME	MADE	CHKD	JOB NO.	FIG
NTS	11/01/00	202-01263-A2.DWG	EK	BEH	202.01263	3



SITE PLAN IS FOR CONCEPTUAL PURPOSES ONLY. PRECISE MEASUREMENTS TO BE CONFIRMED BY SURVEYOR.

LEGEND

- SITE BOUNDARY
- FENCE
- BOREHOLE LOCATION
- BOREHOLE COMPLETED AS A MONITORING WELL
- TEST PIT LOCATION

NOTE:
SITE PLAN DERIVED FROM "SITE PLAN AND BOREHOLE LOCATIONS PIERCY ROAD, DENMAN ISLAND, B.C." AMEC EARTH AND ENVIRONMENTAL LIMITED

SCALE 1:500 (APPROX.)

0 10 20 30 m

REV.	DESCRIPTION	DATE	MADE	CHKD
2				
1				

SEACOR ENVIRONMENTAL INC.™

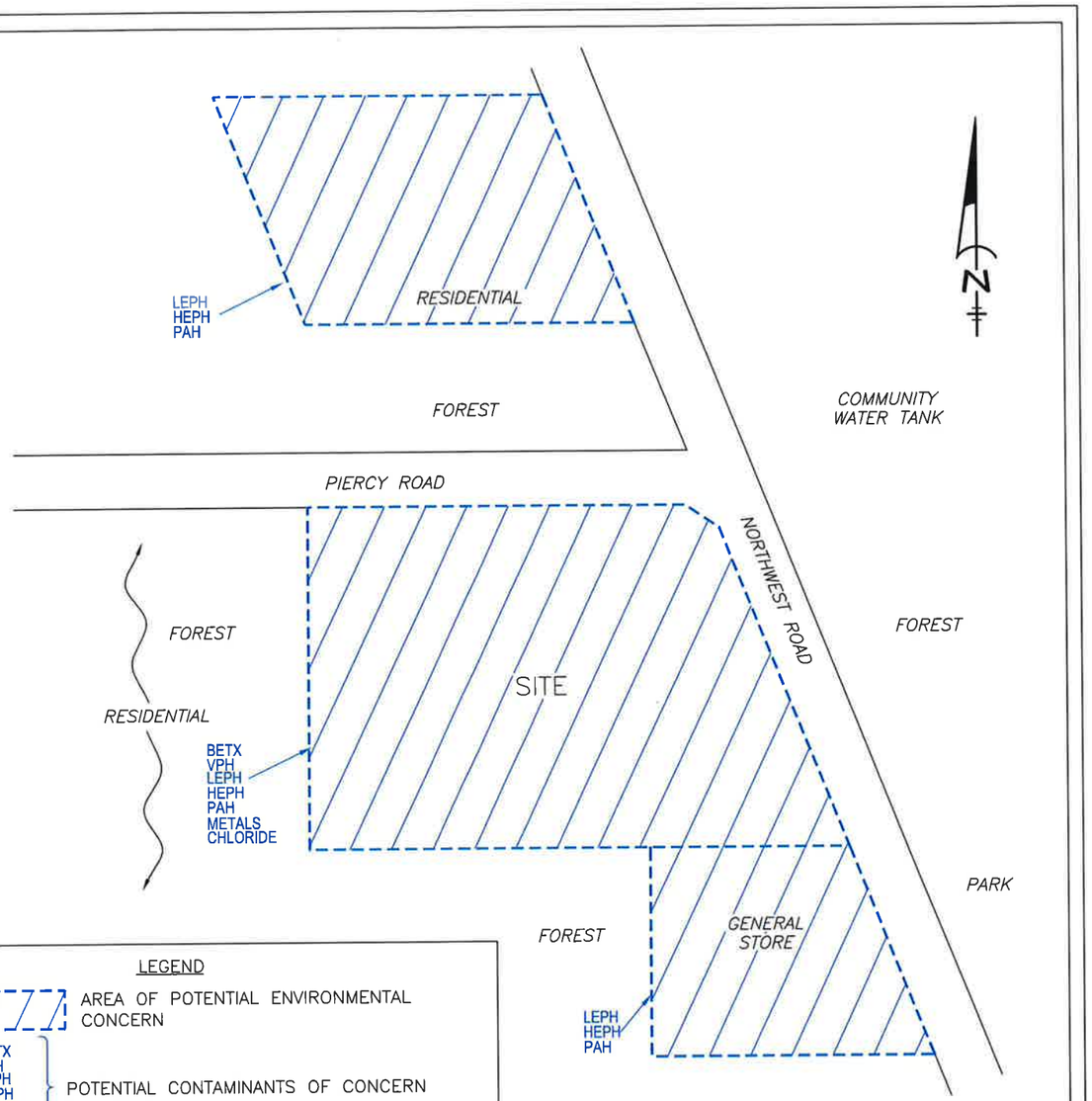
BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

FORMER SITE PLAN (1999)

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE	DATE	FILE NAME	
1:500	03/01/02	202-01263-A15.DWG	
MADE	CHKD	JOB NO.	FIG
EK/DK	BEH	202.01263	4



LEGEND

AREA OF POTENTIAL ENVIRONMENTAL CONCERN

BETX, VPH, LEPH, HEPH, PAH, METALS — POTENTIAL CONTAMINANTS OF CONCERN

BETX	BENZENE, ETHYLBENZENE, TOLUENE, XYLENES
VPH	VOLATILE PETROLEUM HYDROCARBONS
LEPH	LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS
HEPH	HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
PAH	POLYCYCLIC AROMATIC HYDROCARBONS

NOTE

PLAN DERIVED FROM "SURROUNDING LAND USE PLAN (NX2018903)" PROVIDED BY AMEC EARTH AND ENVIRONMENTAL LTD.

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

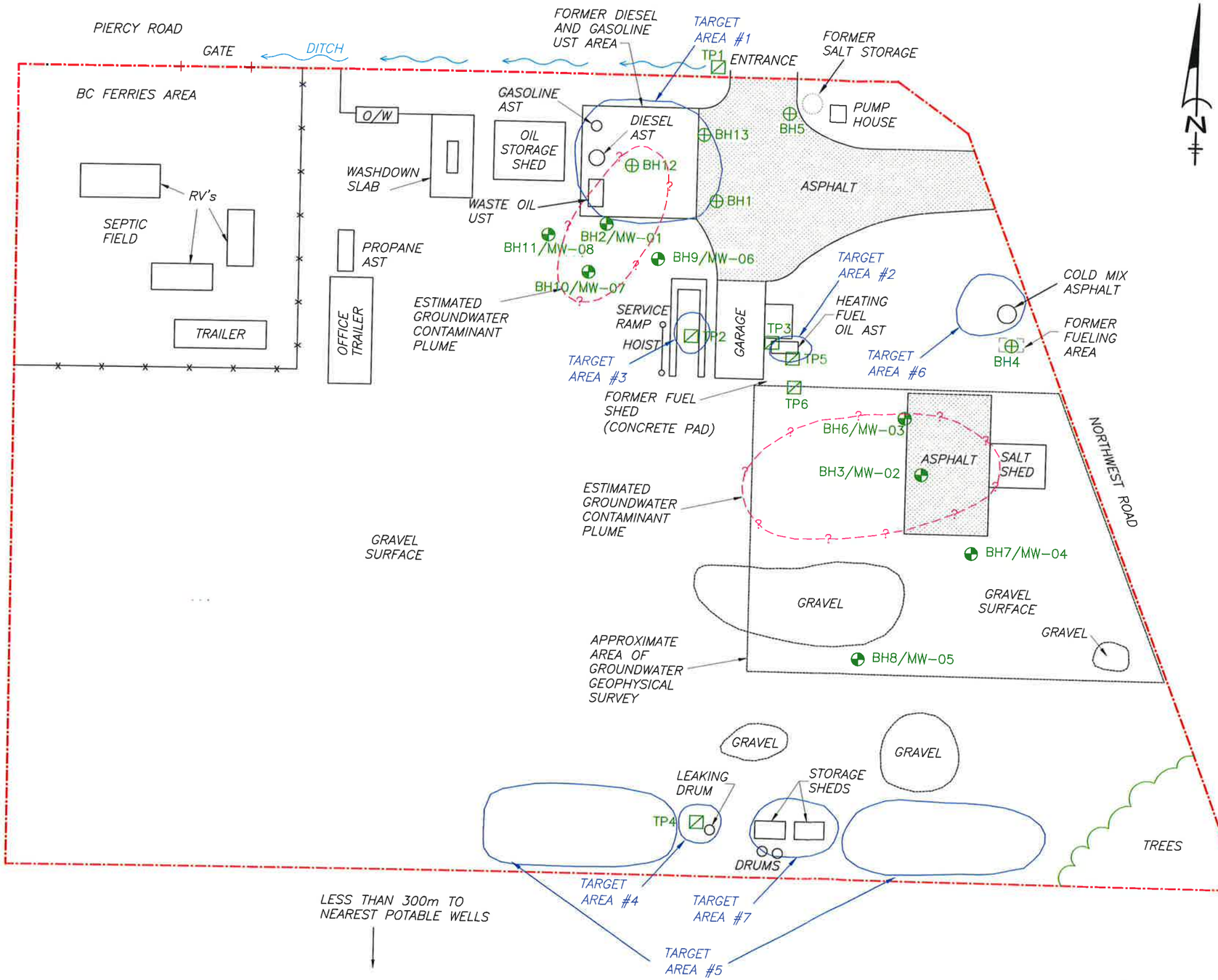
SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

POTENTIAL CONTAMINANTS OF CONCERN PLAN

SCALE	DATE	FILE NAME	MADE	CHKD	JOB NO.	FIG
NTS	08/10/01	202-01263-A7.DWG	EK	BEH	202.01263	5



SITE PLAN IS FOR CONCEPTUAL PURPOSES ONLY. PRECISE MEASUREMENTS TO BE CONFIRMED BY SURVEYOR.

LEGEND

- SITE BOUNDARY
- FENCE
- BOREHOLE LOCATION
- BOREHOLE COMPLETED AS A MONITORING WELL
- TEST PIT LOCATION
- O/W — OIL/ WATER SEPARATOR

NOTE:
SITE PLAN DERIVED FROM "SITE PLAN AND BOREHOLE LOCATIONS PIERCY ROAD, DENMAN ISLAND, B.C." AMEC EARTH AND ENVIRONMENTAL LIMITED

SCALE 1:500 (APPROX.)

0 10 20 30 m

REV.	DESCRIPTION	DATE	MADE	CHKD
2				
1				

SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

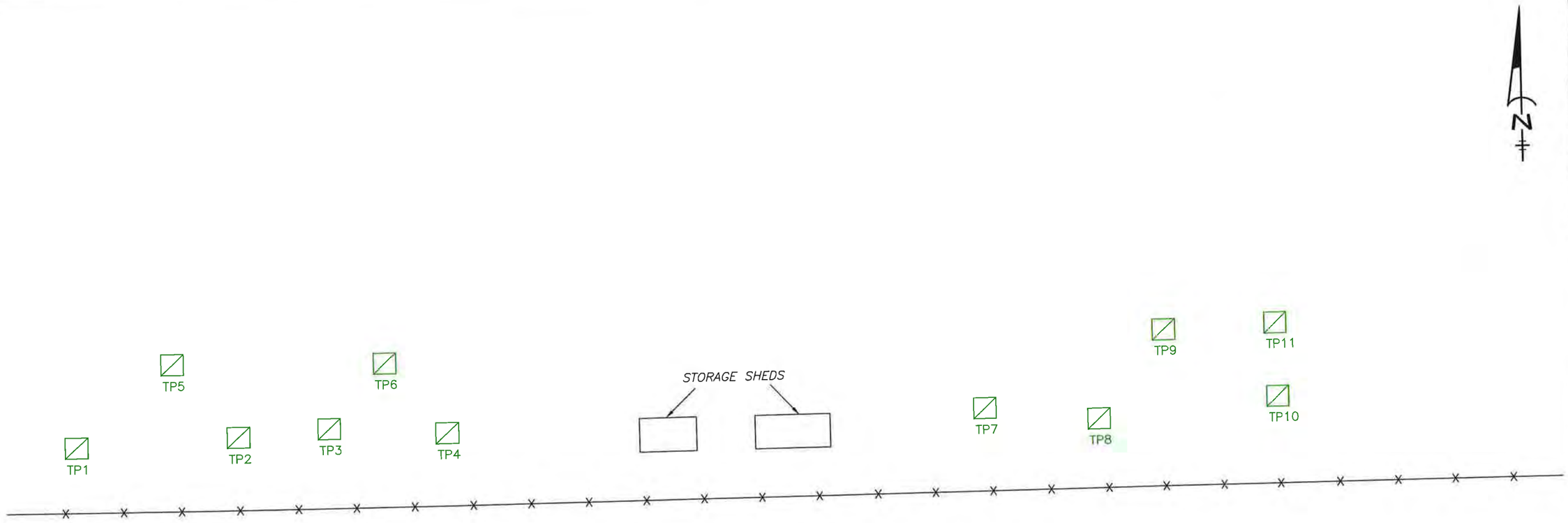
BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

SITE PLAN – TARGET AREAS

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE	DATE	FILE NAME
1:500	04/25/02	202-01263-A16.dwg

MADE	CHKD	JOB NO.	FIG
EK	BEH	202.01263	6



LEGEND

FENCE

TEST PIT LOCATION

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

REV.	DESCRIPTION	DATE	MADE	CHKD
4				
3				
2				
1				

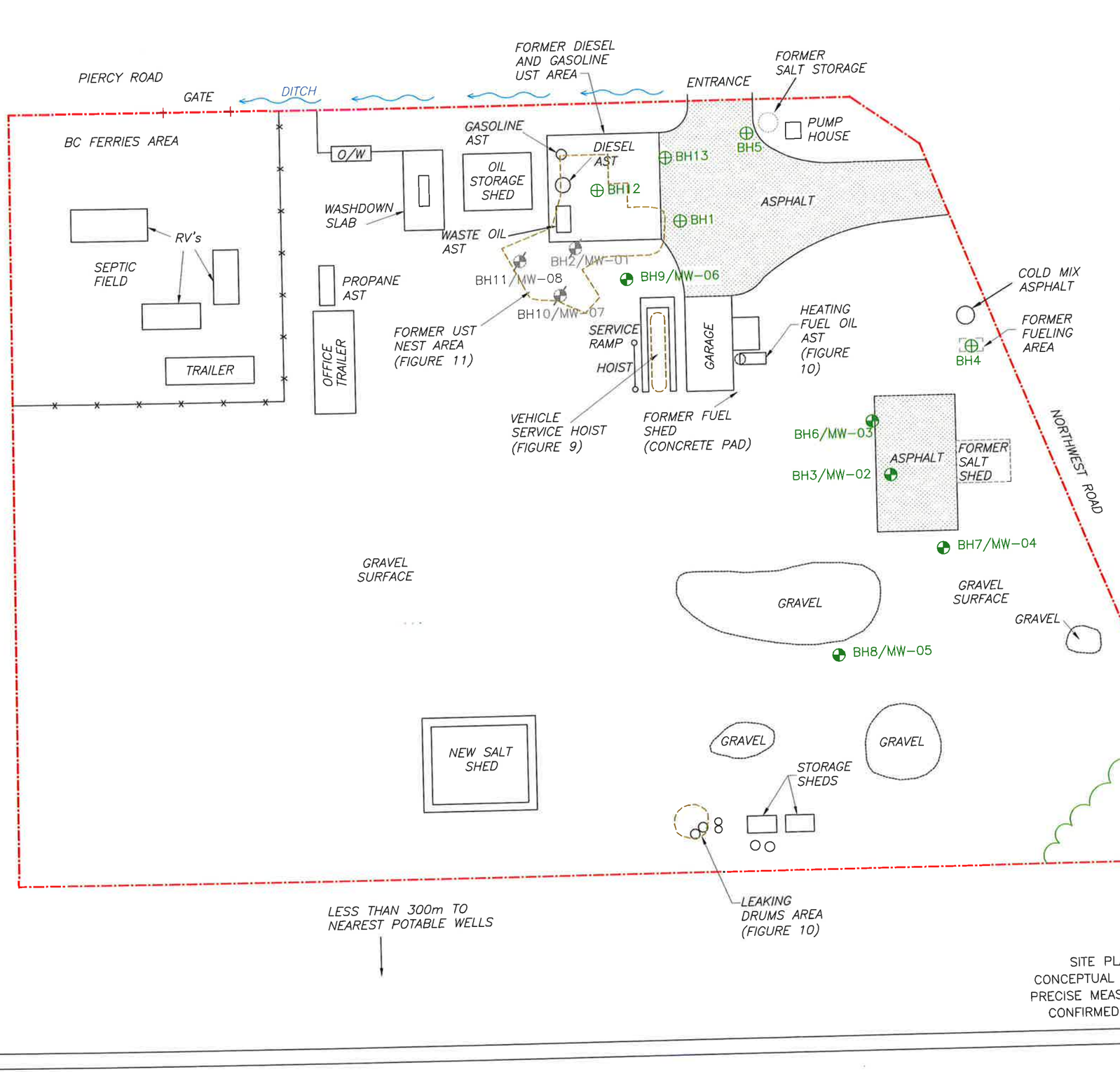
SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

TARGET AREA #5 TEST PIT LOCATION PLAN – NOVEMBER 2000

SCALE	DATE	FILE NAME	MADE	CHKD	JOB NO.	FIG
1:200	03/01/02	202-01263-A17.DWG	EK	BEH	202.01263	7



LEGEND

- SITE BOUNDARY
- FENCE
- BOREHOLE LOCATION
- BOREHOLE COMPLETED AS A MONITORING WELL
- FORMER MONITORING WELL (DECOMMISSIONED JUNE 2001)
- LIMITS OF EXCAVATION
- O/W — OIL/ WATER SEPARATOR

NOTE:
SITE PLAN DERIVED FROM "SITE PLAN AND BOREHOLE LOCATIONS PIERCY ROAD, DENMAN ISLAND, B.C." AMEC EARTH AND ENVIRONMENTAL LIMITED

SCALE 1:500 (APPROX.)

0 10 20 30 m

REV.	DESCRIPTION	DATE	MADE	CHKD
2				
1				

SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

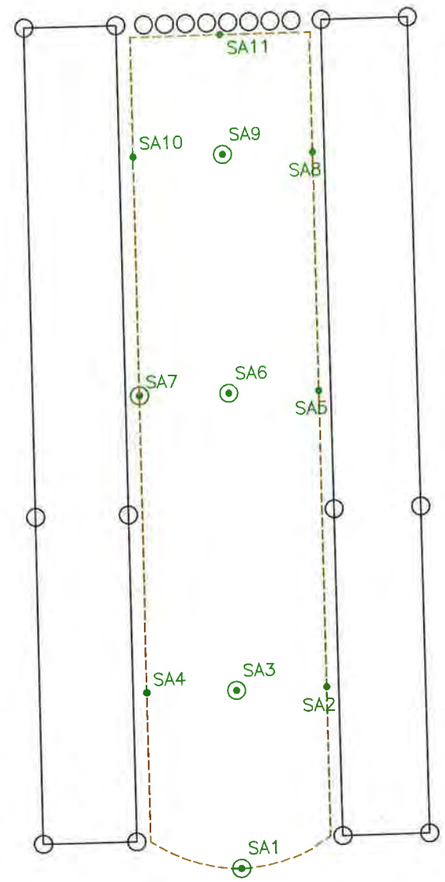
BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

BASE PLAN – EXCAVATION AREAS

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE	DATE	FILE NAME
1:500	04/25/02	202-01263-A18.dwg

MADE	CHKD	JOB NO.	FIG
EK/DK	BEH	202.01263	8



GARAGE

N

JUNE 19, 2001	
PARAMETER	SA1–SA9
EPH (C 10–19)	<200*
EPH (C 19–32)	<200*
LEPH	<200*
HEPH	<200*
PAH	<0.01*
METALS	<CSR RL[1]

LEGEND

- LIMITS OF EXCAVATION
- SOIL SAMPLE LOCATION
- CONFIRMATORY SOIL SAMPLE SUBMITTED FOR ANALYSIS

CSR RL	BC CONTAMINATED SITES REGULATION RESIDENTIAL STANDARDS
EPH	EXTRACTABLE PETROLEUM HYDROCARBONS
LEPH	LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS
HEPH	HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
PAH	POLYCYCLIC AROMATIC HYDROCARBONS
*	ALL SAMPLES BELOW ANALYTICAL DETECTION LIMIT INDICATED
1	REFER TO CSR FOR SPECIFIC METALS STANDARD

SCALE 1:50 (APPROX.)

0 0.5 1 2 3 m

REV.	DESCRIPTION	DATE	MADE	CHKD
2				
1				

SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

CONFIRMATORY SOIL SAMPLE LOCATION PLAN– VEHICLE SERVICE HOIST EXCAVATION

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE	DATE	FILE NAME
1:50	08/10/01	202–01263–A10.dwg

MADE	CHKD	JOB NO.	FIG
DK	BEH	202.01263	9

GARAGE

SA12

SA14

SA13

HEATING OIL AST

SA13–JUNE 19, 2001	
PARAMETER	CONCENTRATION
EPH (C 10–19)	<200
EPH (C 19–32)	659
METALS	<CSR RL[2]

HEATING OIL AST EXCAVATION

SA15–JUNE 19, 2001	
PARAMETER	CONCENTRATION
EPH (C 10–19)	<200
EPH (C 19–32)	<200
LEPH	<200
HEPH	<200
PAH	<CSR RL[2]

SA20

SA19

SA15

SA17

SA18

SA18–JUNE 19, 2001	
PARAMETER	CONCENTRATION
EPH (C 10–19)	<200
EPH (C 19–32)	596

LEAKING DRUMS EXCAVATION

N

LEGEND

- LIMITS OF EXCAVATION
- SOIL SAMPLE LOCATION
- CONFIRMATORY SOIL SAMPLE SUBMITTED FOR ANALYSIS
- FENCE

STANDARDS (ppm)		
PARAMETER	CSR RL	CSR CL
EPH (C_{10-19})	1000[1]	2000[1]
EPH (C_{19-32})	1000[1]	5000[1]
LEPH	1000[1]	2000[1]
HEPH	1000[1]	5000[1]
PAH	[2]	[2]
METALS	[2]	[2]

ppm	PARTS PER MILLION
CSR	BC CONTAMINATED SITES REGULATION
CSR RL	BC CSR–RESIDENTIAL STANDARDS
CSR CL	BC CSR–COMMERCIAL STANDARDS
EPH	EXTRACTABLE PETROLEUM HYDROCARBONS
LEPH	LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS
HEPH	HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
PAH	POLYCYCLIC AROMATIC HYDROCARBONS
1	INDICATES COMPARABLE LEPH/HEPH STANDARD
2	REFER TO CSR FOR SPECIFIC PAH/METALS STANDARD

SCALE 1:50 (APPROX.)

0 0.5 1 2 3 m

REV.	DESCRIPTION	DATE	MADE
2			
1			

SEACOR ENVIRONMENTAL INC.

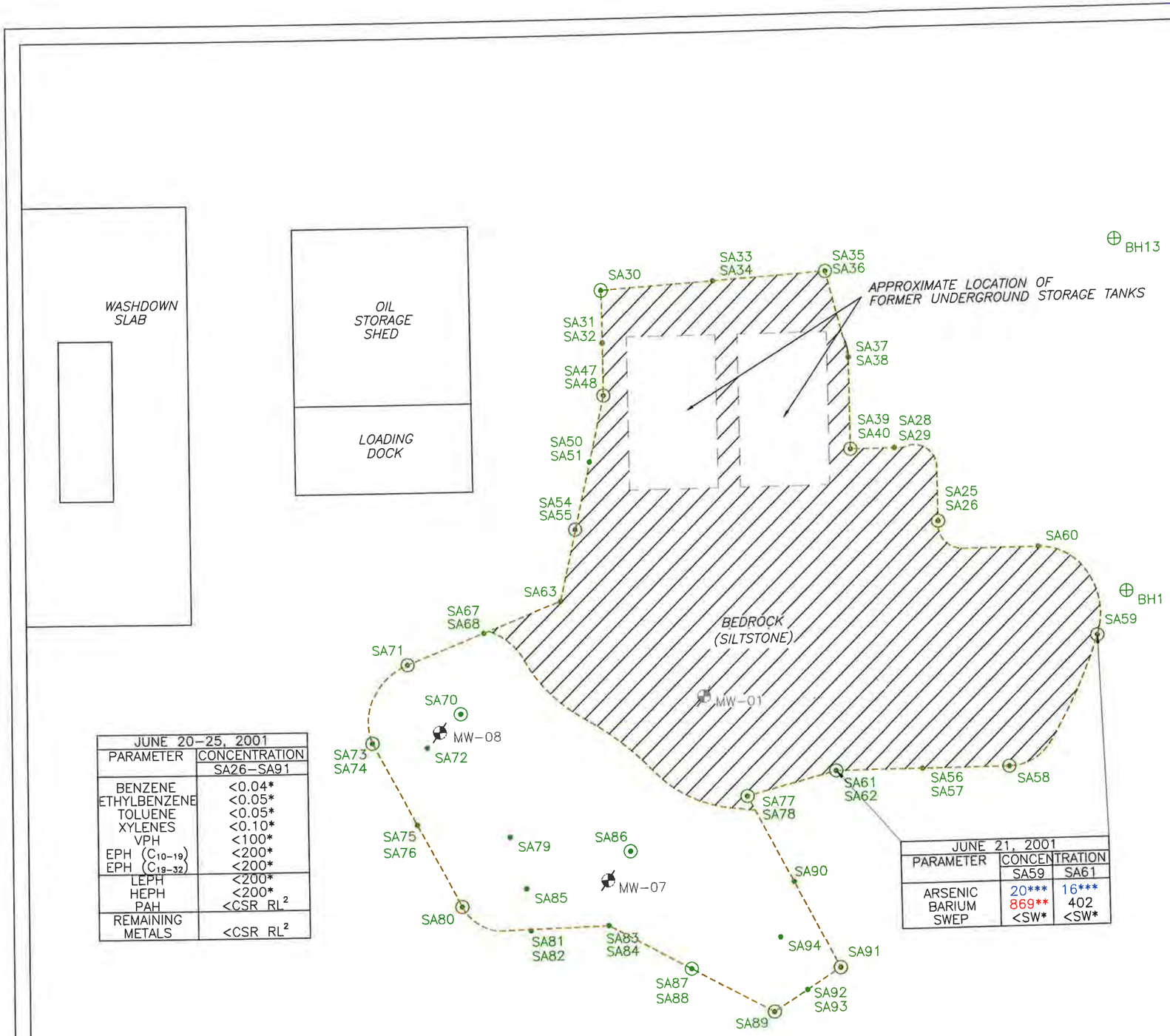
BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

CONFIRMATORY SOIL SAMPLE LOCATION PLAN– HEATING OIL AST AND LEAKING DRUMS EXCAVATIONS

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE	DATE	FILE NAME	
1:50	08/10/01	202–01263–A11.dwg	
MADE	CHKD	JOB NO.	FIG
DK	BEH	202.01263	10



JUNE 20–25, 2001	
PARAMETER	CONCENTRATION SA26–SA91
BENZENE	<0.04*
ETHYLBENZENE	<0.05*
TOLUENE	<0.05*
XYLENES	<0.10*
VPH	<100*
EPH (C_{10-19})	<200*
EPH (C_{19-32})	<200*
LEPH	<200*
HEPH	<200*
PAH	<CSR RL[2]
REMAINING METALS	<CSR RL[2]

JUNE 21, 2001		
PARAMETER	CONCENTRATION SA59	SA61
ARSENIC	20***	16***
BARIUM	869**	402
SWEP	<SW*	<SW*

LEGEND

- LIMITS OF EXCAVATION
- SOIL SAMPLE LOCATION
- CONFIRMATORY SOIL SAMPLE SUBMITTED FOR ANALYSIS
- FORMER MONITORING WELL (DECOMMISSIONED JUNE 2001)
- BOREHOLE LOCATION

STANDARDS (ppm)		
PARAMETER	CSR RL	CSR CL
EPH (C_{10-19})	1000[1]	2000[1]
EPH (C_{19-32})	1000[1]	5000[1]
LEPH	1000	2000
HEPH	1000	5000
PAH	[2]	[2]
METALS	[2]	[2]
ARSENIC	15	15
BARIUM	500	2000

ppm	PARTS PER MILLION
CSR	BC CONTAMINATED SITES REGULATION
CSR RL	BC CSR–RESIDENTIAL STANDARDS
CSR CL	BC CSR–COMMERCIAL STANDARDS
SW	SPECIAL WASTE STANDARD
EPH	EXTRACTABLE PETROLEUM HYDROCARBONS
LEPH	LIGHT EXTRACTABLE PETROLEUM HYDROCARBONS
HEPH	HEAVY EXTRACTABLE PETROLEUM HYDROCARBONS
PAH	POLYCYCLIC AROMATIC HYDROCARBONS
SWEP	SPECIAL WASTE EXTRACTION PROCEDURE
[1]	INDICATES COMPARABLE LEPH/HEPH STANDARD. EPH IS NOT A REGULATED PARAMETER.
[2]	REFER TO CSR FOR SPECIFIC PAH/METALS STANDARD
*	ALL SAMPLES BELOW ANALYTICAL DETECTION LIMIT AS INDICATED–REFER TO TEXT FOR SPECIFIC ANALYSIS
**	CONCENTRATION IN EXCESS OF CSR RL STANDARD
***	CONCENTRATION IN EXCESS OF CSR CL STANDARD

REV.	DESCRIPTION	DATE	MADE
2			
1			

SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

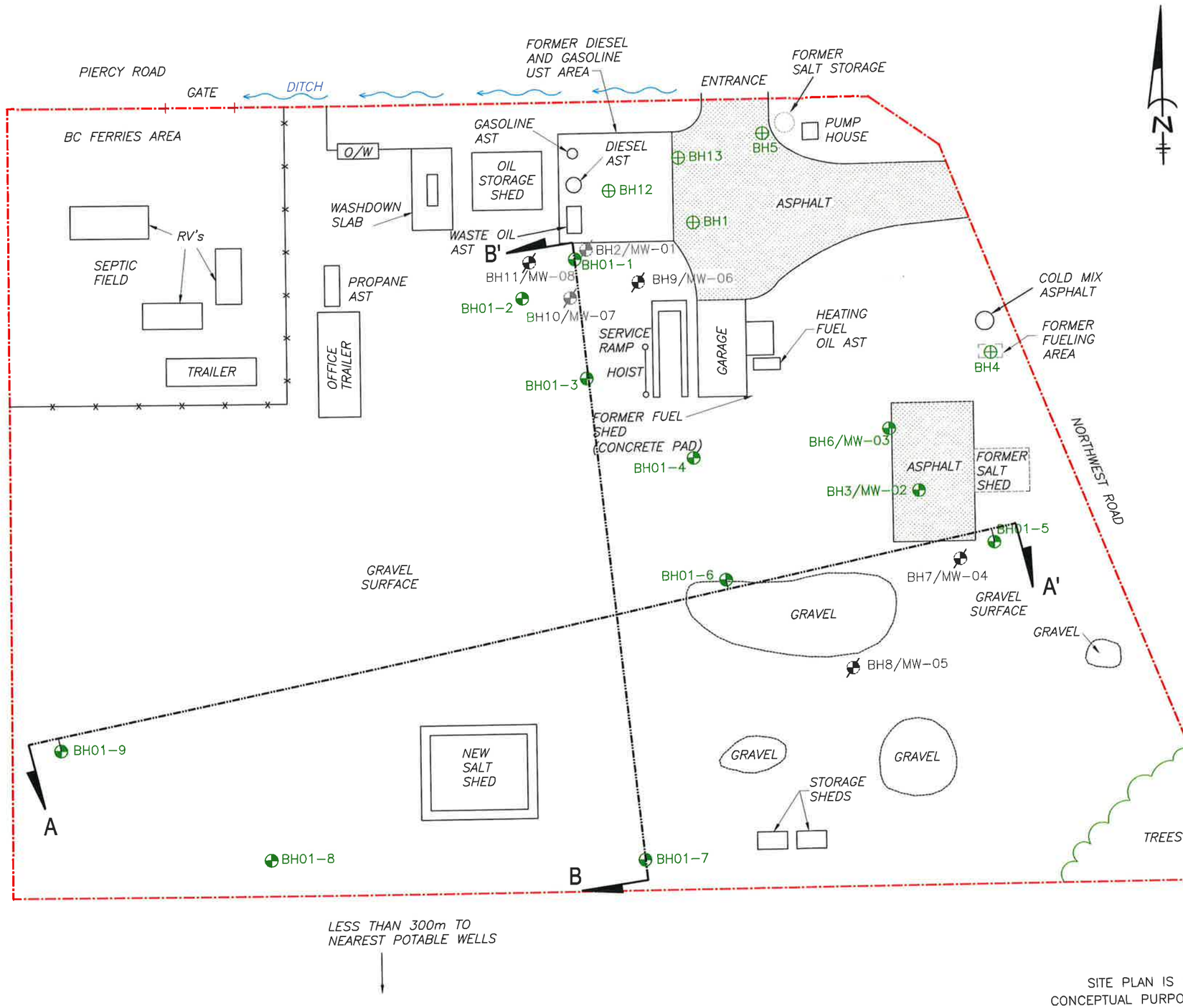
BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

CONFIRMATORY SOIL SAMPLE LOCATION PLAN– FORMER UST NEST AREA EXCAVATION

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE	DATE	FILE NAME
1:100	08/13/01	202–01263–A12.dwg

MADE	CHKD	JOB NO.	FIG
DK	BEH	202.01263	11



SITE PLAN IS FOR CONCEPTUAL PURPOSES ONLY. PRECISE MEASUREMENTS TO BE CONFIRMED BY SURVEYOR.

LEGEND

- SITE BOUNDARY
- FENCE
- BOREHOLE LOCATION
- BOREHOLE COMPLETED AS A MONITORING WELL
- FORMER MONITORING WELL (DECOMMISSIONED / DESTROYED)
- O/W — OIL/ WATER SEPARATOR

FOR CROSS SECTION A–A' REFER TO FIG. 13
FOR CROSS SECTION B–B' REFER TO FIG. 14

NOTE:
SITE PLAN DERIVED FROM "SITE PLAN AND BOREHOLE LOCATIONS PIERCY ROAD, DENMAN ISLAND, B.C." AMEC EARTH AND ENVIRONMENTAL LIMITED

SCALE 1:500 (APPROX.)

0 10 20 30 m

REV.	DESCRIPTION	DATE	MADE
2			
1			

SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

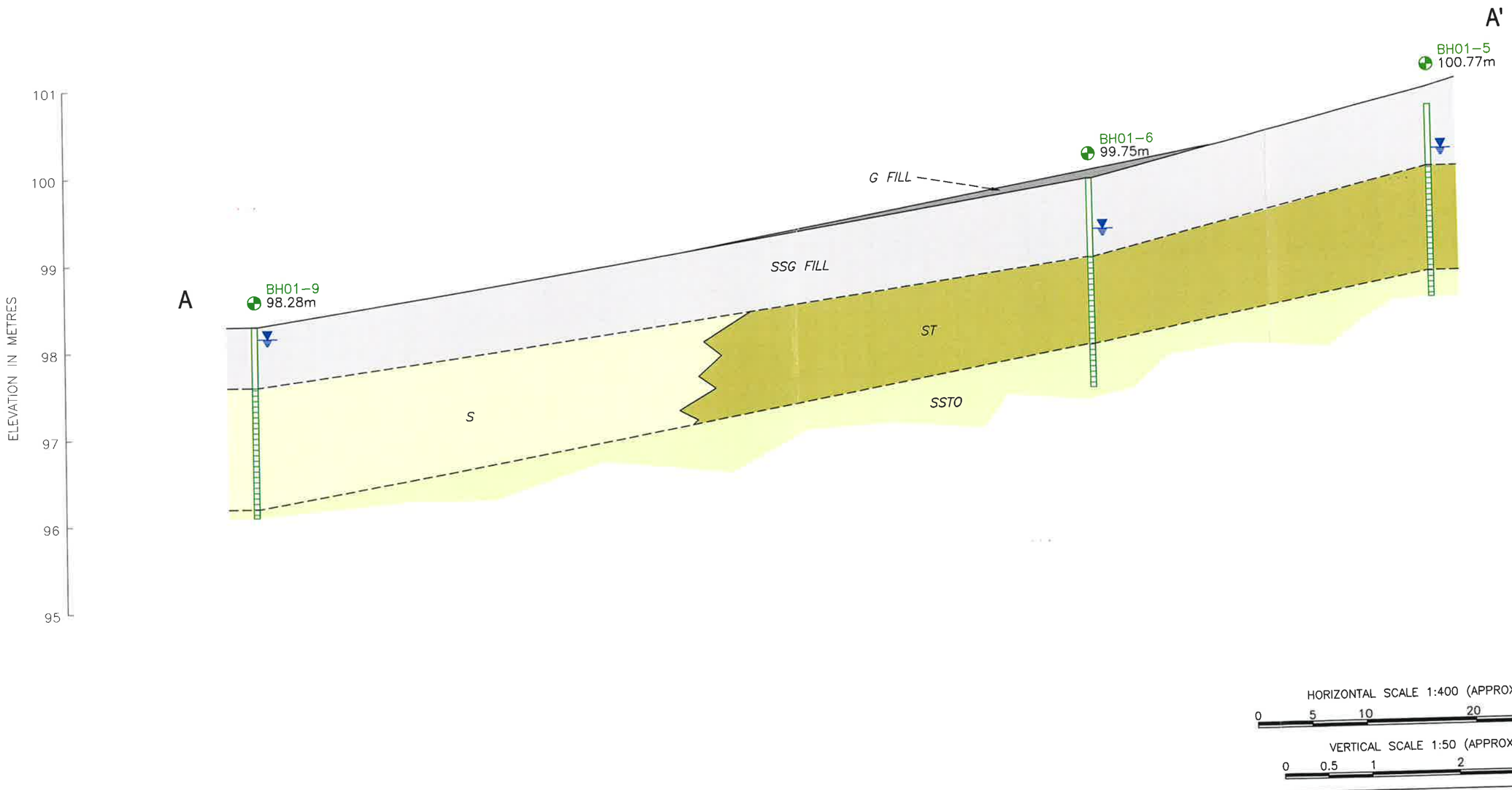
BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

POST REMEDIATION INVESTIGATION – GROUNDWATER MONITORING WELL LOCATION PLAN

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE	DATE	FILE NAME
1:500	04/25/02	202-01263-A19.dwg

MADE	CHKD	JOB NO.	FIG
EK/DK	BEH	202.01263	12



HORIZONTAL SCALE 1:400 (APPROX.)

0 5 10 20 30 m

VERTICAL SCALE 1:50 (APPROX.)

0 0.5 1 2 3 m

LEGEND

- BOREHOLE COMPLETED AS A MONITORING WELL
- BOREHOLE
- SCREENED INTERVAL
- WATER LEVEL (DECEMBER 05, 2001)

TS	TOP SOIL		
SG	SAND AND GRAVEL		
ST	SILT (NATIVE)		
SSG FILL	SAND TO SAND AND GRAVEL FILL		
S	SAND (NATIVE)	S STO	SILTSTONE
G FILL	GRAVEL FILL	S FILL	SAND FILL

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

REV.	DESCRIPTION	DATE	MADE	CHKD
4				
3				
2				
1				

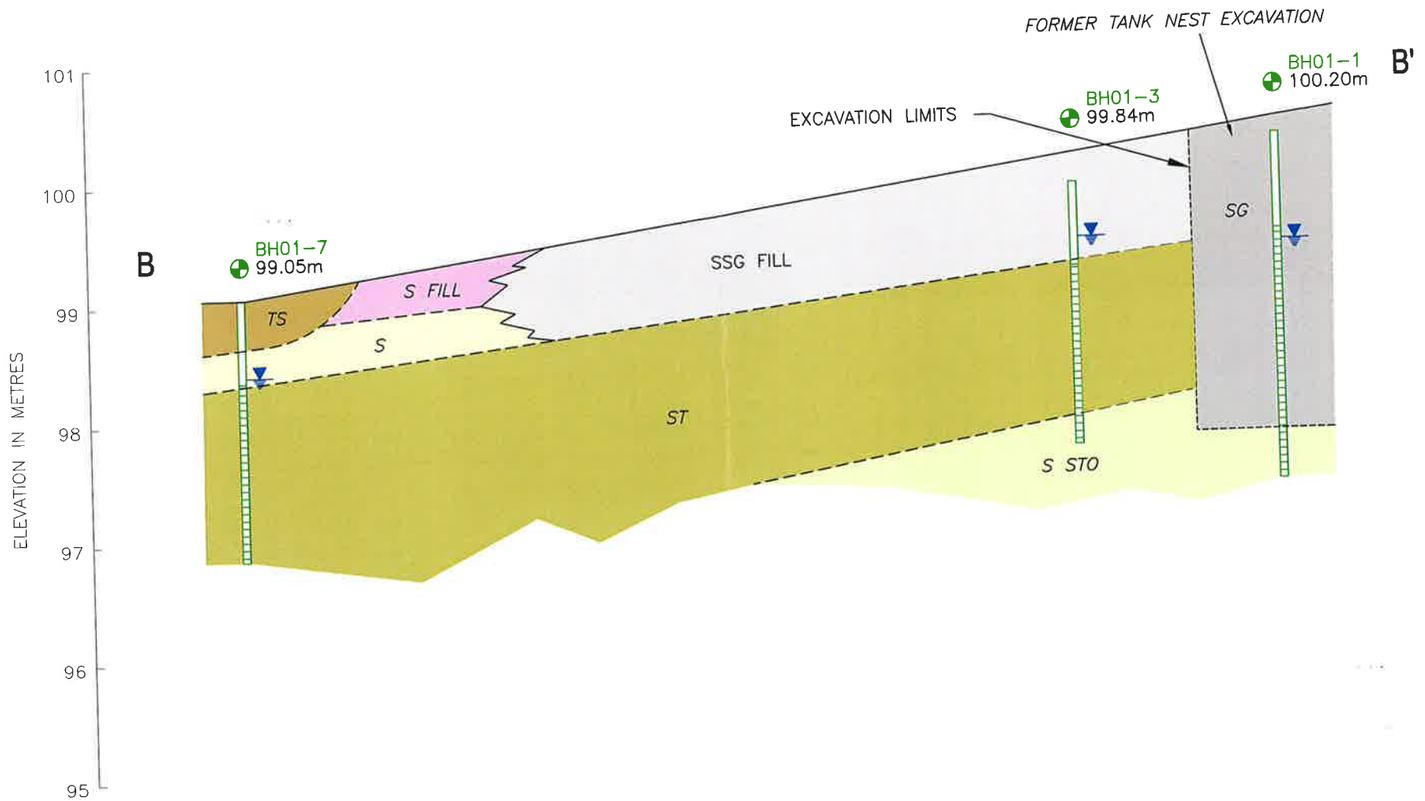
SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

POST REMEDIATION INVESTIGATION – CROSS SECTION A–A'

SCALE	DATE	FILE NAME	MADE	CHKD	JOB NO.	FIG
H=1:400 V=1:50	03/19/02	202-01263-A20.DWG	DK	BEH	202.01263	13



HORIZONTAL SCALE 1:400 (APPROX.)

0 5 10 20 30 m

VERTICAL SCALE 1:50 (APPROX.)

0 0.5 1 2 3 m

LEGEND

- BOREHOLE COMPLETED AS A MONITORING WELL
- BOREHOLE
- SCREENED INTERVAL
- WATER LEVEL (DECEMBER 05, 2001)
- S STO — SILTSTONE
- S FILL — SAND FILL
- TS — TOP SOIL
- SG — SAND AND GRAVEL
- ST — SILT (NATIVE)
- SSG FILL — SAND TO SAND AND GRAVEL FILL
- S — SAND

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

REV.	DESCRIPTION	DATE	MADE	CHKD
4				
3				
2				
1				

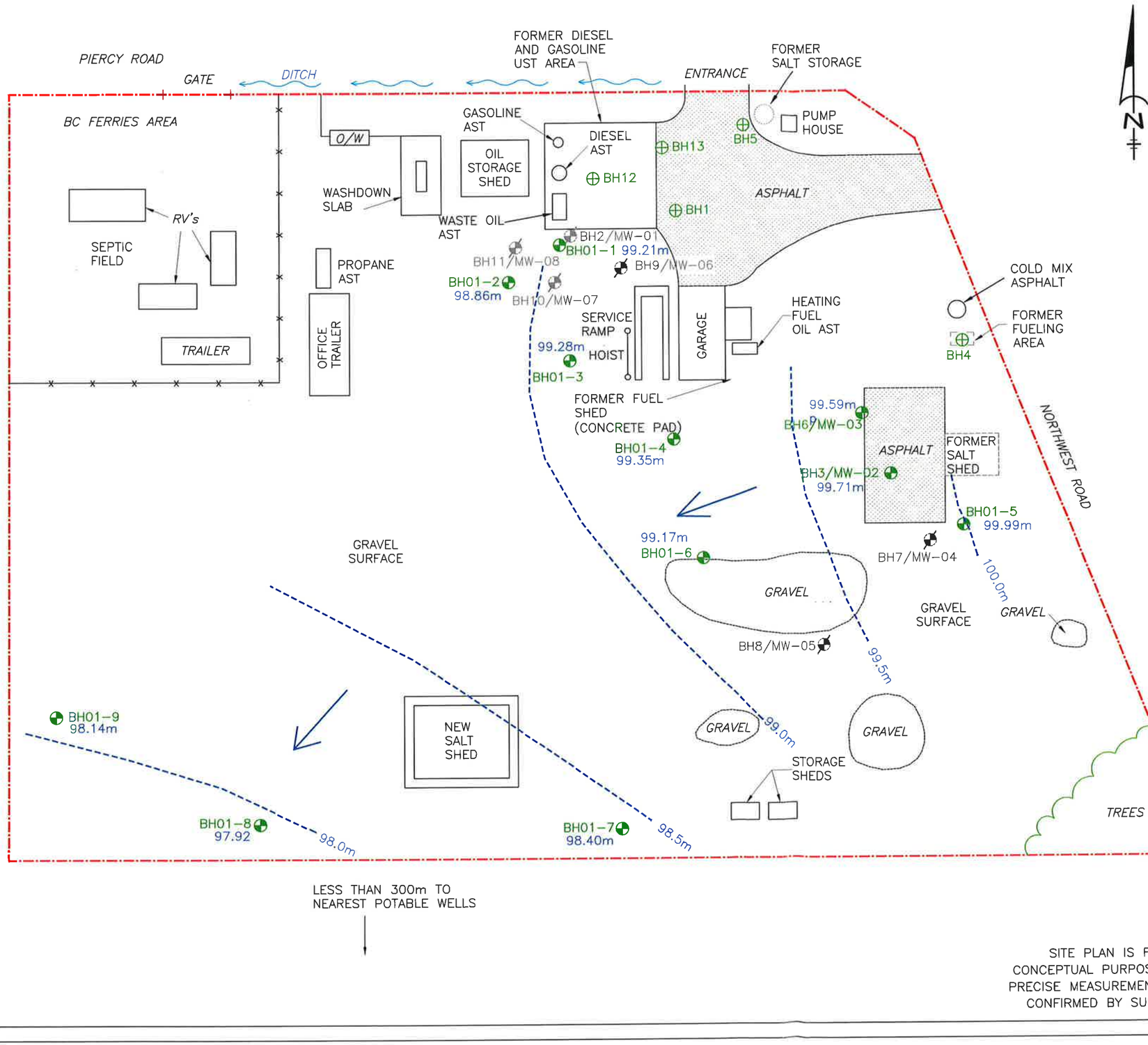
SEACOR ENVIRONMENTAL INC.™

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

POST REMEDIATION INVESTIGATION – CROSS SECTION B-B'

SCALE	DATE	FILE NAME	MADE	CHKD	JOB NO.	FIG
H=1:400 V=1:50	03/19/02	202-01263-A21.DWG	DK	BEH	202.01263	14



LEGEND

- SITE BOUNDARY
- FENCE
- BOREHOLE LOCATION
- BOREHOLE COMPLETED AS A MONITORING WELL
- FORMER MONITORING WELL (DECOMMISSIONED / DESTROYED)
- 97.73m — GROUNDWATER ELEVATION IN METRES (DECEMBER 05, 2001)
- INFERRED GROUNDWATER ELEVATION CONTOUR
- INFERRED DIRECTION OF GROUNDWATER FLOW
- O/W — OIL/ WATER SEPARATOR

NOTE:
SITE PLAN DERIVED FROM "SITE PLAN AND BOREHOLE LOCATIONS PIERCY ROAD, DENMAN ISLAND, B.C." AMEC EARTH AND ENVIRONMENTAL LIMITED

SCALE 1:500 (APPROX.)

0 10 20 30 m

REV.	DESCRIPTION	DATE	MADE
2			
1			

SEACOR ENVIRONMENTAL INC.

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

POST REMEDIATION INVESTIGATION – GROUNDWATER CONTOUR PLAN

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

SCALE	DATE	FILE NAME
1:500	04/25/02	202-01263-A23.dwg

MADE	CHKD	JOB NO.	FIG
KA	BH	202.01263	15

GROUNDWATER BETX/VPHw, EPH, LEPHw/HEPH AND PAH CHEMISTRY (ppb)
Post-Remediation Investigation - December 5, 2001

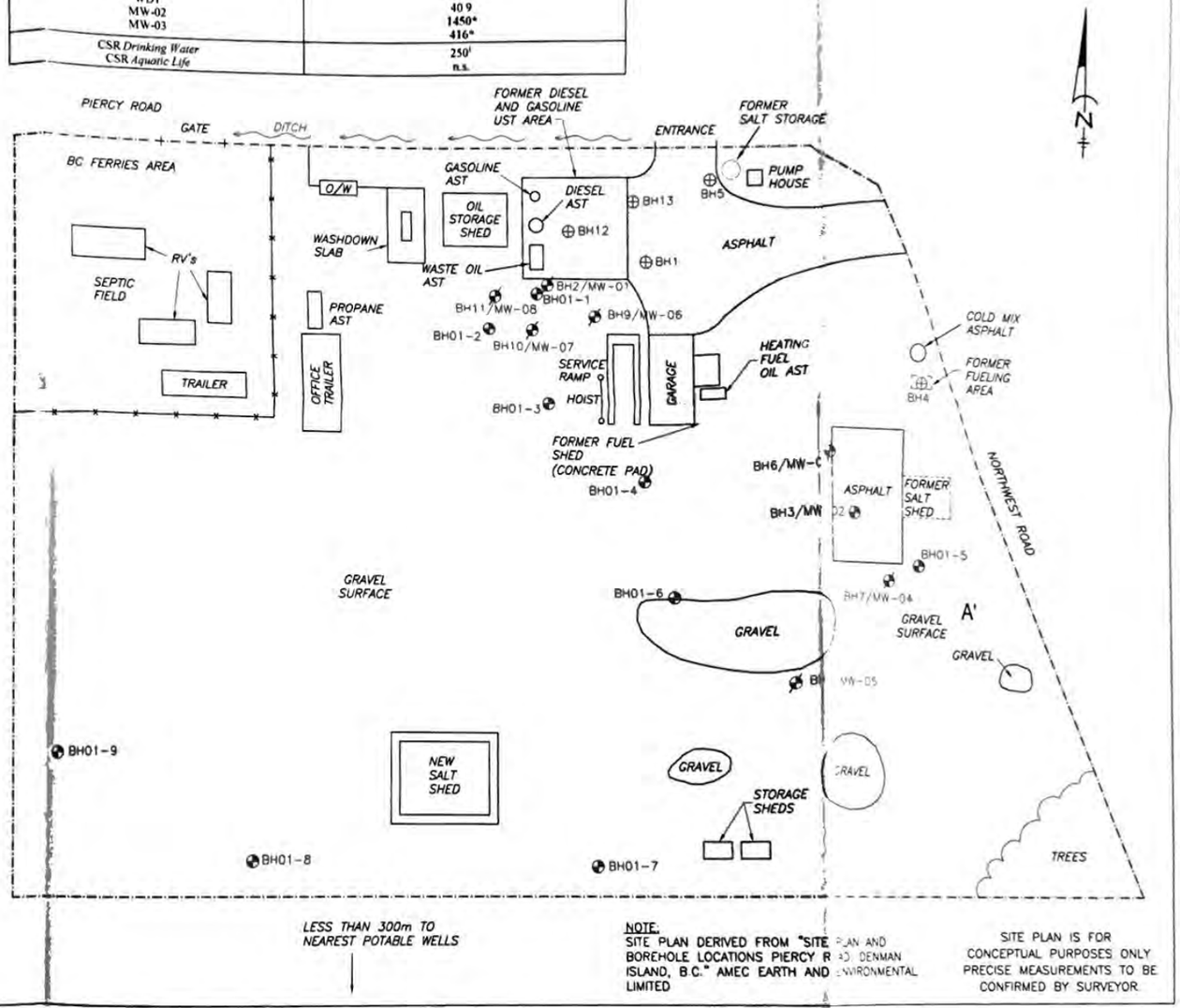
Parameter	BH01-1	BH01-2	BH01-3	WD1	BC Standards: CSR Drinking Water	BC Standards: CSR Aquatic Life
NON-HALOGENATED VOLATILES						
Benzene	<0.5	<0.5	<0.5	<0.5	5	3000
Ethylbezene	<0.5	<0.5	<0.5	<0.5	2.4	7000
Toluene	<0.5	0.8	0.5	<0.5	24	3000
Xylenes	<1.0	<1.0	<1.3	<1.0	300	n.s.
VHW	<100	<100	<100	<100	n.s.	1500
VPHW	<100	<100	<100	<100	n.s.	15000
EXTRACTABLES						
LEPHW	-	<300	-	-	n.s.	500
HEPH	-	<1000	-	-	n.s.	n.s.
EPH (C_{10-19})[2]	<300	<300	<300	<300	n.s.	500[2]
EPH (C_{19-32})	<1000	<1000	<1000	<1000	n.s.	n.s.
POLYCYCLIC AROMATIC HYDROCARBONS						
Acenaphthene	-	<0.05	-	-	n.s.	60
Acenaphthylene	-	<0.05	-	-	n.s.	n.s.
Acridine	-	<0.05	-	-	n.s.	0.5
Anthracene	-	<0.05	-	-	n.s.	1
Benz(a)anthracene	-	<0.05	-	-	0.01	1
Benzo(a)pyrene	-	<0.03	-	-	n.s.	0.1
Benzo(b)fluoranthene	-	<0.05	-	-	n.s.	n.s.
Benzo(g,h,i)perylene	-	<0.07	-	-	n.s.	n.s.
Benzo(k)fluoranthene	-	<0.05	-	-	n.s.	1
Chrysene	-	<0.05	-	-	n.s.	n.s.
Dibenz(a,h)anthracene	-	<0.2	-	-	n.s.	2
Fluoranthene	-	<0.05	-	-	n.s.	120
Fluorene	-	<0.05	-	-	n.s.	n.s.
Indeno(1,2,3-c,d)pyrene	-	<0.05	-	-	n.s.	10
Naphthalene	-	<0.05	-	-	n.s.	3
Phenanthrene	-	<0.05	-	-	n.s.	0.2
Pyrene	-	<0.05	-	-	n.s.	n.s.

GROUNDWATER DISSOLVED METALS CHEMISTRY (ppb)
Post-Remediation Investigation - December 5, 2001

Parameter	BH01-3	BH01-4	BH01-5	BH01-6	BH01-8	BH01-9	BC Standards: CSR *Drinking Water*	BC Standards: CSR *Aquatic Life*
Hardness (mg/L)	135	143	206	336	482	487	n.s.	n.s.
Aluminum	**300***	<100	100	<100	<100	100	200	n.s.
Antimony	<100	<100	<100	<100	<100	<100	6	200
Arsenic	<10	<10	<10	<10	<10	<10	25	120
Barium	<20	130	70	330	250	190	1000	5000
Beryllium	<5	<5	<5	<5	<5	<5	n.s.	1000
Boron	<100	<100	<100	<100	<100	<100	5000	50000
Cadmium	<2	<2	<2	<2	<2	<2	5	1
Chromium	<10	<10	30	<10	**50***	**100***	50	150
Cobalt	<10	<10	<10	**20****	<10	<10	n.s.	9
Copper	<10	<10	10	<10	**20****	**40****	1000	20
Iron	180	<30	**400***	<30	<30	**1130***	300	n.s.
Lead	<10	<10	<10	<10	<10	<10	10	20
Magnesium[1]	1.1	7.0	<0.1	25.2	34.4	<0.1	100[3]	n.s.
Manganese	<10	**600***	<10	**10800***	**1290***	<10	50	n.s.
Mercury	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1	1
Molybdenum	<10	10	20	<10	30	40	250	10000
Nickel	<50	<50	<50	<50	<50	<50	n.s.	83
Selenium	<10	<10	<10	<10	<10	<10	10	540
Silver	<1	<1	<1	<1	<1	<1	n.s.	0.5
Sodium[1]	63	52	94	178	155	**207***	200[3]	n.s.
Thallium	<2	<2	<2	<2	<2	<2	n.s.	3
Uranium	<2	<2	<2	<2	<8	<2	100	3000
Zinc	<50	<50	<50	<50	<50	<50	5000	100

GROUNDWATER DISSOLVED CHLORIDE CHEMISTRY (ppm) -POST-REMEDIATION INVESTIGATION
DECEMBER 5, 2001

Sample ID	Chloride
BH01-4	25.1
BH01-5	64.5
BH01-6	**280***
BH01-7	**415***
BH01-8	235
BH01-9	36.2
WD1	40.9
MW-02	**1450***
MW-03	**416***
CSR *Drinking Water*	250[1]
CSR *Aquatic Life*	n.s.



LESS THAN 300m TO NEAREST POTABLE WELLS

NOTE.
SITE PLAN DERIVED FROM "SITE PLAN AND BOREHOLE LOCATIONS PIERCY RD. DENMAN ISLAND, B.C." AMEC EARTH AND ENVIRONMENTAL LIMITED

SITE PLAN IS FOR CONCEPTUAL PURPOSES ONLY PRECISE MEASUREMENTS TO BE CONFIRMED BY SURVEYOR

LEGEND

- SITE BOUNDARY
- FENCE
- BOREHOLE LOCATION
- BOREHOLE COMPLETED AS A MONITORING WELL
- FORMER MONITORING WELL (DECOMMISSIONED / DESTROYED)
- O/W OIL/ WATER SEPARATOR

CSR - BC Contaminated Sites Regulation
CSR *Drinking Water*- CSR *Drinking Water* standards
CSR *Aquatic Life*- CSR *Aquatic Life* standards
VHw - volatile hydrocarbons in water
VPHw - volatile petroleum hydrocarbons in water
EPH - extractable petroleum hydrocarbons
LEPHw - light extractable petroleum hydrocarbons in water
HEPH - heavy extractable petroleum hydrocarbons
PAH - polycyclic aromatic hydrocarbons
ppb - parts per billion
ppm - parts per million
< - less than analytical detection limit
n.s. - no standard listed
[1] - expressed as ppm
[2] - indicates comparable LEPHw standard
* - indicates concentration in excess of the CSR *Drinking Water* standard
** - indicates concentration in excess of the CSR *Aquatic Life* marine standard

SCALE 1:500 (APPROX.)
0 10 20 30 m

REV.	DESCRIPTION	DATE	MADE
2			
1			

SEACOR ENVIRONMENTAL INC

BC Buildings Corporation

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, B.C.

POST REMEDIATION INVESTIGATION – GROUNDWATER CHEMISTRY PLAN
DECEMBER 5, 2001

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY
ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN

SCALE	DATE	FILE NAME
1:500	04/25/02	202-01263-A22.dwg

MADE	CHKD	JOB NO	FIG
EK/DK	BEH	202 01263	16

PHOTO 1: Vehicle service hoist excavation facing north.

PHOTO 2: Leaking drums excavation facing southwest.

SEACOR ENVIRONMENTAL INC.

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, BC

SITE PHOTOGRAPHS

DATE	MADE	CHKD	JOB NO.	PAGE
April 2002	D.W.	R.C.	202.01263	1 OF 4

PHOTO 3: Excavation of hydrocarbon-impacted soils from former UST nest. Note dark grey hydrocarbon stained tank nest sands.

PHOTO 4: Excavation of hydrocarbon-stained siltstone adjacent to former tank nest.

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, BC

SITE PHOTOGRAPHS

DATE	MADE	CHKD	JOB NO.	PAGE
April 2002	D.W.	R.C.	202.01263	2 OF 4

SEACOR ENVIRONMENTAL INC.

PHOTO 5: Former tank nest excavation facing west. Note proximity to oil shed building.

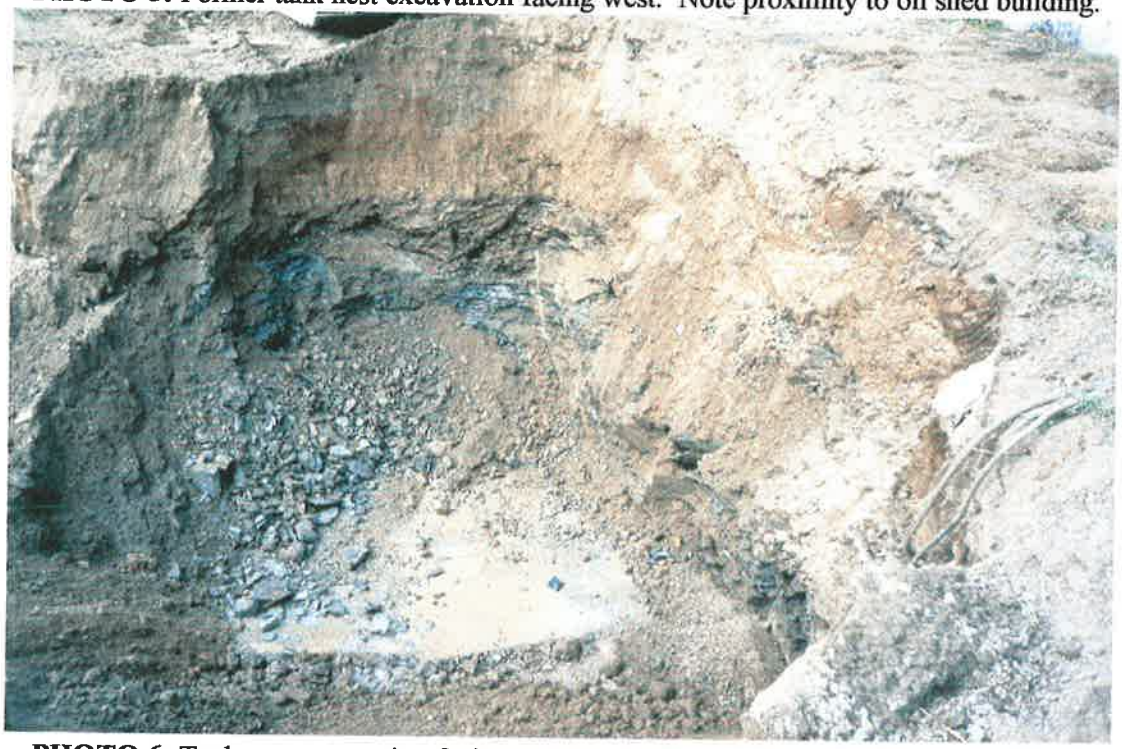


PHOTO 6: Tank nest excavation facing southwest. Note dark grey hydrocarbon-stained siltstone underlying sand and gravel fill.

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, BC

SITE PHOTOGRAPHS

SEACOR ENVIRONMENTAL INC.

DATE	MADE	CHKD	JOB NO.	PAGE
April 2002	D.W.	R.C.	202.01263	3 OF 4

PHOTO 7: Tank nest excavation facing southeast following partial backfilling and compaction.

PHOTO 8: Tank nest excavation area following re-instatement with new concrete slab and replacement of above ground fuel storage tanks.

SEACOR ENVIRONMENTAL INC.

BRITISH COLUMBIA BUILDINGS CORPORATION
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD
DENMAN ISLAND, BC

SITE PHOTOGRAPHS

DATE	MADE	CHKD	JOB NO.	PAGE
April 2002	D.W.	R.C.	202.01263	4 OF 4

APPENDIX A

BOREHOLE LOGS

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-1
ELEVATION: 100.20 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv)	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
			SAND AND GRAVEL (Fill) Fine to coarse grained sand, fine to coarse grained gravel, trace silt, brown, damp	1 10 100 1000			Roadbox Concrete/ bentonite seal Solid PVC pipe	
1.0				5		▼	0.99m (Dec 5/01) Silica sand	1.0
			- Saturated below 1.8 m	35				
2.0							010 slotted PVC pipe	2.0
			SILT (Native) Sandy, trace fine to coarse grained gravel, brown/grey, damp	5				
3.0			End of borehole at 3.1 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 3.1 m below ground surface Monitoring well combustible vapour level (12/05/01) = 25 ppmv Elevation at top of piezometer = 99.93 m Groundwater elevation (12/05/01) = 99.21 m					3.0

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 28 November 2001

Notes: ⋈ SPLIT SPOON

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-2
ELEVATION: 99.79 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv) 1 / 10 / 100 / 1000	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
			SAND AND GRAVEL (Fill) Fine to coarse grained sand, fine to coarse grained gravel, trace silt, dark brown, damp				Roadbox Concrete/ bentonite seal Solid PVC pipe	
1.0			**SILT (Native)** Trace to some coarse subrounded gravel, trace to some fine grained sand, trace clay, firm to stiff, light brown, damp - Moist to wet below 1.4 m - Very hard drilling below 1.5 m	25		0.93m (Dec 5/01)	Silica sand	1.0
2.0			**SILTSTONE** Trace fine grained sand, hard, brown/gray, damp	40			010 slotted PVC pipe	2.0
			Auger refusal at 2.4 m End of borehole at 2.4 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 2.4 m below ground surface Monitoring well combustible vapour level (12/05/01) = >11000 ppmv Elevation at top of piezometer = 99.63 m Groundwater elevation (12/05/01) = 98.86 m					

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 28 November 2001

Notes: SPLIT SPOON

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-3
ELEVATION: 99.84 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
			SAND (Fill) Silty, trace gravel, soft, dark brown, damp				Roadbox Concrete/ bentonite seal 0.56m (Dec 5/01) Solid PVC pipe	
1.0			**SILT (Native)** Some fine to coarse grained sand, some fine to coarse grained gravel, trace clay, brown to gray, damp	45			Silica sand	1.0
			- Trace fine grained sand, trace clay, very hard, gray with orange mottling, damp	25				
2.0			**SILTSTONE** Trace fine grained sand, hard, brown/gray, damp	35			010 slotted PVC pipe	2.0
			Auger refusal at 2.6 m End of borehole at 2.6 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 2.4 m below ground surface Monitoring well combustible vapour level (12/05/01) = 550 ppmv Elevation at top of piezometer = 99.55 m Groundwater elevation (12/05/01) = 99.28 m					

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 28 November 2001

Notes: SPLIT SPOON

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-4
ELEVATION: 100.02 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
			SAND AND GRAVEL (Fill) Silty, fine to coarse grained sand, fine to coarse grained gravel, well graded, loose, brown, damp				Roadbox Concrete/ bentonite seal solid PVC pipe 0.67m (Dec 5/01)	
1.0			**SILT (Native)** Some fine to coarse grained sand, some fine to coarse grained gravel, trace clay, hard, brown, damp - Occasional sand lenses between 1.2 m and 1.7 m	5 25			Silica sand	1.0
2.0			**SILTSTONE** Gray with orange mottling	30			010 slotted PVC pipe	2.0
			Auger refusal at 2.6 m End of borehole at 2.6 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 2.4 m below ground surface Monitoring well combustible vapour level (12/05/01) = 250 ppmv Elevation at top of piezometer = 99.81 m Groundwater elevation (12/05/01) = 99.35 m					

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 28 November 2001

Notes: SPLIT SPOON

Sheet 1 of 1

SEACOR_CANAD GPJ SEAC_CAN GDT 23/04/02

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-5
ELEVATION: 100.77 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv) 1 / 10 / 100 / 1000	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
0			**SAND AND GRAVEL (Fill)** Silty, loose, dark brown, damp				Roadbox Concrete/ bentonite seal Solid PVC pipe 0.78m (Dec 5/01)	
1.0			**SILT (Native)** Some fine to coarse grained sand, some fine to coarse grained gravel, stiff, brown, damp - Sand lenses between 1.4 m and 2.0 m	50			Silica sand	1.0
2.0			**SILTSTONE** Gray with orange mottling, damp	35 5			010 slotted PVC pipe	2.0
			End of borehole at 2.4 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 2.4 m below ground surface Monitoring well combustible vapour level (12/05/01) = 125 ppmv Elevation at top of piezometer = 100.76 m Groundwater elevation (12/05/01) = 99.99 m					

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 28 November 2001

Notes: SPLIT SPOON

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-6
ELEVATION: 99.75 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv) 1 10 100 1000	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
			GRAVEL (Fill)					
			SAND AND GRAVEL (Fill) Silty, fine to coarse grained sand, fine to coarse grained gravel, soft, brown, damp				Roadbox Concrete/ bentonite seal 0.58m (Dec 5/01) Solid PVC pipe	
1.0			**SILT (Native)** Sandy, some clay, grey, wet, sulfur-like odour	145			Silica sand	1.0
			- Trace sand, damp below 1.5 m	50				
2.0			**SILTSTONE** Gray/brown with orange mottling, hard, damp	55			010 slotted PVC pipe	2.0
			End of borehole at 2.6 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 2.4 m Monitoring well combustible vapour level (12/05/01) = 15 ppmv Elevation at top of piezometer = 99.53 m Groundwater elevation (12/05/01) = 99.17 m					

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 29 November 2001

Notes: SPLIT SPOON

Sheet 1 of 1

SEACOR_CANADA 3.GPJ SEAC_CAN.GDT 23/04/02

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-7
ELEVATION: 99.05 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv) 1 / 10 / 100 / 1000	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
			TOPSOIL Grass, organic fibres, vegetation debris				Roadbox	
			SAND (Native) Silty, some fine gravel, organic fibrous material, dark brown, damp				Concrete/ bentonite seal Solid PVC pipe 0.65m (Dec 5/01)	
1.0			**SILT** Sandy, brown to gray, soft to firm, damp to wet	75				1.0
			- Gray/brown with orange mottling, firm, damp	50			Silica sand	
2.0				60			010 slotted PVC pipe	2.0
			End of borehole at 2.6 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 2.4 m below ground surface Monitoring well combustible vapour level (12/05/01) = 110 ppmv Elevation at top of piezometer = 98.92 m Groundwater elevation (12/05/01) = 98.40 m					

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 29 November 2001

Notes: SPLIT SPOON

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-8
ELEVATION: 98.49 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv) 1 / 10 / 100 / 1000	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
			SAND AND GRAVEL (Fill) Some silt, fine to coarse grained sand, fine to coarse grained gravel, trace fibrous organics, loose-firm, brown, damp				Roadbox	
							Concrete/ bentonite seal	
			TOPSOIL (Native) Some sand and silt, organic fibrous material, soft, dark brown to black, damp			▼	0.57m (Dec 5/01)	
1.0							solid PVC pipe	1.0
			SAND Some silt, fine to coarse grained sand, trace coarse grained gravel, soft, grey, moist to wet	110			silica sand	
			SILT Some sand, brown and grey, soft, moist to wet					
			Trace fine to coarse grained gravel, firm, damp below 1.8 m	70				
2.0							010 slotted PVC pipe	2.0
			SILTSTONE Gray/brown with orange mottling, damp	45				
			End of borehole at 2.9 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 2.7 m below ground surface Monitoring well combustible vapour level (12/05/01) = 250 ppmv Elevation at top of piezometer = 98.37 m Groundwater elevation (12/05/01) = 97.92 m					

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 29 November 2001

Notes: ⋈ SPLIT SPOON

SEACOR ENVIRONMENTAL INC.

SEACOR JOB NO: 202.01263.004

CLIENT: **British Columbia Buildings Corporation**
PROJECT: Denman Island Highways Yard
3661 Piercy Road
Denman Island, BC

BOREHOLE LOG

BOREHOLE NO: BH01-9
ELEVATION: 98.28 m

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA: HYDROCARBON VAPOUR LEVEL (ppmv) 1 / 10 / 100 / 1000	WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
			SAND AND GRAVEL (Fill) Some silt, fine to coarse grained sand, brown, moist			0.14m (Dec 5/01)	Roadbox Concrete/ bentonite seal Solid PVC pipe	
1.0			**SAND (Native)** Silty, fine grained sand, soft, brown to gray, moist to wet, sulfur-like odour	30			Silica sand	1.0
			- Saturated below 1.5 m	0				
2.0			- Increase in silt below 2.1 m **SILTSTONE** Hard, black/gray with orange mottling	50			010 slotted PVC pipe	2.0
			Auger refusal at 2.6 m End of borehole at 2.6 m; 50 mm diameter monitoring well installed Screened interval from 0.9 m to 2.3 m below ground surface Monitoring well combustible vapour level (12/05/01) = n/a Elevation at top of piezometer = 98.14 m Groundwater eleavtion (12/05/01) = 98.14 m					

DRILLING METHOD: Hollow Stem Auger

DATE DRILLED: 29 November 2001

Notes: SPLIT SPOON

APPENDIX B

ALS ANALYTICAL CHEMISTRY REPORTS

ALS Environmental

CHEMICAL ANALYSIS REPORT

Date:	July 9, 2001
ALS File No.	N2131
Report On:	202.01263.004 Soil Analysis BCBC
Report To:	**SEACOR Environmental Inc.** #9 - 6421 Applecross Rd. Nanaimo, BC V9V 1N1
Attention:	**Mr. Brad Halsey**
Received:	June 21, 2001

ALS ENVIRONMENTAL
per:

Can Dang, B.Sc. - Project Chemist
Joanne Patrick, B.Sc. - Project Chemist

AURORA LABORATORY SERVICES LTD
1988 Triumph Street, Vancouver, BC Canada V5L 1K5
Phone: 604-253-4188 Fax: 604-253-6700 Website: www.alsenviro.com

File No. N2131

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		SA1 0.2m	SA3 0.6m	SA6 0.6m	SA7 0.3m	SA9 0.6m
Sample Date		01 06 19	01 06 19	01 06 19	01 06 19	01 06 19
ALS ID		*1*	*2*	*3*	*4*	*5*
Physical Tests						
Moisture	%	10.9	18.1	12.1	13.8	8.2
pH		-	5.92	-	-	6.88
Total Metals						
Antimony	T-Sb	-	<20	-	-	<20
Arsenic	T-As	-	7	-	-	<5
Barium	T-Ba	-	220	-	-	73
Beryllium	T-Be	-	<0.5	-	-	<0.5
Cadmium	T-Cd	-	<0.5	-	-	<0.5
Chromium	T-Cr	-	46	-	-	30
Cobalt	T-Co	-	15	-	-	13
Copper	T-Cu	-	50	-	-	42
Lead	T-Pb	-	<50	-	-	<50
Mercury	T-Hg	-	0.021	-	-	0.017
Molybdenum	T-Mo	-	<4	-	-	<4
Nickel	T-Ni	-	32	-	-	28
Selenium	T-Se	-	<2	-	-	<2
Silver	T-Ag	-	<2	-	-	<2
Tin	T-Sn	-	<10	-	-	<10
Vanadium	T-V	-	139	-	-	117
Zinc	T-Zn	-	56	-	-	44

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N2131

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA1 0.2m	SA3 0.6m	SA6 0.6m	SA7 0.3m	SA9 0.6m
Sample Date	01 06 19	01 06 19	01 06 19	01 06 19	01 06 19
ALS ID	*1*	*2*	*3*	*4*	*5*
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	-	<0.01	-	-	-
Acenaphthylene	-	<0.01	-	-	-
Anthracene	-	<0.01	-	-	-
Benz(a)anthracene	-	<0.01	-	-	-
Benzo(a)pyrene	-	<0.01	-	-	-
Benzo(b)fluoranthene	-	<0.01	-	-	-
Benzo(g,h,i)perylene	-	<0.01	-	-	-
Benzo(k)fluoranthene	-	<0.01	-	-	-
Chrysene	-	<0.01	-	-	-
Dibenz(a,h)anthracene	-	<0.01	-	-	-
Fluoranthene	-	<0.01	-	-	-
Fluorene	-	<0.01	-	-	-
Indeno(1,2,3-c,d)pyrene	-	<0.01	-	-	-
Naphthalene	-	<0.01	-	-	-
Phenanthrene	-	<0.01	-	-	-
Pyrene	-	<0.01	-	-	-
Extractable Hydrocarbons					
EPH10-19	<200	<200	<200	<200	<200
EPH19-32	<200	<200	<200	<200	<200
LEPH	-	<200	-	-	-
HEPH	-	<200	-	-	-

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N2131

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		SA13 0.2m	SA15 1.1m	SA18 0.5m	SA27 1.8m
Sample Date		01 06 19	01 06 19	01 06 19	01 06 20
ALS ID		*6*	*7*	*8*	*10*
Physical Tests					
Moisture	%	7.3	22.5	22.9	9.0
pH		6.04	-	-	-
Total Metals					
Antimony	T-Sb	<20	-	-	-
Arsenic	T-As	<5	-	-	-
Barium	T-Ba	120	-	-	-
Beryllium	T-Be	<0.5	-	-	-
Cadmium	T-Cd	<0.5	-	-	-
Chromium	T-Cr	39	-	-	-
Cobalt	T-Co	15	-	-	-
Copper	T-Cu	55	-	-	-
Lead	T-Pb	<50	-	-	-
Mercury	T-Hg	0.012	-	-	-
Molybdenum	T-Mo	<4	-	-	-
Nickel	T-Ni	23	-	-	-
Selenium	T-Se	<2	-	-	-
Silver	T-Ag	<2	-	-	-
Tin	T-Sn	<10	-	-	-
Vanadium	T-V	96	-	-	-
Zinc	T-Zn	380	-	-	-
Non-halogenated Volatiles					
Benzene		-	-	-	<0.04
Ethylbenzene		-	-	-	<0.05
Styrene		-	-	-	<0.05
Toluene		-	-	-	<0.05
meta- & para-Xylene		-	-	-	0.18
ortho-Xylene		-	-	-	0.10
Volatile Hydrocarbons (VH6-10)		-	-	-	176
VPH		-	-	-	176

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N2131

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA13 0.2m	SA15 1.1m	SA18 0.5m	SA27 1.8m
Sample Date	01 06 19	01 06 19	01 06 19	01 06 20
ALS ID	*6*	*7*	*8*	*10*
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	-	<0.01	-	<0.04
Acenaphthylene	-	<0.01	-	<0.01
Anthracene	-	<0.01	-	<0.03
Benz(a)anthracene	-	<0.01	-	<0.01
Benzo(a)pyrene	-	<0.01	-	<0.01
Benzo(b)fluoranthene	-	<0.01	-	<0.01
Benzo(g,h,i)perylene	-	<0.01	-	<0.01
Benzo(k)fluoranthene	-	<0.01	-	<0.01
Chrysene	-	<0.01	-	<0.01
Dibenz(a,h)anthracene	-	<0.01	-	<0.01
Fluoranthene	-	<0.01	-	<0.01
Fluorene	-	<0.01	-	0.06
Indeno(1,2,3-c,d)pyrene	-	<0.01	-	<0.01
Naphthalene	-	<0.01	-	0.80
Phenanthrene	-	<0.01	-	0.18
Pyrene	-	<0.01	-	0.08
Extractable Hydrocarbons				
EPH10-19	<200	<200	<200	962
EPH19-32	659	<200	596	245
LEPH	-	<200	-	961
HEPH	-	<200	-	245

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N2131

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA30 2.8m	SA35 2.6m	SA39 2.4m	SA26 1.4m
Sample Date	01 06 20	01 06 20	01 06 20	01 06 20
ALS ID	*11*	*12*	*13*	*14*
Physical Tests				
Moisture %	11.4	16.7	22.5	14.9
pH	-	-	-	-
Non-halogenated Volatiles				
Benzene	-	<0.04	<0.04	<0.04
Ethylbenzene	-	<0.05	<0.05	<0.05
Styrene	-	<0.05	<0.05	<0.05
Toluene	-	<0.05	<0.05	<0.05
meta- & para-Xylene	-	<0.05	<0.05	<0.05
ortho-Xylene	-	<0.05	<0.05	<0.05
Volatile Hydrocarbons (VH6-10)	-	<100	<100	<100
VPH	-	<100	<100	<100

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N2131

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA30 2.8m	SA35 2.6m	SA39 2.4m	SA26 1.4m
Sample Date	01 06 20	01 06 20	01 06 20	01 06 20
ALS ID	*11*	*12*	*13*	*14*
Extractable Hydrocarbons				
EPH10-19	<200	<200	<200	<200
EPH19-32	<200	<200	<200	<200
LEPH	-	-	-	-
HEPH	-	-	-	-

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N2131

Appendix 1 - QUALITY CONTROL - Replicates

Sediment/Soil		SA3 0.6m 01 06 19	SA3 0.6m QC # 245185
Physical Tests			
Moisture	%	18.1	16.7
Total Metals			
Antimony	T-Sb	<20	<20
Arsenic	T-As	7	5
Barium	T-Ba	220	210
Beryllium	T-Be	<0.5	<0.5
Cadmium	T-Cd	<0.5	<0.5
Chromium	T-Cr	46	47
Cobalt	T-Co	15	14
Copper	T-Cu	50	48
Lead	T-Pb	<50	<50
Mercury	T-Hg	0.021	0.018
Molybdenum	T-Mo	<4	<4
Nickel	T-Ni	32	30
Selenium	T-Se	<2	<2
Silver	T-Ag	<2	<2
Tin	T-Sn	<10	<10
Vanadium	T-V	139	133
Zinc	T-Zn	56	55

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N2131

Appendix 1 - QUALITY CONTROL - Replicates

Sediment/Soil	SA3 0.6m 01 06 19	SA3 0.6m QC # 245185
Polycyclic Aromatic Hydrocarbons		
Acenaphthene	<0.01	0.02
Acenaphthylene	<0.01	<0.01
Anthracene	<0.01	0.02
Benz(a)anthracene	<0.01	0.02
Benzo(a)pyrene	<0.01	0.07
Benzo(b)fluoranthene	<0.01	0.15
Benzo(g,h,i)perylene	<0.01	0.03
Benzo(k)fluoranthene	<0.01	0.05
Chrysene	<0.01	0.08
Dibenz(a,h)anthracene	<0.01	0.01
Fluoranthene	<0.01	0.02
Fluorene	<0.01	<0.01
Indeno(1,2,3-c,d)pyrene	<0.01	0.04
Naphthalene	<0.01	0.01
Phenanthrene	<0.01	0.03
Pyrene	<0.01	0.02
Extractable Hydrocarbons		
EPH10-19	<200	<200
EPH19-32	<200	<200
LEPH	<200	<200
HEPH	<200	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

Appendix 2 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Moisture in Sediment/Soil

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of six hours.

Recommended Holding Time:

Sample:	14 days
Reference:	Puget
For more detail see:	ASL "Collection & Sampling Guide"

Extractable Hydrocarbons in Sediment/Soil

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Solids by GC/FID, Version 2.1 July 1999". The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone at high temperature and pressure. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

Recommended Holding Time:

Sample: 14 days Extract: 40 days
Reference: BCMELP
For more detail see ASL "Collection & Sampling Guide"

pH in Soil

This analysis is carried out in accordance with procedures described in "Soil Sampling and Methods of Analysis" (CSSS). The procedure involves mixing the air-dried sample with deionized/distilled water. The pH of the solution is then measured using a standard pH probe. A one to two ratio of sediment to water is used for mineral soils and a one to ten ratio is used for highly organic soils.

Metals in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3050B or Method 3051, published by the United States Environmental Protection Agency (EPA). The sample is manually homogenized and a representative subsample of the wet material is weighed. The sample is then digested by either hotplate or microwave oven using a 1:1 ratio of nitric acid and hydrochloric acid. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000 series) and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve

almost all elements that could become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Recommended Holding Time:

Sample/Extract:	6 months (Mercury = 28 days)
Reference:	EPA
For more detail see:	ASL "Collection & Sampling Guide"

Polycyclic Aromatic Hydrocarbons in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545, 3630 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene and undergoes a silica gel clean-up to remove sample components that could potentially interfere with the analysis. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS).

Recommended Holding Time:

Sample: 14 days Extract: 40 days
Reference: EPA
For more detail see ASL "Collection & Sampling Guide"

Light and Heavy Extractable Petroleum Hydrocarbons in Solids

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Light and Heavy Extractable Petroleum Hydrocarbons in Solids or Water". According to this method, LEPH and HEPH are calculated by subtracting selected Polycyclic Aromatic Hydrocarbon results from Extractable Petroleum Hydrocarbon results. To calculate LEPH, the individual results for Naphthalene and Phenanthrene are subtracted from EPH(C10-19). To calculate HEPH, the individual results for Benz(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, and Pyrene are subtracted from EPH(C19-32). Analysis of Extractable Petroleum Hydrocarbons adheres to all prescribed elements of the BCMELP method "Extractable Petroleum Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

Volatile Organic Compounds and Volatile Hydrocarbons in Sediment/Soil

This analysis involves the extraction of a subsample of the sediment/soil with methanol. Aliquots of the methanol extract are then analyzed for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID) and for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The methanol extraction and VH analysis are carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999).

Appendix 2 - METHODOLOGY - Continued

The VOC analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA).

Recommended Holding Time:

Sample: 7 days Extract: 40 days

Reference: BCMELP

For more detail see ASL "Collection & Sampling Guide"

Volatile Petroleum Hydrocarbons (VPH) in Solids

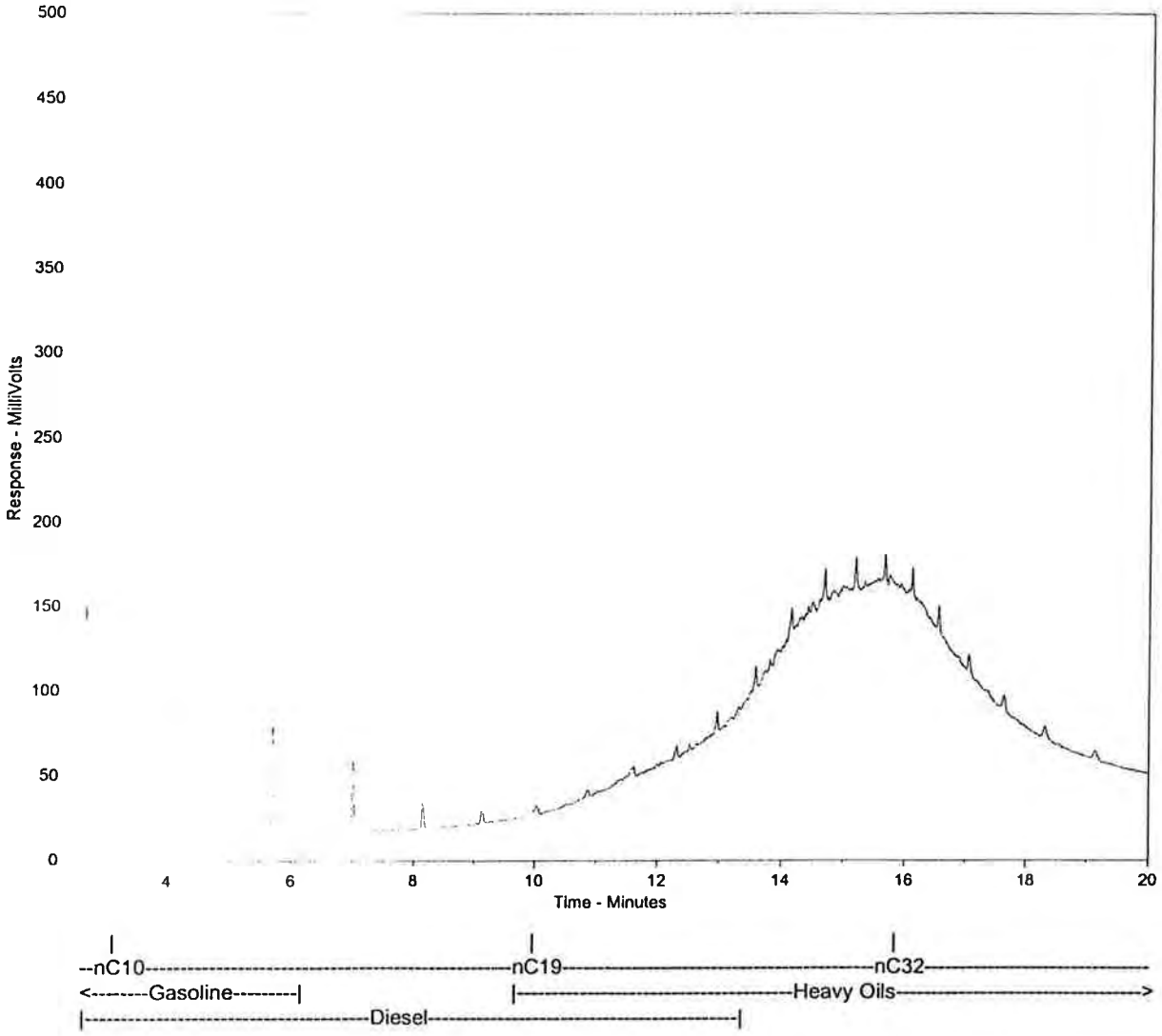
These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Volatile Petroleum Hydrocarbons in Solids or Water" (Version 2.1, July 20, 1999). According to this method, the concentrations of specific Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Xylenes and Styrene) are subtracted from the collective concentration of Volatile Hydrocarbons (VH) that elute between n-hexane (nC6) and n-decane (nC10). Analysis of Volatile Hydrocarbons adheres to all prescribed elements of BCMELP method "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

End Of Report

ALS Environmental - Hydrocarbon Distribution Report

Client Sample ID:
ALS Sample ID: **N2131-T--6**
File Name: m:\Chrom\gc12\data\gc12_26junA.0031.RAW
Run Information: Acquired on GC12, 6/27/01 12:19:32 PM



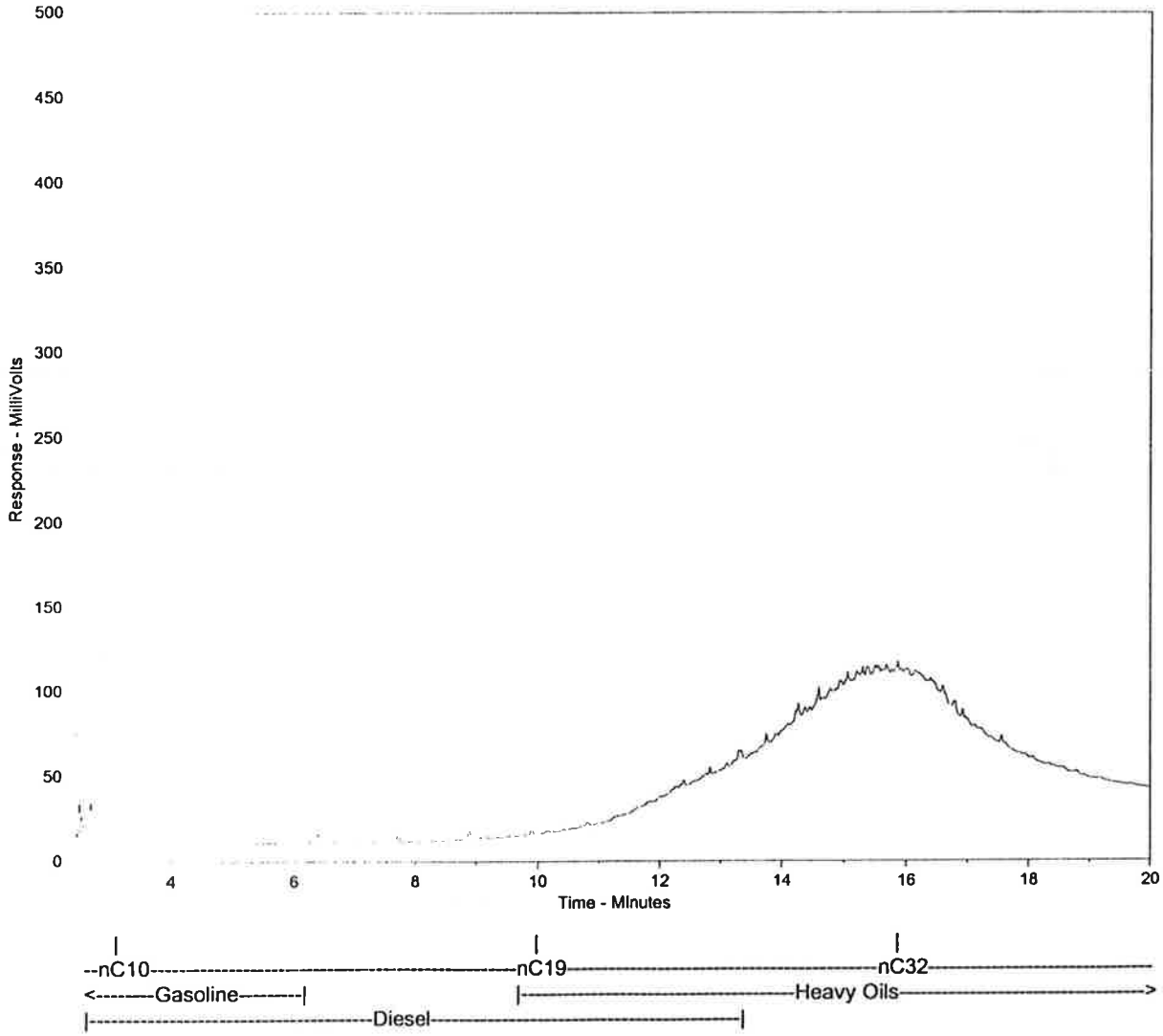
Sample Amount = 9.7 (g or mL) Dilution Factor = 10.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of three n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample. A current library of reference products is available upon request.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

ALS Environmental - Hydrocarbon Distribution Report

Client Sample ID:
ALS Sample ID: **N2131-T--8**
File Name: m:\Chrom\gc12\data\gc12_26junB.0031.RAW
Run Information: Acquired on GC12, 6/27/01 12:19:32 PM



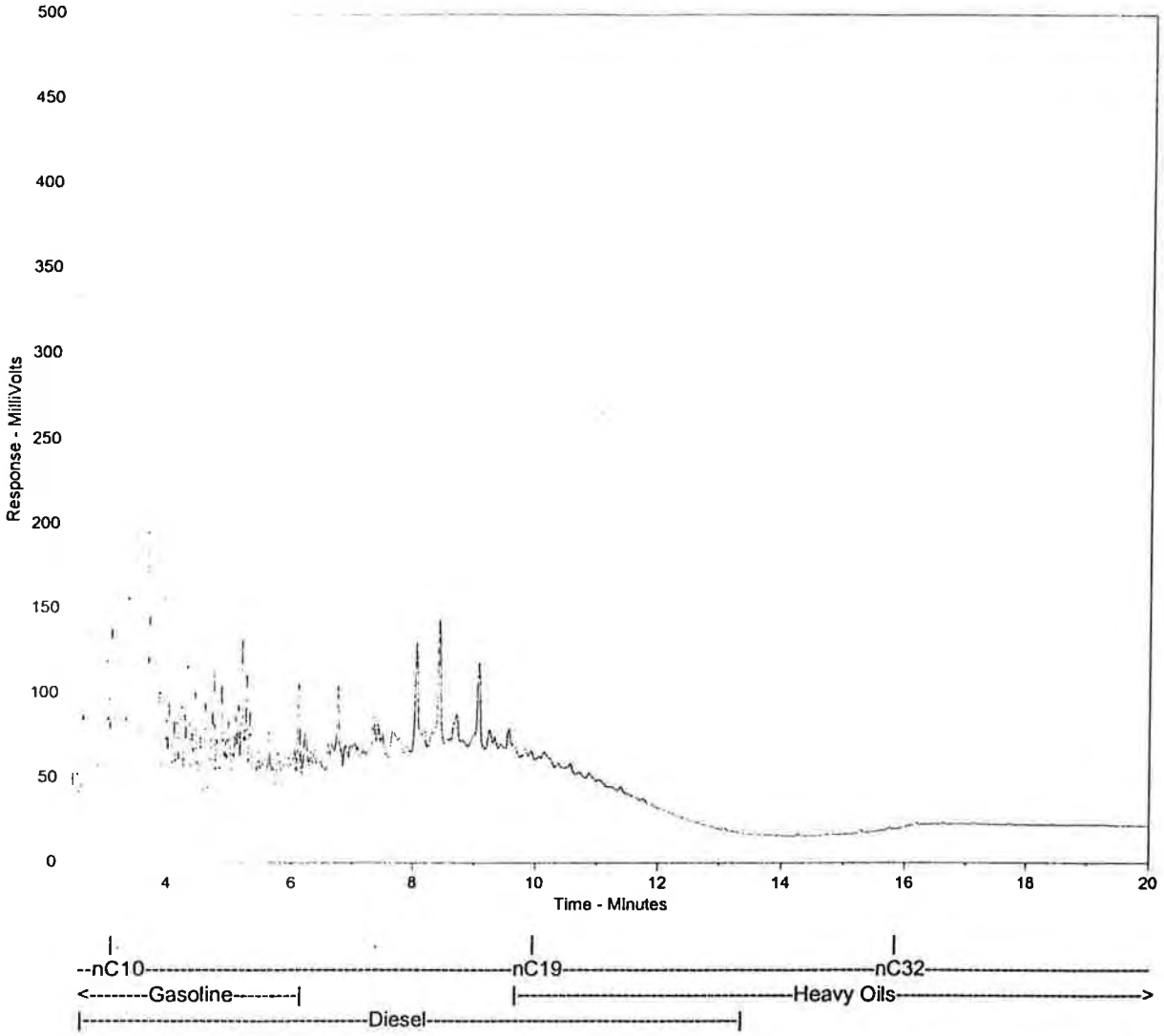
Sample Amount = 8.6 (g or mL) Dilution Factor = 10.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of three n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample. A current library of reference products is available upon request.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

ALS Environmental - Hydrocarbon Distribution Report

Client Sample ID:
ALS Sample ID: **N2131-T--10**
File Name: m:\Chrom\gc18\data\gc18_26junA.0033.RAW
Run Information: Acquired on GC18, 6/27/01 11:42:03 AM



|----------Diesel----------|

Sample Amount = 9.5 (g or mL) Dilution Factor = 10.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of three n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample. A current library of reference products is available upon request.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

ALS Environmental

CHEMICAL ANALYSIS REPORT

Date:	July 13, 2001
ALS File No.	N2212
Report On:	202.01263.004 Soil Analysis BCBC
Report To:	**SEACOR Environmental Inc.** #9 - 6421 Applecross Rd. Nanaimo, BC V9V 1N1
Attention:	**Mr. Brad Halsey**
Received:	June 23, 2001

ALS ENVIRONMENTAL
per:

Joanne Patrick, B.Sc. - Project Chemist
Can Dang, B.Sc. - Project Chemist

AURORA LABORATORY SERVICES LTD
1988 Triumph Street, Vancouver, BC Canada V5L 1K5
Phone: 604-253-4188 Fax: 604-253-6700 Website: www.alsenviro.com

File No. N2212

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		SA41	SA42	SA44	SA45	SA48 1.4m
Sample Date		01 06 21	01 06 21	01 06 21	01 06 21	01 06 21
ALS ID		*1*	*2*	*3*	*4*	*5*
Physical Tests						
Moisture	%	7.0	7.4	8.9	9.9	12.3

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petrolcum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.

File No. N2212

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA41	SA42	SA44	SA45	SA48 1.4m
Sample Date	01 06 21	01 06 21	01 06 21	01 06 21	01 06 21
ALS ID	*1*	*2*	*3*	*4*	*5*
Non-halogenated Volatiles					
Benzene	<0.04	-	<0.04	<0.04	<0.04
Ethylbenzene	<0.05	-	0.28	0.63	<0.05
Styrene	<0.05	-	<0.05	<0.05	<0.05
Toluene	<0.05	-	<0.05	<0.05	<0.05
meta- & para-Xylene	<0.05	-	1.67	6.08	<0.05
ortho-Xylene	<0.05	-	0.41	1.25	<0.05
Volatile Hydrocarbons (VH6-10)	<100	-	309	199	<100
VPH	<100	-	306	191	<100
Extractable Hydrocarbons					
EPH10-19	<200	<200	1790	4120	<200
EPH19-32	<200	<200	521	1030	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.

File No. N2212

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		SA54 2.7m	SA59 2.7m	SA61 2.6m	SA58 2.7m	SA43
Sample Date		01 06 21	01 06 21	01 06 21	01 06 21	01 06 21
ALS ID		*6*	*7*	*8*	*9*	*10*
Physical Tests						
Moisture	%	14.9	30.2	11.3	11.2	11.0
pH		-	6.48	7.17	-	-
Initial SWEP pH		-	6.55	7.30	-	-
Final SWEP pH		-	5.16	5.14	-	-
Total Metals						
Antimony	T-Sb	-	<20	<20	-	-
Arsenic	T-As	-	20	16	-	-
Barium	T-Ba	-	869	402	-	-
Beryllium	T-Be	-	1.2	1.0	-	-
Cadmium	T-Cd	-	<0.5	<0.5	-	-
Chromium	T-Cr	-	41	51	-	-
Cobalt	T-Co	-	16	20	-	-
Copper	T-Cu	-	41	51	-	-
Lead	T-Pb	-	<50	<50	-	-
Mercury	T-Hg	-	0.114	0.088	-	-
Molybdenum	T-Mo	-	<4	<4	-	-
Nickel	T-Ni	-	52	53	-	-
Selenium	T-Se	-	<2	<2	-	-
Silver	T-Ag	-	<2	<2	-	-
Tin	T-Sn	-	<10	<10	-	-
Vanadium	T-V	-	120	131	-	-
Zinc	T-Zn	-	123	141	-	-
Extractable Metals [1,2]						
Arsenic	As	-	<0.2	<0.2	-	-
Barium	Ba	-	<0.05	<0.05	-	-
Boron	B	-	<0.1	<0.1	-	-
Cadmium	Cd	-	<0.01	<0.01	-	-
Chromium	Cr	-	<0.01	<0.01	-	-
Copper	Cu	-	<0.01	<0.01	-	-
Lead	Pb	-	<0.05	<0.05	-	-
Mercury	Hg	-	<0.00005	<0.00005	-	-
Selenium	Se	-	<0.2	<0.2	-	-
Silver	Ag	-	<0.01	<0.01	-	-
Zinc	Zn	-	<0.05	<0.05	-	-

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
[1]Results are expressed as milligrams per litre, as per the requirements of
[2]the Special Waste Regulations, B.C. Reg.63/88.

File No. N2212

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA54 2.7m	SA59 2.7m	SA61 2.6m	SA58 2.7m	SA43
Sample Date	01 06 21	01 06 21	01 06 21	01 06 21	01 06 21
ALS ID	*6*	*7*	*8*	*9*	*10*
Non-halogenated Volatiles					
Benzene	-	<0.04	<0.04	<0.04	<0.04
Ethylbenzene	-	<0.05	<0.05	<0.05	<0.05
Styrene	-	<0.05	<0.05	<0.05	<0.05
Toluene	-	<0.05	<0.05	<0.05	<0.05
meta- & para-Xylene	-	<0.05	<0.05	<0.05	<0.05
ortho-Xylene	-	<0.05	<0.05	<0.05	<0.05
Volatile Hydrocarbons (VH6-10)	-	<100	<100	<100	<100
VPH	-	<100	<100	<100	<100
Extractable Hydrocarbons					
EPH10-19	<200	<200	<200	<200	<200
EPH19-32	<200	<200	<200	<200	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.

File No. N2212

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		SA53
Sample Date		01 06 21
ALS ID		*11*
Physical Tests		
Moisture	%	9.3

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.

File No. N2212

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA53
Sample Date	01 06 21
ALS ID	*11*
Non-halogenated Volatiles	
Benzene	<0.04
Ethylbenzene	<0.05
Styrene	<0.05
Toluene	<0.05
meta- & para-Xylene	<0.05
ortho-Xylene	<0.05
Volatile Hydrocarbons (VH6-10)	<100
VPH	<100
Extractable Hydrocarbons	
EPH10-19	<200
EPH19-32	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.

File No. N2212

Appendix 1 - QUALITY CONTROL - Replicates

Sediment/Soil	SA44	SA44
	01 06 21	QC # 245487
Physical Tests		
Moisture %	8.9	7.9
Non-halogenated Volatiles		
Benzene	<0.04	<0.04
Ethylbenzene	0.28	0.21
Styrene	<0.05	<0.05
Toluene	<0.05	<0.05
meta- & para-Xylene	1.67	1.23
ortho-Xylene	0.41	0.31
Volatile Hydrocarbons (VH6-10)	309	245
VPH	306	243
Extractable Hydrocarbons		
EPH10-19	1790	1410
EPH19-32	521	422

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.

Appendix 2 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Moisture in Sediment/Soil

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of six hours.

Recommended Holding Time:

Sample: 14 days
Reference: Puget
For more detail see ALS Environmental "Collection & Sampling Guide"

Volatile Organic Compounds and Volatile Hydrocarbons in Sediment/Soil

This analysis involves the extraction of a subsample of the sediment/soil with methanol. Aliquots of the methanol extract are then analyzed for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID) and for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The methanol extraction and VH analysis are carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). The VOC analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA).

Recommended Holding Time:

Sample: 7 days Extract: 40 days
Reference: BCMELP
For more detail see ALS Environmental "Collection & Sampling Guide"

Volatile Petroleum Hydrocarbons (VPH) in Solids

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Volatile Petroleum Hydrocarbons in Solids or Water" (Version 2.1, July 20, 1999). According to this method, the concentrations of specific Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Xylenes and Styrene) are subtracted from the collective concentration of Volatile Hydrocarbons (VH) that elute between n-hexane (nC6) and n-decane (nC10). Analysis of Volatile Hydrocarbons adheres to all prescribed elements of BCMELP method "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

Extractable Hydrocarbons in Sediment/Soil

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Solids by GC/FID, Version 2.1 July 1999". The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone at high temperature

and pressure. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

Recommended Holding Time:

Sample: 14 days Extract: 40 days
Reference: BCMELP
For more detail see ALS Environmental "Collection & Sampling Guide"

pH in Soil

This analysis is carried out in accordance with procedures described in "Soil Sampling and Methods of Analysis" (CSSS). The procedure involves mixing the air-dried sample with deionized/distilled water. The pH of the solution is then measured using a standard pH probe. A one to two ratio of sediment to water is used for mineral soils and a one to ten ratio is used for highly organic soils.

Special Waste/Leachate Extraction Procedure (SWEP/LEP) for Metals

This analysis is carried out in accordance with the extraction procedure outlined in the Waste Management Act, British Columbia Special Waste Regulation - Schedule Reg. 63/88, February 29, 1988. In summary the sample is extracted for a 24 hour period using 0.5 N acetic acid to maintain the pH of the extract at 5.0. The resulting extract is then filtered through a 0.45 micron membrane filter and analysed by atomic absorption spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B & APHA 3120), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020 & APHA Method 3125).

Recommended Holding Time:

Sample: 6 months (Mercury = 28 days)
Extract: 6 months (Mercury = 28 days)
Reference: EPA
For more detail see ALS Environmental "Collection & Sampling Guide"

Metals in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3050B or Method 3051, published by the United States Environmental Protection Agency (EPA). The sample is manually homogenized and a representative subsample of the wet material is weighed. The sample is then digested by either hotplate or microwave oven using a 1:1 ratio of nitric acid and hydrochloric acid. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000 series) and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become "environmentally available." By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Recommended Holding Time:

Appendix 2 - METHODOLOGY - Continued

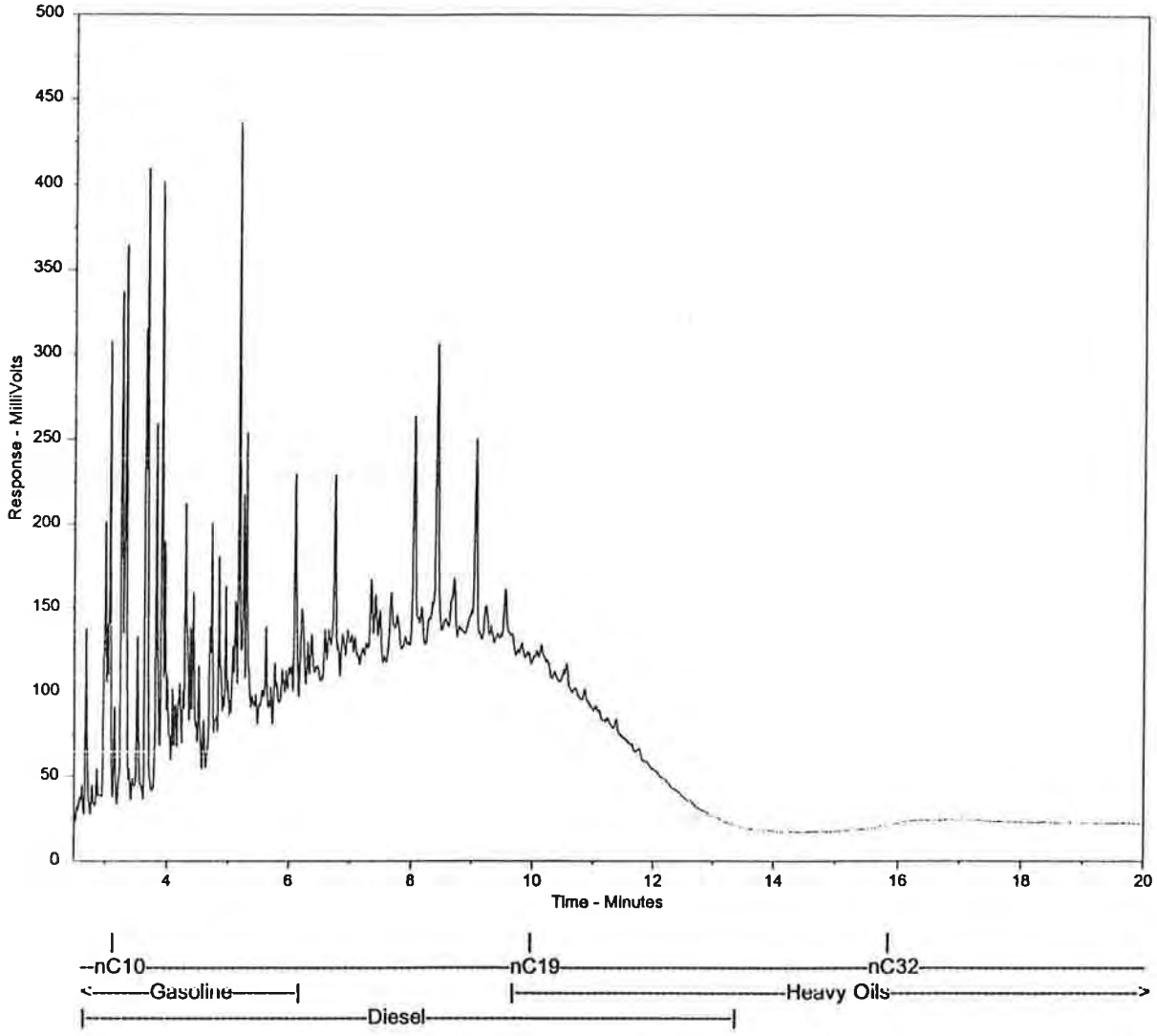
Sample/Extract:	6 months (Mercury = 28 days)
Reference:	EPA

For more detail see ALS Environmental "Collection & Sampling Guide"

End Of Report

ALS Environmental - Hydrocarbon Distribution Report

Client Sample ID:
ALS Sample ID: **N2212-T--3**
File Name: m:\Chrom\gc18\data\gc18_27junA.0032.RAW
Run Information: Acquired on GC18, 6/28/01 8:47:06 AM



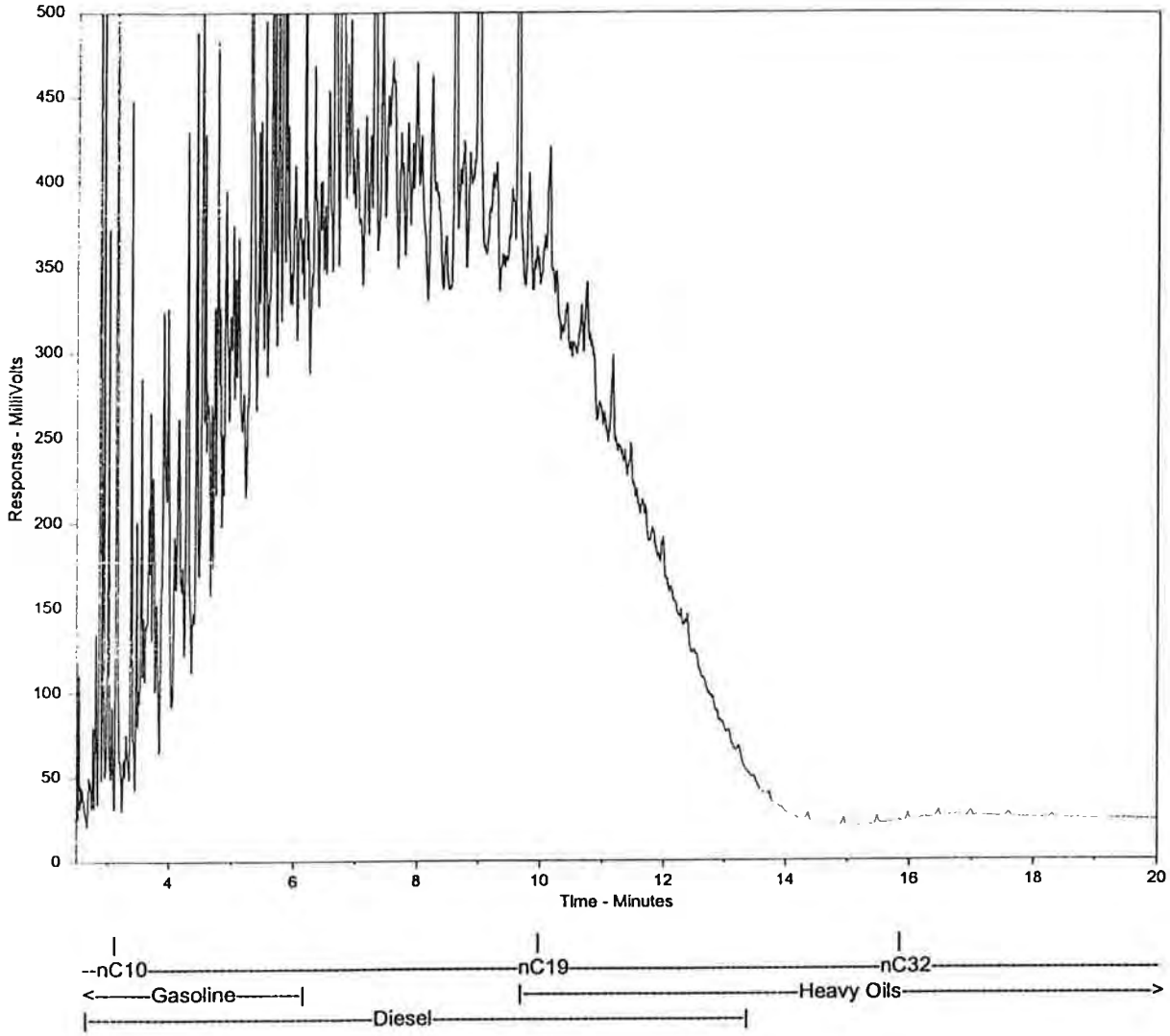
Sample Amount = 9.6 (g or mL) Dilution Factor = 10.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of three n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample. A current library of reference products is available upon request.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

ALS Environmental - Hydrocarbon Distribution Report

Client Sample ID:
ALS Sample ID: **N2212-T--4 RE**
File Name: m:\Chrom\gc12\data\gc12_29junB.0043.RAW
Run Information: Acquired on GC12, 6/30/01 2:24:01 PM



Sample Amount = 9.5 (g or mL) Dilution Factor = 10.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of three n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample. A current library of reference products is available upon request.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

ALS Environmental

CHEMICAL ANALYSIS REPORT

Date:	July 9, 2001
ALS File No.	N2343
Report On:	202.01263.004 Soil Analysis BCBC
Report To:	**SEACOR Environmental Inc.** #9 - 6421 Applecross Rd. Nanaimo, BC V9V 1N1
Attention:	**Mr. Brad Halsey**
Received:	June 25, 2001

ALS ENVIRONMENTAL
per:

Can Dang, B.Sc. - Project Chemist
Joanne Patrick, B.Sc. - Project Chemist

AURORA LABORATORY SERVICES LTD
1988 Triumph Street, Vancouver, BC Canada V5L 1K5
Phone: 604-253-4188 Fax: 604-253-6700 Website: www.alsenviro.com

File No. N2343

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		SA69 1.5m	SA70 3.2m	SA71 2.5m	SA77 2.6m
Sample Date		01 06 22	01 06 22	01 06 22	01 06 22
ALS ID		*1*	*2*	*3*	*4*
Physical Tests					
Moisture	%	19.0	14.6	14.1	-
pH		-	7.73	-	6.07
Total Metals					
Antimony	T-Sb	-	<10	-	<10
Arsenic	T-As	-	14	-	12
Barium	T-Ba	-	324	-	324
Beryllium	T-Be	-	<1	-	0.5
Cadmium	T-Cd	-	<0.5	-	<0.5
Chromium	T-Cr	-	37	-	32
Cobalt	T-Co	-	15	-	24
Copper	T-Cu	-	48	-	44
Lead	T-Pb	-	<100	-	<50
Mercury	T-Hg	-	0.09	-	0.08
Molybdenum	T-Mo	-	<8	-	<4
Nickel	T-Ni	-	41	-	46
Selenium	T-Se	-	<2	-	<2
Silver	T-Ag	-	<4	-	<2
Tin	T-Sn	-	<6	-	<5
Vanadium	T-V	-	58	-	61
Zinc	T-Zn	-	111	-	118
Non-halogenated Volatiles					
Benzene		<0.04	<0.04	<0.04	-
Ethylbenzene		<0.05	<0.05	<0.05	-
Styrene		<0.05	<0.05	<0.05	-
Toluene		<0.05	<0.05	<0.05	-
meta- & para-Xylene		<0.05	<0.05	<0.05	-
ortho-Xylene		<0.05	<0.05	<0.05	-
Volatile Hydrocarbons (VH6-10)		<100	<100	<100	-
VPH		<100	<100	<100	-

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

File No. N2343

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA69 1.5m	SA70 3.2m	SA71 2.5m
Sample Date	01 06 22	01 06 22	01 06 22
ALS ID	*1*	*2*	*3*
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	-	<0.01	-
Acenaphthylene	-	<0.01	-
Anthracene	-	<0.01	-
Benz(a)anthracene	-	<0.01	-
Benzo(a)pyrene	-	<0.01	-
Benzo(b)fluoranthene	-	0.02	-
Benzo(g,h,i)perylene	-	0.01	-
Benzo(k)fluoranthene	-	<0.01	-
Chrysene	-	0.01	-
Dibenz(a,h)anthracene	-	<0.01	-
Fluoranthene	-	0.02	-
Fluorene	-	<0.01	-
Indeno(1,2,3-c,d)pyrene	-	<0.01	-
Naphthalene	-	0.08	-
Phenanthrene	-	0.05	-
Pyrene	-	0.02	-
Extractable Hydrocarbons			
EPH10-19	1780	<200	<200
EPH19-32	483	<200	<200
LEPH	-	<200	-
HEPH	-	<200	-

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

File No. N2343

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA74 1.5m
Sample Date	01 06 22
ALS ID	*5*
Physical Tests	
Moisture %	15.9
pH	-
Non-halogenated Volatiles	
Benzene	<0.04
Ethylbenzene	<0.05
Styrene	<0.05
Toluene	<0.05
meta- & para-Xylene	<0.05
ortho-Xylene	<0.05
Volatile Hydrocarbons (VH6-10)	<100
VPH	<100

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

File No. N2343

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA74 1.5m
Sample Date	01 06 22
ALS ID	*5*

Extractable Hydrocarbons

EPH10-19	<200
EPH19-32	<200
LEPH	-
HEPH	-

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

Appendix 1 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Moisture in Sediment/Soil

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of six hours.

Recommended Holding Time:

Sample:	14 days
Reference:	Puget
For more detail see:	ASL "Collection & Sampling Guide"

Volatile Organic Compounds and Volatile Hydrocarbons in Sediment/Soil

This analysis involves the extraction of a subsample of the sediment/soil with methanol. Aliquots of the methanol extract are then analyzed for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID) and for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The methanol extraction and VH analysis are carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). The VOC analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA).

Recommended Holding Time:

Sample: 7 days Extract: 40 days
Reference: BCMELP
For more detail see ASL "Collection & Sampling Guide"

Volatile Petroleum Hydrocarbons (VPH) in Solids

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Volatile Petroleum Hydrocarbons in Solids or Water" (Version 2.1, July 20, 1999). According to this method, the concentrations of specific Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Xylenes and Styrene) are subtracted from the collective concentration of Volatile Hydrocarbons (VH) that elute between n-hexane (nC6) and n-decane (nC10). Analysis of Volatile Hydrocarbons adheres to all prescribed elements of BCMELP method "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

Extractable Hydrocarbons in Sediment/Soil

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Solids by GC/FID, Version 2.1 July 1999". The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone at high temperature

and pressure. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

Recommended Holding Time:

Sample: 14 days Extract: 40 days
Reference: BCMELP
For more detail see ASL "Collection & Sampling Guide"

pH in Soil

This analysis is carried out in accordance with procedures described in "Soil Sampling and Methods of Analysis" (CSSS). The procedure involves mixing the air-dried sample with deionized/distilled water. The pH of the solution is then measured using a standard pH probe. A one to two ratio of sediment to water is used for mineral soils and a one to ten ratio is used for highly organic soils.

Polycyclic Aromatic Hydrocarbons in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545, 3630 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene and undergoes a silica gel clean-up to remove sample components that could potentially interfere with the analysis. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS).

Recommended Holding Time:

Sample: 14 days Extract: 40 days
Reference: EPA
For more detail see ASL "Collection & Sampling Guide"

Light and Heavy Extractable Petroleum Hydrocarbons in Solids

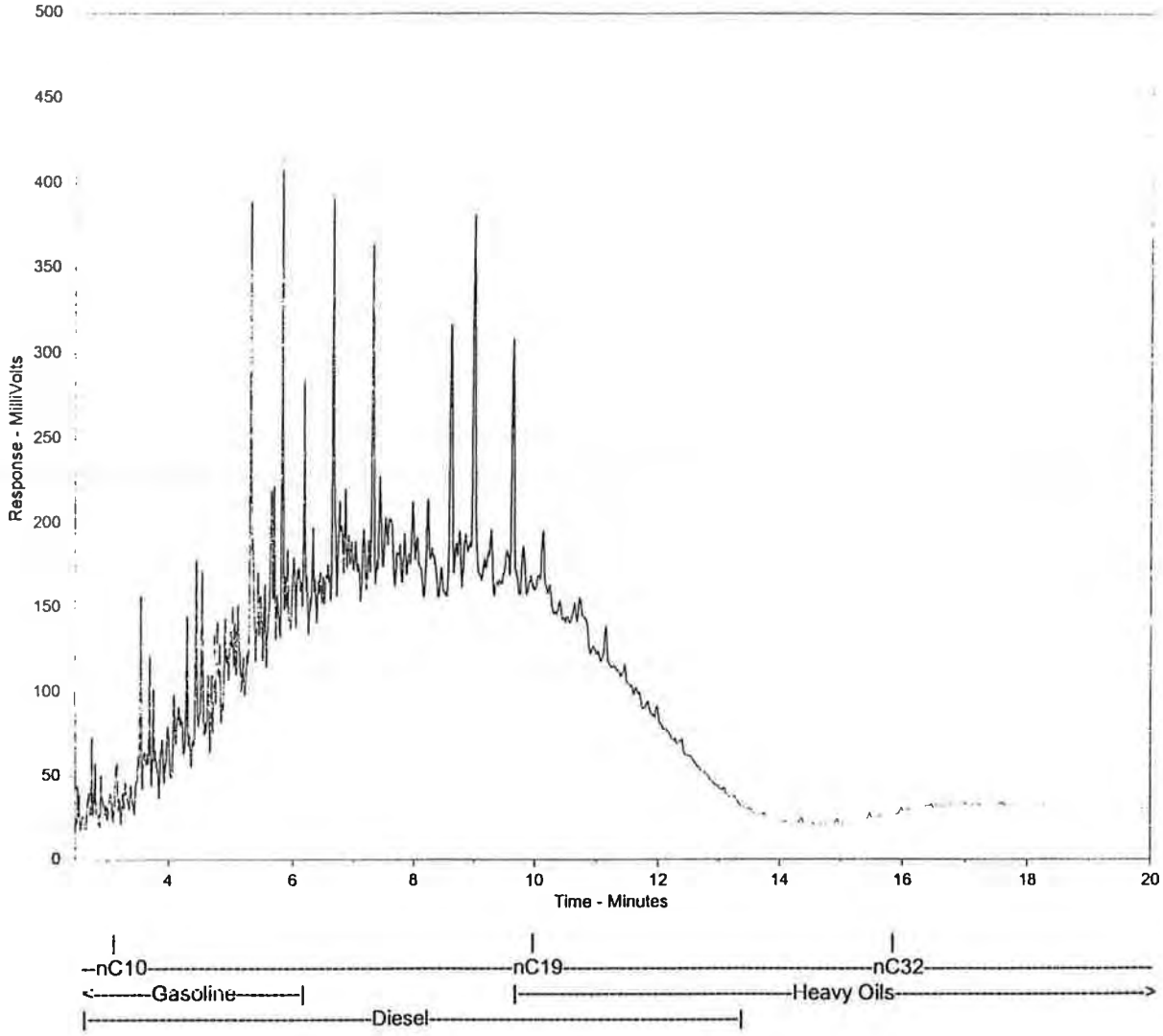
These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Light and Heavy Extractable Petroleum Hydrocarbons in Solids or Water". According to this method, LEPH and HEPH are calculated by subtracting selected Polycyclic Aromatic Hydrocarbon results from Extractable Petroleum Hydrocarbon results. To calculate LEPH, the individual results for Naphthalene and Phenanthrene are subtracted from EPH(C10-19). To calculate HEPH, the individual results for Benz(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, and Pyrene are subtracted from EPH(C19-32). Analysis of Extractable Petroleum Hydrocarbons adheres to all prescribed elements of the BCMELP method "Extractable Petroleum Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

End Of Report

ALS Environmental - Hydrocarbon Distribution Report

Client Sample ID:
ALS Sample ID: **N2343-T--1**
File Name: m:\Chrom\gc12\data\gc12_29junB.0039.RAW
Run Information: Acquired on GC12, 6/30/01 12:19:16 PM



Sample Amount = 9.0 (g or mL) Dilution Factor = 10.0

The Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products, and of three n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample. A current library of reference products is available upon request.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

ALS Environmental

CHEMICAL ANALYSIS REPORT

Date:	July 5, 2001
ALS File No.	N2378
Report On:	202.01263.004 Soil Analysis BCBC
Report To:	**SEACOR Environmental Inc.** #9 - 6421 Applecross Rd. Nanaimo, BC V9V 1N1
Attention:	**Mr. Brad Halsey**
Received:	June 27, 2001

ALS ENVIRONMENTAL
per:

Can Dang, B.Sc. - Project Chemist
Joanne Patrick, B.Sc. - Project Chemist

File No. N2378

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	SA80 2.0m	SA86 2.5m	SA88 1.5m	SA89 2.5m	SA91 2.6m
Sample Date	01 06 25	01 06 25	01 06 25	01 06 25	01 06 25
ALS ID	*1*	*2*	*3*	*4*	*5*
Physical Tests					
Moisture %	15.4	19.2	18.4	12.4	12.9
Non-halogenated Volatiles					
Benzene	<0.04	<0.04	<0.04	<0.04	<0.04
Ethylbenzene	<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	<0.05	<0.05	<0.05	<0.05	<0.05
meta- & para-Xylene	<0.05	<0.05	<0.05	<0.05	<0.05
ortho-Xylene	<0.05	<0.05	<0.05	<0.05	<0.05
Volatile Hydrocarbons (VH6-10)	<100	<100	<100	<100	<100
VPH	<100	<100	<100	<100	<100
Extractable Hydrocarbons					
EPH10-19	<200	<200	<200	<200	<200
EPH19-32	<200	<200	<200	<200	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.

File No. N2378

Appendix 1 - QUALITY CONTROL - Replicates

Sediment/Soil	SA89 2.5m 01 06 25	SA89 2.5m QC # 246105
Physical Tests		
Moisture %	12.4	13.2
Non-halogenated Volatiles		
Benzene	<0.04	<0.04
Ethylbenzene	<0.05	<0.05
Styrene	<0.05	<0.05
Toluene	<0.05	<0.05
meta- & para-Xylene	<0.05	<0.05
ortho-Xylene	<0.05	<0.05
Volatile Hydrocarbons (VH6-10)	<100	<100
VPH	<100	<100
Extractable Hydrocarbons		
EPH10-19	<200	<200
EPH19-32	<200	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.

File No. N2378

Appendix 2 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Moisture in Sediment/Soil

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of six hours.

Recommended Holding Time:

Sample:	14 days
Reference:	Puget
For more detail see:	ASL "Collection & Sampling Guide"

Volatile Organic Compounds and Volatile Hydrocarbons in Sediment/Soil

This analysis involves the extraction of a subsample of the sediment/soil with methanol. Aliquots of the methanol extract are then analyzed for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID) and for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The methanol extraction and VH analysis are carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). The VOC analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA).

Recommended Holding Time:

Sample: 7 days Extract: 40 days

Reference: BCMELP

For more detail see ASL "Collection & Sampling Guide"

Volatile Petroleum Hydrocarbons (VPH) in Solids

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Volatile Petroleum Hydrocarbons in Solids or Water" (Version 2.1, July 20, 1999). According to this method, the concentrations of specific Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Xylenes and Styrene) are subtracted from the collective concentration of Volatile Hydrocarbons (VH) that elute between n-hexane (nC6) and n-decane (nC10). Analysis of Volatile Hydrocarbons adheres to all prescribed elements of BCMELP method "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

Extractable Hydrocarbons in Sediment/Soil

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Solids by GC/FID, Version 2.1 July 1999". The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone at high temperature

Appendix 2 - METHODOLOGY - Continued

and pressure. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

Recommended Holding Time:

Sample: 14 days Extract: 40 days

Reference: BCMELP

For more detail see ASL "Collection & Sampling Guide"

End Of Report

ALS Environmental

CHEMICAL ANALYSIS REPORT

Date:	July 9, 2001
ALS File No.	N2377
Report On:	202.01263.004 Soil Analysis BCBC
Report To:	**SEACOR Environmental Inc.** #9 - 6421 Applecross Rd. Nanaimo, BC V9V 1N1
Attention:	**Mr. Brad Halsey**
Received:	June 27, 2001

ALS ENVIRONMENTAL
per:

Can Dang, B.Sc. - Project Chemist
Joanne Patrick, B.Sc. - Project Chemist

File No. N2377

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		SA95	SA97
Sample Date		01 06 25	01 06 25
ALS ID		*1*	*2*
Physical Tests			
Moisture	%	2.7	4.3
pH		7.43	7.41
Total Metals			
Antimony	T-Sb	<10	<10
Arsenic	T-As	<5	<5
Barium	T-Ba	14	18
Beryllium	T-Be	<0.5	<0.5
Cadmium	T-Cd	<0.5	<0.5
Chromium	T-Cr	39	38
Cobalt	T-Co	22	21
Copper	T-Cu	136	121
Lead	T-Pb	<50	<50
Mercury	T-Hg	<0.05	<0.05
Molybdenum	T-Mo	<4	<4
Nickel	T-Ni	40	39
Selenium	T-Se	<3	<3
Silver	T-Ag	<2	<2
Tin	T-Sn	<5	<5
Vanadium	T-V	130	122
Zinc	T-Zn	48	49
Extractable Hydrocarbons			
EPH10-19		<200	<200
EPH19-32		<200	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.

File No. N2377

Appendix 1 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Moisture in Sediment/Soil

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of six hours.

Recommended Holding Time:

Sample:	14 days
Reference:	Puget
For more detail see:	ASL "Collection & Sampling Guide"

pH in Soil

This analysis is carried out in accordance with procedures described in "Soil Sampling and Methods of Analysis" (CSSS). The procedure involves mixing the air-dried sample with deionized/distilled water. The pH of the solution is then measured using a standard pH probe. A one to two ratio of sediment to water is used for mineral soils and a one to ten ratio is used for highly organic soils.

Extractable Hydrocarbons in Sediment/Soil

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Solids by GC/FID, Version 2.1 July 1999". The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone at high temperature and pressure. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

Recommended Holding Time:

Sample: 14 days Extract: 40 days

Reference: BCMELP

For more detail see ASL "Collection & Sampling Guide"

End Of Report

ALS Environmental

CHEMICAL ANALYSIS REPORT

Date:	December 20, 2001
ALS File No.	N8603
Report On:	202.01263.004 Soil Analysis BCBC
Report To:	**SEACOR Environmental Inc.** #9 - 6421 Applecross Rd. Nanaimo, BC V9V 1N1
Attention:	**Ms. Suzanne Durnin**
Received:	November 30, 2001

ALS ENVIRONMENTAL
per:

per: Can Dang, B.Sc. - Project Chemist
Leanne Harris, B.Sc. - Project Chemist

AURORA LABORATORY SERVICES LTD.
1988 Triumph Street, Vancouver, BC Canada V5L 1K5
Phone: 604-253-4188 Fax: 604-253-6700 Website: www.alsenviro.com

File No. N8603

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		BH01-2 SA2	BH01-3 SA1	BH01-4 SA1	BH01-5 SA1	BH01-6 SA1
Sample Date						
ALS ID		*1*	*2*	*3*	*4*	*5*
Physical Tests						
Moisture	%	13.9	15.1	21.9	15.3	22.2
pH		-	-	-	-	6.21
Dissolved Anions						
Chloride	Cl	-	-	<5	12	10
Total Metals						
Antimony	T-Sb	-	-	-	-	<10
Arsenic	T-As	-	-	-	-	8
Barium	T-Ba	-	-	-	-	125
Beryllium	T-Be	-	-	-	-	<0.5
Cadmium	T-Cd	-	-	-	-	<0.5
Chromium	T-Cr	-	-	-	-	47
Cobalt	T-Co	-	-	-	-	12
Copper	T-Cu	-	-	-	-	40
Lead	T-Pb	-	-	-	-	<50
Mercury	T-Hg	-	-	-	-	<0.05
Molybdenum	T-Mo	-	-	-	-	<4
Nickel	T-Ni	-	-	-	-	22
Selenium	T-Se	-	-	-	-	<3
Silver	T-Ag	-	-	-	-	<2
Tin	T-Sn	-	-	-	-	<5
Vanadium	T-V	-	-	-	-	123
Zinc	T-Zn	-	-	-	-	43
Non-Halogenated Volatiles						
Benzene		<0.04	<0.04	-	-	-
Ethylbenzene		<0.05	<0.05	-	-	-
Styrene		<0.05	<0.05	-	-	-
Toluene		<0.05	<0.05	-	-	-
meta- & para-Xylene		<0.05	<0.05	-	-	-
ortho-Xylene		<0.05	<0.05	-	-	-
Volatile Hydrocarbons (VH6-10)		<100	<100	-	-	-
VPH		<100	<100	-	-	-

Results are expressed as milligrams per dry kilogram except where noted.
< - Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

File No. N8603

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	BH01-2 SA2	BH01-3 SA1
Sample Date		
ALS ID	*1*	*2*
Extractable Hydrocarbons		
EPH10-19	<200	<200
EPH19-32	<200	<200
LEPH	-	-
HEPH	-	-

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

File No. N8603

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID		BH01-7 SA1	BH01-8 SA1	BH01-9 SA1
Sample Date				
ALS ID		*6*	*7*	*8*
Physical Tests				
Moisture	%	20.9	27.2	20.8
pH		-	6.08	6.97
Dissolved Anions				
Chloride	Cl	-	14	<5
Total Metals				
Antimony	T-Sb	-	<10	<10
Arsenic	T-As	-	<5	6
Barium	T-Ba	-	225	170
Beryllium	T-Be	-	<0.5	<0.5
Cadmium	T-Cd	-	<0.5	<0.5
Chromium	T-Cr	-	32	36
Cobalt	T-Co	-	7	7
Copper	T-Cu	-	25	16
Lead	T-Pb	-	<50	<50
Mercury	T-Hg	-	<0.05	<0.05
Molybdenum	T-Mo	-	<4	<4
Nickel	T-Ni	-	16	17
Selenium	T-Se	-	<2	<2
Silver	T-Ag	-	<2	<2
Tin	T-Sn	-	<5	<5
Vanadium	T-V	-	79	91
Zinc	T-Zn	-	30	27

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

File No. N8603

RESULTS OF ANALYSIS - Sediment/Soil

Sample ID	BH01-7 SA1
Sample Date	
ALS ID	*6*

Polycyclic Aromatic Hydrocarbons	
Acenaphthene	<0.01
Acenaphthylene	<0.01
Anthracene	<0.01
Benz(a)anthracene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(g,h,i)perylene	<0.01
Benzo(k)fluoranthene	<0.01
Chrysene	<0.01
Dibenz(a,h)anthracene	<0.01
Fluoranthene	<0.01
Fluorene	<0.01
Indeno(1,2,3-c,d)pyrene	<0.01
Naphthalene	<0.01
Phenanthrene	0.01
Pyrene	<0.01

Extractable Hydrocarbons	
EPH10-19	<200
EPH19-32	<200
LEPH	<200
HEPH	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

File No. N8603

Appendix 1 - QUALITY CONTROL - Replicates

Sediment/Soil	BH01-3 SA1	BH01-3 SA1 QC # 268048
Physical Tests		
Moisture %	15.1	15.2
Non-Halogenated Volatiles		
Benzene	<0.04	<0.04
Ethylbenzene	<0.05	<0.05
Styrene	<0.05	<0.05
Toluene	<0.05	<0.05
meta- & para-Xylene	<0.05	<0.05
ortho-Xylene	<0.05	<0.05
Volatile Hydrocarbons (VH6-10)	<100	<100
VPH	<100	<100
Extractable Hydrocarbons		
EPH10-19	<200	<200
EPH19-32	<200	<200

Results are expressed as milligrams per dry kilogram except where noted.
< = Less than the detection limit indicated.
VPH = Volatile Petroleum Hydrocarbons.
EPH = Extractable Petroleum Hydrocarbons.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.

File No. N8603

Appendix 2 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Moisture in Sediment/Soil

This analysis is carried out gravimetrically by drying the sample at 103 C for a minimum of six hours.

Recommended Holding Time:

Sample: 14 days
Reference: Puget
For more detail see ALS Environmental "Collection & Sampling Guide"

Volatile Organic Compounds and Volatile Hydrocarbons in Sediment/Soil

This analysis involves the extraction of a subsample of the sediment/soil with methanol. Aliquots of the methanol extract are then analyzed for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID) and for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The methanol extraction and VH analysis are carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1 July 1999). The VOC analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA).

Recommended Holding Time:

Sample: 7 days Extract: 40 days
Reference: BCMELP
For more detail see ALS Environmental "Collection & Sampling Guide"

Volatile Petroleum Hydrocarbons (VPH) in Solids

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Volatile Petroleum Hydrocarbons in Solids or Water" (Version 2.1, July 20, 1999). According to this method, the concentrations of specific Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Ethylbenzene, Xylenes and Styrene) are subtracted from the collective concentration of Volatile Hydrocarbons (VH) that elute between n-hexane (nC6) and n-decane (nC10). Analysis of Volatile Hydrocarbons adheres to all prescribed elements of BCMELP method "Volatile Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

Extractable Hydrocarbons in Sediment/Soil

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Solids by GC/FID, Version 2.1 July 1999". The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone at high temperature

and pressure. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

Recommended Holding Time:

Sample: 14 days Extract: 40 days
Reference: BCMELP
For more detail see ALS Environmental "Collection & Sampling Guide"

Conventional Parameters in Sediment/Soil

These analyses are carried out on a leachable basis. The procedure involves mixing the sample with reagent grade water in a one to ten ratio and leaching for several hours. The leachate is filtered and analyzed in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

pH in Soil

This analysis is carried out in accordance with procedures described in "Soil Sampling and Methods of Analysis" (CSSS). The procedure involves mixing the air-dried sample with deionized/distilled water. The pH of the solution is then measured using a standard pH probe. A one to two ratio of sediment to water is used for mineral soils and a one to ten ratio is used for highly organic soils.

Metals in Sediment/Soil

This analysis is carried out using procedures from CSR Analytical Method 8 "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, Lands and Parks, 26 June 2001, and procedures adapted from "Test Methods for Evaluating Solid Waste", SW-846 Method 3050B or Method 3051, United States Environmental Protection Agency (EPA). The sample is manually homogenized, dried at 60 degrees Celcius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 90 degrees Celcius for 2 hours by either hotplate or block digestor using a 1:1 ratio of concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic absorption spectrophotometry (EPA Method 7000 series) and/or inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Recommended Holding Time:

Sample:	6 months (Hg = 28 days)
Extract:	6 months (Hg = 28 days, Sb & Sn = 7 days)
Reference:	BCMELP

Appendix 2 - METHODOLOGY - Continued

Polycyclic Aromatic Hydrocarbons in Sediment/Soil

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545, 3630 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses an automated system (Accelerated Solvent Extractor - ASE) to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene and undergoes a silica gel clean-up to remove sample components that could potentially interfere with the analysis. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS).

Recommended Holding Time:

Sample: 14 days Extract: 40 days

Reference: EPA

For more detail see ALS Environmental "Collection & Sampling Guide"

Light and Heavy Extractable Petroleum Hydrocarbons in Solids

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Light and Heavy Extractable Petroleum Hydrocarbons in Solids or Water". According to this method, LEPH and HEPH are calculated by subtracting selected Polycyclic Aromatic Hydrocarbon results from Extractable Petroleum Hydrocarbon results. To calculate LEPH, the individual results for Naphthalene and Phenanthrene are subtracted from EPH(C10-19). To calculate HEPH, the individual results for Benz(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Dibenz(a,h)anthracene, Indeno(1,2,3-c,d)pyrene, and Pyrene are subtracted from EPH(C19-32). Analysis of Extractable Petroleum Hydrocarbons adheres to all prescribed elements of the BCMELP method "Extractable Petroleum Hydrocarbons in Solids by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

End Of Report

ALS Environmental

CHEMICAL ANALYSIS REPORT

Date:	January 8, 2002
ALS File No.	N8794
Report On:	202.01263.004 Water Analysis Q99-442
Report To:	**SEACOR Environmental Inc.** #9 - 6421 Applecross Rd. Nanaimo, BC V9V 1N1
Attention:	**Ms. Suzanne Durnin**
Received:	December 6, 2001

ALS ENVIRONMENTAL
per:

Leanne Harris, B.Sc. - Project Chemist
Can Dang, B.Sc. - Project Chemist

REMARKS

The detection limits for some total metals were increased due to interferences encountered during analysis.

For some of the submitted water samples, the measured concentration of specific dissolved parameters is greater than the corresponding total parameters concentration. The explanation for these findings is one or a combination of the following:

- laboratory method variability;
- analytical bias introduced during sample filtration;
- analytical bias introduced during general handling, storage, transportation and/or analysis of the sample;
- sample grab bias - where separate grab samples are processed to produce total and dissolved samples;
- sample split bias - where total and dissolved parameters samples are produced from the same grab sample.

For further clarification of any of the above information, please contact your ALS representative.

File No. N8794

RESULTS OF ANALYSIS - Water

Sample ID		BH01-3	BH01-4	BH01-5
Sample Date				
ALS ID		*3*	*4*	*5*
Physical Tests				
Hardness	CaCO3	135	143	206
Dissolved Anions				
Chloride	Cl	-	25.1	64.5
Total Metals				
Aluminum	T-Al	68.3	7.04	0.42
Antimony	T-Sb	<0.01	<0.01	<0.02
Arsenic	T-As	0.023	0.003	<0.002
Barium	T-Ba	0.75	0.41	0.08
Beryllium	T-Be	<0.005	<0.005	<0.005
Boron	T-B	0.1	<0.1	<0.1
Cadmium	T-Cd	0.0003	<0.0002	<0.0004
Calcium	T-Ca	23.1	43.5	80.6
Chromium	T-Cr	0.10	0.01	0.04
Cobalt	T-Co	0.04	<0.01	<0.01
Copper	T-Cu	0.166	0.012	0.016
Iron	T-Fe	92.5	7.13	0.59
Lead	T-Pb	0.026	0.003	<0.002
Lithium	T-Li	0.07	<0.05	<0.05
Magnesium	T-Mg	18.8	8.4	1.2
Manganese	T-Mn	2.00	1.03	0.10
Mercury	T-Hg	<0.0002	<0.0002	<0.0002
Molybdenum	T-Mo	0.005	0.012	0.015
Nickel	T-Ni	0.09	<0.05	<0.05
Selenium	T-Se	<0.001	<0.001	<0.003
Silver	T-Ag	0.0004	<0.0001	<0.0002
Sodium	T-Na	60	51	94
Thallium	T-Tl	0.0004	<0.0002	<0.0004
Uranium	T-U	0.0015	0.0014	<0.0004
Vanadium	T-V	0.24	<0.03	<0.03
Zinc	T-Zn	0.31	<0.05	<0.05

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N8794

RESULTS OF ANALYSIS - Water

Sample ID		BH01-1	BH01-2	BH01-3	BH01-4	BH01-5
Sample Date						
ALS ID		*1*	*2*	*3*	*4*	*5*
Dissolved Metals						
Aluminum	D-Al	-	-	0.3	<0.1	0.1
Antimony	D-Sb	-	-	<0.1	<0.1	<0.1
Arsenic	D-As	-	-	<0.01	<0.01	<0.01
Barium	D-Ba	-	-	<0.02	0.13	0.07
Beryllium	D-Be	-	-	<0.005	<0.005	<0.005
Boron	D-B	-	-	<0.1	<0.1	<0.1
Cadmium	D-Cd	-	-	<0.002	<0.002	<0.002
Calcium	D-Ca	-	-	8.3	41.4	53.2
Chromium	D-Cr	-	-	<0.01	<0.01	0.03
Cobalt	D-Co	-	-	<0.01	<0.01	<0.01
Copper	D-Cu	-	-	<0.01	<0.01	0.01
Iron	D-Fe	-	-	0.18	<0.03	0.40
Lead	D-Pb	-	-	<0.01	<0.01	<0.01
Lithium	D-Li	-	-	<0.05	<0.05	<0.05
Magnesium	D-Mg	-	-	1.1	7.0	<0.1
Manganese	D-Mn	-	-	<0.01	0.60	<0.01
Mercury	D-Hg	-	-	<0.0002	<0.0002	<0.0002
Molybdenum	D-Mo	-	-	<0.01	0.01	0.02
Nickel	D-Ni	-	-	<0.05	<0.05	<0.05
Selenium	D-Se	-	-	<0.01	<0.01	<0.01
Silver	D-Ag	-	-	<0.001	<0.001	<0.001
Sodium	D-Na	-	-	63	52	94
Thallium	D-Tl	-	-	<0.002	<0.002	<0.002
Uranium	D-U	-	-	<0.002	<0.002	<0.002
Vanadium	D-V	-	-	<0.03	<0.03	<0.03
Zinc	D-Zn	-	-	<0.05	<0.05	<0.05
Non-Halogenated Volatiles						
Benzene		<0.0005	<0.0005	<0.0005	-	-
Ethylbenzene		<0.0005	<0.0005	<0.0005	-	-
Toluene		<0.0005	0.0008	0.0005	-	-
meta- & para-Xylene		<0.0005	<0.0005	0.0008	-	-
ortho-Xylene		<0.0005	<0.0005	<0.0005	-	-
Volatile Hydrocarbons (VH6-10)		<0.1	<0.1	<0.1	-	-
VPH		<0.1	<0.1	<0.1	-	-

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N8794

RESULTS OF ANALYSIS - Water

Sample ID	BH01-1	BH01-2	BH01-3
Sample Date			
ALS ID	*1*	*2*	*3*
Polycyclic Aromatic Hydrocarbons			
Acenaphthene	-	<0.00005	-
Acenaphthylene	-	<0.00005	-
Acridine	-	<0.00005	-
Anthracene	-	<0.00005	-
Benz(a)anthracene	-	<0.00005	-
Benzo(a)pyrene	-	<0.00003	-
Benzo(b)fluoranthene	-	<0.00005	-
Benzo(g,h,i)perylene	-	<0.00007	-
Benzo(k)fluoranthene	-	<0.00005	-
Chrysene	-	<0.00005	-
Dibenz(a,h)anthracene	-	<0.0002	-
Fluoranthene	-	<0.00005	-
Fluorene	-	<0.00005	-
Indeno(1,2,3-c,d)pyrene	-	<0.00009	-
Naphthalene	-	<0.00005	-
Phenanthrene	-	<0.00005	-
Pyrene	-	<0.00005	-
Extractable Hydrocarbons			
EPH10-19	<0.3	<0.3	<0.3
EPH19-32	<1	<1	<1
LEPH	-	<0.3	-
HEPH	-	<1	-

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N8794

RESULTS OF ANALYSIS - Water

Sample ID			BH01-6	BH01-7	BH01-8	BH01-9	WD1
Sample Date							
ALS ID			*6*	*7*	*8*	*9*	*10*
Physical Tests							
Hardness		CaCO3	336	-	482	487	-
Dissolved Anions							
Chloride		Cl	280	415	235	36.2	40.9
Total Metals							
Aluminum	T-Al		7.62	-	0.27	3.51	-
Antimony	T-Sb		<0.02	-	<0.02	<0.05	-
Arsenic	T-As		0.004	-	<0.002	<0.005	-
Barium	T-Ba		0.42	-	0.24	0.35	-
Beryllium	T-Be		<0.005	-	<0.005	<0.005	-
Boron	T-B		<0.1	-	0.1	0.1	-
Cadmium	T-Cd		0.0004	-	<0.0004	<0.001	-
Calcium	T-Ca		91.3	-	138	182	-
Chromium	T-Cr		0.01	-	0.06	0.06	-
Cobalt	T-Co		0.02	-	<0.01	<0.01	-
Copper	T-Cu		0.022	-	0.022	0.042	-
Iron	T-Fe		24.0	-	0.35	3.75	-
Lead	T-Pb		0.003	-	<0.002	0.032	-
Lithium	T-Li		<0.05	-	<0.05	<0.05	-
Magnesium	T-Mg		26.2	-	33.3	7.8	-
Manganese	T-Mn		10.6	-	1.24	1.96	-
Mercury	T-Hg		<0.0002	-	<0.0002	<0.0002	-
Molybdenum	T-Mo		<0.002	-	0.030	0.018	-
Nickel	T-Ni		<0.05	-	<0.05	<0.05	-
Selenium	T-Se		<0.002	-	<0.006	<0.005	-
Silver	T-Ag		<0.0002	-	<0.0002	<0.0005	-
Sodium	T-Na		174	-	151	126	-
Thallium	T-Tl		<0.0004	-	<0.0004	<0.001	-
Uranium	T-U		0.0018	-	0.0068	<0.001	-
Vanadium	T-V		<0.03	-	<0.03	<0.03	-
Zinc	T-Zn		0.07	-	<0.05	0.25	-

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N8794

RESULTS OF ANALYSIS - Water

Sample ID		BH01-6	BH01-8	BH01-9	WD1
Sample Date					
ALS ID		*6*	*8*	*9*	*10*
Dissolved Metals					
Aluminum	D-Al	<0.1	<0.1	0.1	-
Antimony	D-Sb	<0.1	<0.1	<0.1	-
Arsenic	D-As	<0.01	<0.01	<0.01	-
Barium	D-Ba	0.33	0.25	0.19	-
Beryllium	D-Be	<0.005	<0.005	<0.005	-
Boron	D-B	<0.1	<0.1	<0.1	-
Cadmium	D-Cd	<0.002	<0.002	<0.002	-
Calcium	D-Ca	89.4	138	68.0	-
Chromium	D-Cr	<0.01	0.05	0.10	-
Cobalt	D-Co	0.02	<0.01	<0.01	-
Copper	D-Cu	<0.01	0.02	0.04	-
Iron	D-Fe	<0.03	<0.03	1.13	-
Lead	D-Pb	<0.01	<0.01	0.01	-
Lithium	D-Li	<0.05	<0.05	<0.05	-
Magnesium	D-Mg	25.2	34.4	<0.1	-
Manganese	D-Mn	10.8	1.29	<0.01	-
Mercury	D-Hg	<0.0002	<0.0002	<0.0002	-
Molybdenum	D-Mo	<0.01	0.03	0.04	-
Nickel	D-Ni	<0.05	<0.05	<0.05	-
Selenium	D-Se	<0.01	<0.01	<0.01	-
Silver	D-Ag	<0.001	<0.001	<0.001	-
Sodium	D-Na	178	155	207	-
Thallium	D-Tl	<0.002	<0.002	<0.002	-
Uranium	D-U	<0.002	0.008	<0.002	-
Vanadium	D-V	<0.03	<0.03	<0.03	-
Zinc	D-Zn	<0.05	<0.05	<0.05	-
Non-Halogenated Volatiles					
Benzene		-	-	-	<0.0005
Ethylbenzene		-	-	-	<0.0005
Toluene		-	-	-	<0.0005
meta- & para-Xylene		-	-	-	<0.0005
ortho-Xylene		-	-	-	<0.0005
Volatile Hydrocarbons (VH6-10)		-	-	-	<0.1
VPH		-	-	-	<0.1

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N8794

RESULTS OF ANALYSIS - Water

Sample ID	WD1
Sample Date	
ALS ID	*10*
Extractable Hydrocarbons	
EPH10-19	<0.3
EPH19-32	<1
LEPH	-
HEPH	-

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N8794

RESULTS OF ANALYSIS - Water

Sample ID		MW2	MW3
Sample Date			
ALS ID		*11*	*12*
Dissolved Anions			
Chloride	Cl	1450	416

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N8794

Appendix 1 - QUALITY CONTROL - Replicates

Water			BH01-3	BH01-3
				QC # 268596
Physical Tests				
Hardness		CaCO3	135	133
Total Metals				
Aluminum	T-Al		68.3	67.6
Antimony	T-Sb		<0.01	<0.01
Arsenic	T-As		0.023	0.023
Barium	T-Ba		0.75	0.73
Beryllium	T-Be		<0.005	<0.005
Boron	T-B		0.1	<0.1
Cadmium	T-Cd		0.0003	0.0003
Calcium	T Ca		23.1	22.6
Chromium	T-Cr		0.10	0.10
Cobalt	T-Co		0.04	0.04
Copper	T-Cu		0.166	0.167
Iron	T-Fe		92.5	91.0
Lead	T-Pb		0.026	0.026
Lithium	T-Li		0.07	0.07
Magnesium	T-Mg		18.8	18.5
Manganese	T-Mn		2.00	1.96
Mercury	T-Hg		<0.0002	<0.0002
Molybdenum	T-Mo		0.005	0.005
Nickel	T-Ni		0.09	0.09
Selenium	T-Se		<0.001	<0.001
Silver	T-Ag		0.0004	0.0004
Sodium	T-Na		60	60
Thallium	T-Tl		0.0004	0.0004
Uranium	T-U		0.0015	0.0015
Vanadium	T-V		0.24	0.24
Zinc	T-Zn		0.31	0.30

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

File No. N8794

Appendix 1 - QUALITY CONTROL - Replicates

Water	BH01-3	BH01-3 QC # 268596
Non-Halogenated Volatiles		
Benzene	<0.0005	<0.0005
Ethylbenzene	<0.0005	<0.0005
Toluene	0.0005	0.0006
meta- & para-Xylene	0.0008	0.0010
ortho-Xylene	<0.0005	0.0006
Volatile Hydrocarbons (VH6-10)	<0.1	<0.1
VPH	<0.1	<0.1

Remarks regarding the analyses appear at the beginning of this report.
Results are expressed as milligrams per litre except where noted.
< = Less than the detection limit indicated.
EPH = Extractable Petroleum Hydrocarbons.
EPH10-19 is equivalent to EHw10-19.
LEPH & HEPH = Light and Heavy Extractable Petroleum Hydrocarbons.
VPH = Volatile Petroleum Hydrocarbons.

Appendix 2 - METHODOLOGY

Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

Volatile Organic Compounds and Volatile Hydrocarbons in Water

This procedure involves the purge and trap extraction of the sample prior to analysis for Volatile Hydrocarbons (VH) by capillary column gas chromatography with flame-ionization detection (GC/FID) and for specific Volatile Organic Compounds (VOC) by capillary column gas chromatography with mass spectrometric detection (GC/MS). The VH analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The VOC analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 8260, published by the United States Environmental Protection Agency (EPA).

Recommended Holding Time:

Sample: 7 days Extract: NA

Reference: BCMELP

For more detail see ALS Environmental "Collection & Sampling Guide"

Volatile Petroleum Hydrocarbons (VPH) in Water

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Volatile Petroleum Hydrocarbons in Solids or Water" (Version 2.1, July 20, 1999). According to this method, the concentrations of specific Monocyclic Aromatic Hydrocarbons (Benzene, Toluene, Ethylbenzene, and Xylenes) are subtracted from the collective concentration of Volatile Hydrocarbons (VH) that elute between n-hexane (nC6) and n-decane (nC10). Analysis of Volatile Hydrocarbons adheres to all prescribed elements of BCMELP method "Volatile Hydrocarbons in Water by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

Extractable Hydrocarbons in Water

This analysis is carried out in accordance with the British Columbia Ministry of Environment, Lands and Parks (BCMELP) Analytical Method for Contaminated Sites "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 1999). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene and analysed by capillary column gas chromatography with flame ionization detection (GC/FID). EPH results include Polycyclic Aromatic Hydrocarbons (PAH) and are therefore not equivalent to Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

Recommended Holding Time:

Sample: 7 days Extract: 40 days

Reference: BCMELP

For more detail see ALS Environmental "Collection & Sampling Guide"

Appendix 2 - METHODOLOGY - Continued

Polycyclic Aromatic Hydrocarbons in Water

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3510, 3630 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure involves extraction of the entire water sample with dichloromethane. The extract is then solvent exchanged to toluene prior to analysis by capillary column gas chromatography with mass spectrometric detection (GC/MS).

Recommended Holding Time:

Sample: 7 days Extract: 40 days

Reference: EPA

For more detail see ALS Environmental "Collection & Sampling Guide"

Light and Heavy Extractable Petroleum Hydrocarbons in Water

These results are determined according to the British Columbia Ministry of Environment, Lands, and Parks Analytical Method for Contaminated Sites "Calculation of Light and Heavy Extractable Petroleum Hydrocarbons in Solids or Water". According to this method, LEPH and HEPH are calculated by subtracting selected Polynuclear Aromatic Hydrocarbon results from Extractable Petroleum Hydrocarbon results. To calculate LEPH, the individual results for Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene, and Phenanthrene are subtracted from EPH(C10-19). To calculate HEPH, the individual results for Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene are subtracted from EPH(C19-32). Analysis of Extractable Petroleum Hydrocarbons adheres to all prescribed elements of the BCMELP method "Extractable Petroleum Hydrocarbons in Water by GC/FID" (Version 2.1, July 20, 1999).

Recommended Holding Time: Not Applicable

Conventional Parameters in Water

These analyses are carried out in accordance with procedures described in "Methods for Chemical Analysis of Water and Wastes" (USEPA), "Manual for the Chemical Analysis of Water, Wastewaters, Sediments and Biological Tissues" (BCMOE), and/or "Standard Methods for the Examination of Water and Wastewater" (APHA). Further details are available on request.

Metals in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

Recommended Holding Time:

Sample: 6 months

Reference: EPA
For more detail see: ALS "Collection & Sampling Guide"

Mercury in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic absorption and/or fluorescence spectrophotometry (EPA Method 7470A/7471A/245.7).

Recommended Holding Time:
Sample: 28 days
Reference: EPA
For more detail see ALS Environmental "Collection & Sampling Guide"

Chloride in Water

This analysis is carried out using procedures adapted from APHA Method 4500 "Chloride". Chloride is determined using the ferricyanide colourimetric method.

Recommended Holding Time:
Sample: 28 days
Reference: APHA
For more detail see ALS Environmental "Collection & Sampling Guide"

End Of Report

APPENDIX C

SUPPLEMENTAL INFORMATION

Date: 02/02/25 TITLE SEARCH PRINT - VICTORIA Time: 11:53:15
Requestor: (PC54841) SEACOR ENVIRONMENTAL ENGINEERING INC. Page: 001
TITLE - J38111

SECTION 98 LAND TITLE ACT

VICTORIA LAND TITLE OFFICE TITLE NO: J38111
FROM TITLE NO: G53959
H66337

APPLICATION FOR REGISTRATION RECEIVED ON: 09 APRIL, 1980
ENTERED: 14 APRIL, 1980

REGISTERED OWNER IN FEE SIMPLE:
BRITISH COLUMBIA BUILDINGS CORPORATION,
400-910 GOVERNMENT STREET, P.O. BOX 1112,
VICTORIA, B.C.,
V8W 2T4

TAXATION AUTHORITY:
COURTENAY ASSESSMENT AREA

DESCRIPTION OF LAND:
PARCEL IDENTIFIER: 000-252-069
LOT 1, SECTION 18, DENMAN ISLAND, NANAIMO DISTRICT, PLAN 33612

LEGAL NOTATIONS:

COAL TSN DF 41413 (29/09/1938) FORFEITED TO CROWN (23/10/1939)
DF 45974

CHARGES, LIENS AND INTERESTS:
NATURE OF CHARGE
CHARGE NUMBER DATE TIME

UNDERSURFACE RIGHTS
117553G 1945-03-08 10:00
REGISTERED OWNER OF CHARGE:
HENRY PERING CREASE
117553G
REMARKS: DD 22030I
SEE S13099

RIGHT OF WAY
288733G 1964-01-31 14:46
REGISTERED OWNER OF CHARGE:
BRITISH COLUMBIA HYDRO AND POWER AUTHORITY
288733G
REMARKS: INTER ALIA

UNDERSURFACE RIGHTS
S13099 1987-02-19 09:00
REMARKS: FORFEITED TO CROWN
ALL MINERALS EXCEPT COAL, GOLD & SILVER

"CAUTION - CHARGES MAY NOT APPEAR IN ORDER OF PRIORITY. SEE SECTION 28, L.T.A."

CONTINUES ON PAGE 002

Date: 02/02/25 TITLE SEARCH PRINT - VICTORIA Time: 11:53:15
Requestor: (PC54841) SEACOR ENVIRONMENTAL ENGINEERING INC. Page: 002
TITLE - J38111

DUPLICATE INDEFEASIBLE TITLE: NONE OUTSTANDING

TRANSFERS: NONE

PENDING APPLICATIONS: NONE

*** CURRENT INFORMATION ONLY - NO CANCELLED INFORMATION SHOWN ***

Detail Report

SITE LOCATION

Site ID: 6994 Latitude: 49d 32m 12.0s
Victoria File: Longitude: 124d 49m 03.0s
Regional File: 26250-20/6994
Region: NANAIMO, VANCOUVER ISLAND

Site Address: 3661 PIERCY ROAD
City: DENMAN ISLAND Prov/State: BC
Postal Code:

Registered: NOV 03, 2000 Updated: JAN 18, 2001 Detail Removed: NOV 29, 2000

Notations: 1 Participants: 4 Associated Sites: 0
Documents: 0 Susp. Land Use: 0 Parcel Descriptions: 1

Record Status: ACTIVE - UNDER REMEDIATION
Fee category: UNRANKED

= =

NOTATIONS

Notation Type: NOTICE OF INDEPENDENT REMEDIATION INITIATION SUBMITTED (WMA 28(2))
Notation Class: WASTE MANAGEMENT ACT: CONTAMINATED SITES NOTATIONS
Initiated: OCT 16, 2000 Approved:

Ministry Contact: COLLISON-BAKER, JOHN

Notation Participants	Notation Roles
SEACOR ENVIRONMENTAL ENGINEERING INC. (NANAIMO (SKINNER STREET))	SUBMITTED BY

= =

SITE PARTICIPANTS

Participant: BC BUILDINGS CORPORATION (VICTORIA, BC)
Role(s): PROPERTY OWNER
Start Date: OCT 16, 2000 End Date:

- -

Participant: BOLLANS, RON A
Role(s): MAIN BC ENVIRONMENT CONTACT
Start Date: OCT 16, 2000 End Date:

- -

Participant: COLLISON-BAKER, JOHN
Role(s): ALTERNATE BC ENVIRONMENT CONTACT
Start Date: OCT 16, 2000 End Date:

- -

Participant: SEACOR ENVIRONMENTAL ENGINEERING INC. (NANAIMO (SKINNER STREET))
Role(s): ENVIRONMENTAL CONSULTANT/CONTRACTOR
Start Date: OCT 16, 2000 End Date:

= =

PARCEL DESCRIPTIONS

Date Added: NOV 29, 2000 Crown Land PIN#:
LTO PID#: 000250069 Crown Land File#:
Land Desc:
No activities were reported for this site

End of Detail Report

PLAN 33612

G53559
H66337
up

Deposited in the Land Registry Office at Victoria, B.C., this 11th day of April, 1980

Registrar.

PLAN of SUBDIVISION of
LOT B, PLAN 19037 and LOT A, PLAN 31917, SECTION 18, NANAIMO DISTRICT, DENMAN ISLAND.

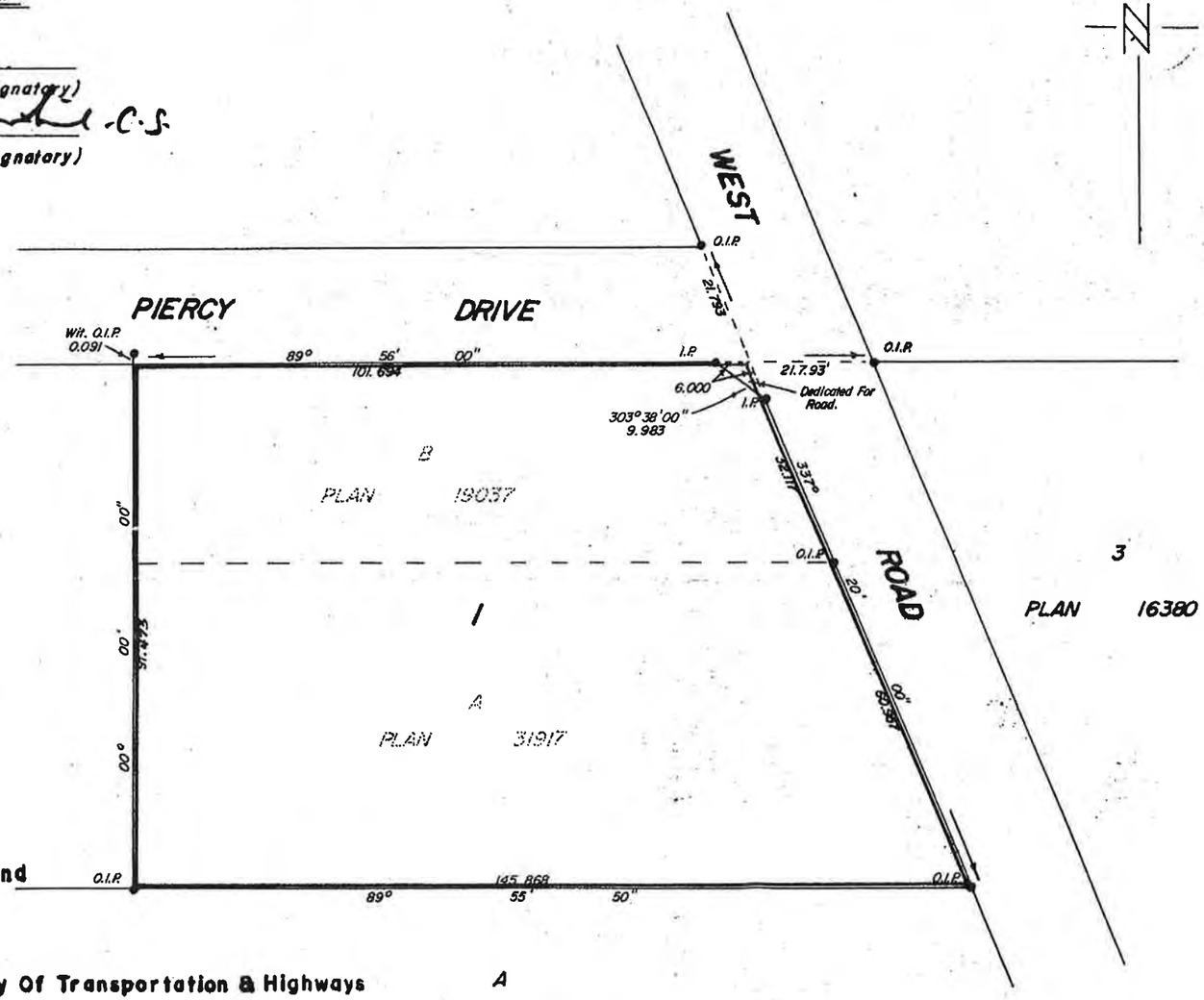
SCALE : 1 : 100 (Metric)

10 5 0 10 20

Owner : British Columbia Buildings Corporation

(Authorized Signatory)

(Authorized Signatory)



Legend

- O.I.P. denotes Standard Iron Post found.
- I.P. denotes Standard Iron Post set.

Bearings are astronomic, derived from Plan 19037.

All distances shown are measured in meters

13286

Approved as to dedication of road,
British Columbia Hydro and Power Authority.

Director
(Authorized Signatory)

Associate Secretary
(Authorized Signatory)

Re Approved Under The Land Titles Act This
28th day MAR 80
Approving Officer Ministry Of Transportation & Highways

Approved under the Land Registry Act, this
4th day of APRIL, 1980.

This Plan lies within the Comox - Strathcona Regional District.

I, G.J. Anderson, a British Columbia land surveyor, of Victoria, in British Columbia, certify that I was present at and personally superintended the survey represented by this plan, and that the survey and plan are correct. The survey was completed on the 4TH day of DECEMBER, 1979.

J.E. ANDERSON & ASSOCIATES
B.C. Land Surveyors & Consulting Engineers
Victoria, B.C.

APPENDIX D

NOTIFICATION OF INDEPENDENT REMEDIATION LETTERS

October 16, 2000

FILE COPY

Ministry of Environment, Lands and Parks
2080-A Labieux Road
Nanaimo, B.C.
V9T 6J9

Attention: Mr. Ron Bollans, P.Eng.
Assistant Regional Waste Manager
Head, Industrial Section

Dear Sir:

RE: ***NOTIFICATION OF INDEPENDENT REMEDIATION - INTENT***
DENMAN ISLAND HIGHWAYS YARD
3661 PIERCY ROAD, DENMAN ISLAND, B.C.
SEACOR PROJECT NO.: 202.01263.003

Please be advised that at the request of the British Columbia Buildings Corporation, SEACOR Environmental Engineering Inc. (SEACOR), is providing Notification of Independent Remediation to the Ministry of Environment, Lands and Parks (MELP) for the above-referenced site as required under the Waste Management Act, Contaminated Sites Regulation (CSR), BC Reg. 375/96.

Hydrocarbon and metals-impacted soils encountered during the Preliminary and Detailed Site Investigation programs indicated that approximately 213 m^3 of soil would require remediation. Approximately 202 m^3 of excavated soils would be treated in an on-site biocell while 11 m^3 would be transported off-site to a licensed facility. Submission of a site remediation summary report would be forwarded to BC MELP for the purpose of obtaining a certificate of compliance for the site.

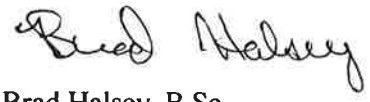
NOTIFICATION OF INDEPENDENT REMEDIATION - INTENT	
CSR Section	Site Information
Section 57(1)(a) Verbal Notification	Verbal notification will be given to MELP by SEACOR prior to the commencement of the on-site remedial program.
Section 57(1)(b)(I) Site Identification	Civic address: 3661 Piercy Road, Denman Island, B.C. Parcel Identifiers: 000-252-069 Latitude/Longitude N 49° 32' 12", W 124° 49' 3" Legal Description: Lot 1, Section 18, Denman Island, Nanaimo District, Plan 33612
Section 57(1)(b)(ii) Property Owner	British Columbia Buildings Corporation 4464 Markham Road, Victoria, B.C. V8Z 5N3
Section 57(1)(b)(iii) Site Contact	Mr. Jim Cuthbert, Project Superintendent British Columbia Buildings Corporation Phone: (250) 952-8212
Section 57(1)(b)(iv) Site Details	The site is an active highways maintenance yard. The Stage 1/2 Preliminary Site Investigation and Detailed Site Investigation (DSI) were completed by AGRA Earth and Environmental Limited in January 1999 and July 1999, respectively.

SEACOR

Pursuant to Section 20.8(2)(b) of the Waste Management (Amendment) Act 1993, notification of completion will be submitted to BC MELP within 90 days of completion of the remedial works.

SEACOR trusts that the information contained herein meets your current needs, however, should you have any questions or require additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely,
SEACOR Environmental Engineering Inc.



Brad Halsey, B.Sc.
Environmental Scientist

c: Mr. Jim Cuthbert, British Columbia Buildings Corporation

C:\PROJECTS\BCBC\1000\202.01263.003INDREM-LTR.DOC

202-022 63

BRITISH COLUMBIA

October 24, 2000

File: 26250-20/6994

Seacor Environmental Engineering Inc.
#9 6421 Applecross Road
Nanaimo BC V9V 1N1

ATTENTION: Brad Halsey

Dear Brad Halsey:

Re: Independent Remediation at [PID: 000-250-069] Highways Maintenance Yard at 3661 Piercy Road, Denman Island, BC

I have received your letter dated October 16, 2000, indicating that the land owner intends to pursue independent remediation at the above-noted site, under the authority of Section 57 of the Contaminated Sites Regulation (CSR) and Section 28 of the *Waste Management Act* (WMA).

I understand that the site will be cleaned up in the near future under the authority of Section 57 of the CSR and Section 28 of the WMA. Pollution Prevention Program staff may monitor and inspect the remediation activities from time to time to ensure compliance with the CSR and the WMA. In addition, the regional waste manager may impose requirements where necessary.

Please note that contaminated effluent must not be discharged from the remediation operation to the environment unless prior authorization is received from this office. Contaminated groundwater, if encountered, should be stored onsite, tested, and data submitted to this office for review prior to release of the effluent to the environment. Similarly, authorization will be required to discharge air contaminants from any air stripping system.

. . . /2

Ministry of Environment, Lands and Parks

Environment and Lands
Vancouver Island Region

Mailing Address:
2080A Labieux Road
Nanaimo BC V9T 6J9

Telephone: (250) 751-3100
Facsimile: (250) 751-3103

Please advise in writing within 90 days of completing remediation. Should the land owner request a certificate of compliance at the completion of remediation, the regional waste manager may request reports and require associated fees in order to verify compliance with applicable provincial standards.

Should you have any questions regarding the above, please contact John Collison-Baker at (250) 751-3100.

Yours truly,

R. A. Bollans, P.Eng.
Assistant Regional Waste Manager
Vancouver Island Region

cc: Jim Cuthbert, BC Buildings Corporation, 4464 Markham Road, Victoria, BC, V8Z 5N3

JCB/jlk
6994 IR letter.BCBC, Denman Island.doc

APPENDIX E

PROTOCOL 5 DOCUMENTATION

Summary of Report Participants

BCE SITE ID#: 6994

1.	This report was commissioned by:	company:	British Columbia Buildings Corporation
		contact name/position:	Mr. Jim Cuthbert, Project Superintendent - Environment
		address:	527 Michigan Street, Victoria BC V8V 1S1
		telephone:	(250) 888-1724
2.	Report author(s):	name(s):	Mr. Robert Chaisson, C.Tech. Manager, Vancouver Island
		address:	9 - 6421 Applecross Road, Nanaimo, B.C. V9V 1N1
		telephone:	(250) 390-5050
		name(s):	Mr. Brad Halsey, B.Sc. Environmental Scientist
		address:	9 - 6421 Applecross Road Nanaimo, B.C. V9V 1N1
		telephone:	(250) 390-5050
3.	Contributors to report:	name/position:	

4. Ministry policy considers that a regional pollution prevention manager has no duty to consider an application for an Approval in Principle, a Certificate of Compliance, a Conditional Certificate of Compliance or an approval of a preliminary or detailed site investigation until an applicant or the applicant's agent provides a written signed statement that the documentation prepared in support of any application has been carried out in accordance with all requirements in the Waste Management Act and the regulations thereto, and certifies that the person signing the statement has demonstrable experience in remediation of the type of contamination at the site for which the statement applies and is familiar with the remediation carried out on the site.

In consideration of the above policy, please detail below the relevant qualifications and experience of the main author(s) of the subject report.

Robert Chaisson, C.Tech., Manager, Vancouver Island - over eleven years experience, has completed more than 175 Stage 1, 2 and 3 environmental site assessments and remediation projects.

Brad Halsey, B.Sc., Environmental Scientist - over four years experience, has completed numerous environmental site assessments and remediation projects.

Signed Signed

Appendix C - Report Summary

Site Information Summary

Common name of site (if applicable)	Denman Island Highways Yard			BCE SITE ID#:		6994
Civic address of site street:	3661 Piercy Road					
city/postal code:	Denman Island, BC					
Owner of site name:	British Columbia Buildings Corporation					
Owner's address street:	3350 Douglas Street					
City, prov/state, postal code, country:	Victoria, BC V8Z 3R1					
Site occupant(s) (if different than owner)	Mainroad North Island Contracting					
Latitude (NAD 83 ± 0.5 seconds)	Degrees:	49	Minutes:	32	Seconds:	12
Longitude (NAD 83 ± 0.5 seconds)	Degrees:	124	Minutes:	49	Seconds:	3
PIDs/PINs of site (attach separate page if necessary)	000-252-069					
Legal description or meets and bounds: (attach separate page if necessary)	Lot 1, Section 18, Denman Island, Nanaimo District, Plan 33612					
Company official & address re sending AiP/Certificates by Registered Mail:	Mr. Jim Cuthbert, Superintendent - Environment					

Report(s) Submitted		Report Date(s)	
		Past Submissions	Present
x	("x" as appropriate)	(yy-mm-dd)	(yy-mm-dd)
	Preliminary Site Investigation - First Stage		
	Preliminary Site Investigation - Second Stage		
	Detailed Site Investigation*		
	Remediation Plan with Risk Assessment		
	Remediation Plan without Risk Assessment		
x	Site Remedial Program		02/04/26
	Monitoring		

Report Names	"Site Remedial Program"
Consultant's Name	SEACOR Environmental Inc.
Consultant's file number	202.01263.004

Summary of Actions Taken (Current Status)

Actions Proposed (if applicable)

Site Data	
Total area of site (m^2)	11300
Total area of building(s) (m^2)	Approximately 200
Total paved surface area (m^2)	Approximately 500
Current land use	Highways works yard
Proposed land use	Unknown
Suspect land uses	As above
Contaminant source(s)	UST's, surficial staining
Presence of free product	LNAPL (Y/N) N DNAPL (Y/N) N
Number of soil contaminant zones	4
No. of groundwater contaminant plumes	1
Contaminant Migration potential	? : unknown Low: X High:

Area Information	SITE ID# 6994
Nearest groundwater water supply (m)	On-site
Nearest surface water (m)	375
Nearest sensitive area (m)	375
Uses of adjacent water resources	Drinking Water
Annual rainfall (mm) + snowfall (cm) (Comox)	Rainfall:1091.4 Snowfall: 91.4
100/200 year flood potential of site	n/a
100/200 yr flood potential of area	n/a
Adjacent land uses	Residential, commercial

Soil Sample Information Confirmatory Soil Samples	
Number of testpits	0
Number of boreholes	9
Number of surface samples collected	0
Number of soil samples collected	101
Number of soil samples analyzed (n)	34
Soil Contaminant(s) PCOCs	Soil Quality (AL,PL, RL,CL.IL.W. SW)
Shallow (depth, m): 0 - 1.5 m	48 samples collected
	19 samples analyzed
	All samples below CSR *RL*
Intermediate (depth, m): 1.51 - 3.0 m	52 samples collected
	14 samples analyzed
	2 samples > CSR *CL* for arsenic
	1 sample > CSR *RL* for barium
Deep (depth, m): 3.01 m+	1 sample collected
	1 sample analyzed
	< CSR *RL*

Groundwater Sample Information Confirmatory Soil Samples	
Approx. depth to groundwater (m)	0.14 m to 1.06 m (Dec. 5/01)
No. of affected aquifers & depths (m)	n/a
No. of monitoring wells developed	11
No. of groundwater samples collected	11
No. groundwater samples analyzed (n)	11
Groundwater Contaminant(s) PCOCs	Water Quality (AW, IW, LW, DW)
Shallow (depth, m): 0 - 1.5 m	Dissolved metals:
	Aluminum, Chromium, Iron,
	Manganese, Sodium Chloride > *DW*
	Cobalt, Copper > *AW*
Intermediate (depth, m): 1.51 - 3.0 m	no samples collected
Deep (depth, m): 3.01 m+	no samples collected

Notes: Migration potential refers to contaminant plume(s) and "?" = "unknown"
"surface samples" = soil samples obtained using hand trowels, shovels and hand augers at depths less than 0.5 metres
PCOC = Potential contaminants of concern

AL = Agricultural
PL = Urban Park
RL = Residential
CL = Commercial
IL = Industrial
W = Waste
SW = Special Waste

AW = Aquatic Life
LW = Livestock
IW = Irrigation
DW = Drinking Water

SOIL -- Zones of Soil Contamination (referenced to attached Site Plan) - Confirmatory Soil Samples													
Map Area	Zone Area (m^2)	Depth Range (m)	Volume (m3)	Quality (CL, IL, etc.)	Soil Contaminants (concentrations in µg/g)								
					PCOC	Number of Analyses	Sample Mean	Standard Deviation	Minimum Value	Maximum Value	Median	75th Percentile	90th Percentile
Vehicle Hoist	10	0 - 0.6	6	< *RL*	EPH C10-19	5	200	0	200	200	200	n/a	n/a
				< *RL*	EPH C19-32	5	200	0	200	200	200	n/a	n/a
				< *RL*	LEPH	1	200	0	200	200	200	n/a	n/a
				< *RL*	HEPH	1	200	0	200	200	200	n/a	n/a
				< *RL*	Benz(a)anthracene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(a)pyrene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(b)fluoranthene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(k)fluoranthene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Dibenz(a.h)anthracene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Indeno(1,2,3-c.d)pyrene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Naphthalene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Phenanthrene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Pyrene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Antimony	2	20	0	20	20	20	n/a	n/a
				< *RL*	Arsenic	2	6	1.414	5	7	6	6.5	6.8
				< *RL*	Barium	2	146.5	103.945	73	220	146.5	183.25	205.3
				< *RL*	Beryllium	2	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Cadmium	2	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Chromium	2	38	11.314	30	46	38	42	44.4
				< *RL*	Cobalt	2	14	1.414	13	15	14	14.5	14.8
				< *RL*	Copper	2	46	5.657	42	50	46	48	49.2
				< *RL*	Lead	2	50	0	50	50	50	n/a	n/a
				< *RL*	Mercury	2	0.019	0.003	0.017	0.021	0.019	0.02	0.021
				< *RL*	Molybdenum	2	4	0	4	4	4	n/a	n/a
				< *RL*	Nickel	2	30	2.823	28	32	30	31	31.6
				< *RL*	Selenium	2	2	0	2	2	2	n/a	n/a
				< *RL*	Silver	2	2	0	2	2	2	n/a	n/a
				< *RL*	Tin	2	10	0	10	10	10	n/a	n/a
				< *RL*	Vanadium	2	128	15.556	117	139	128	133.5	136.8
				< *RL*	Zinc	2	50	8.485	44	56	50	53	54.8
Heating Oil AST	2	0.2	1	< *RL*	EPH C10-19	1	200	0	200	200	200	n/a	n/a
				< *RL*	EPH C19-32	1	659	0	659	659	659	n/a	n/a
				< *RL*	Antimony	1	20	0	20	20	20	n/a	n/a
				< *RL*	Arsenic	1	5	0	5	5	5	n/a	n/a
				< *RL*	Barium	1	120	0	120	120	120	n/a	n/a
				< *RL*	Beryllium	1	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Cadmium	1	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Chromium	1	39	0	39	39	39	n/a	n/a
				< *RL*	Cobalt	1	15	0	15	15	15	n/a	n/a
				< *RL*	Copper	1	55	0	55	55	55	n/a	n/a
				< *RL*	Lead	1	50	0	50	50	50	n/a	n/a
				< *RL*	Mercury	1	0.012	0	0.012	0.012	0.012	n/a	n/a
				< *RL*	Molybdenum	1	4	0	4	4	4	n/a	n/a
				< *RL*	Nickel	1	23	0	23	23	23	n/a	n/a
				< *RL*	Selenium	1	2	0	2	2	2	n/a	n/a
				< *RL*	Silver	1	2	0	2	2	2	n/a	n/a
				< *RL*	Tin	1	10	0	10	10	10	n/a	n/a
				< *RL*	Vanadium	1	96	0	96	96	96	n/a	n/a
				< *RL*	Zinc	1	380	0	380	380	380	n/a	n/a

SOIL -- Zones of Soil Contamination (referenced to attached Site Plan)

Map Area	Zone Area (m^2)	Depth Range (m)	Volume (m3)	Quality (CL, IL, etc.)	Soil Contaminants (concentrations in µg/g)							
					PCOC	Number of Analyses	Sample Mean	Standard Deviation	Minimum Value	Maximum Value	Median	75th Percentile	90th Percentile
Leaking	7	0 - 1.1	2	< *RL*	EPH C10-19	3	200	0	200	200	200	n/a	n/a
Drums				< *RL*	EPH C19-32	3	332	228.631	200	596	200	398	516.8
				< *RL*	LEPH	2	200	0	200	200	200	n/a	n/a
				< *RL*	HEPH	2	200	0	200	200	200	n/a	n/a
				< *RL*	Benz(a)anthracene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(a)pyrene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(b)fluoranthene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(k)fluoranthene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Dibenz(a,h)anthracene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Indeno(1,2,3-c,d)pyrene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Naphthalene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Phenanthrene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Pyrene	2	0.01	0	0.01	0.01	0.01	n/a	n/a
Former UST	250	0 - 3.2	360	< *RL*	Benzene	17	0.04	0	0.04	0.04	0.04	n/a	n/a
Nest Area				< *RL*	Ethylbenzene	17	0.05	0	0.05	0.05	0.05	n/a	n/a
				< *RL*	Toluene	17	0.05	0	0.05	0.05	0.05	n/a	n/a
				< *RL*	Xylenes	17	0.1	0	0.1	0.1	0.1	n/a	n/a
				< *RL*	VPH	17	100	0	100	100	100	n/a	n/a
				< *RL*	EPH C10-19	19	200	0	200	200	200	n/a	n/a
				< *RL*	EPH C19-32	19	200	0	200	200	200	n/a	n/a
				< *RL*	LEPH	1	200	0	200	200	200	n/a	n/a
				< *RL*	HEPH	1	200	0	200	200	200	n/a	n/a
				< *RL*	Benz(a)anthracene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(a)pyrene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(b)fluoranthene	1	0.02	0	0.02	0.02	0.02	n/a	n/a
				< *RL*	Benzo(k)fluoranthene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Dibenz(a,h)anthracene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Indeno(1,2,3-c,d)pyrene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Naphthalene	1	0.08	0	0.08	0.08	0.08	n/a	n/a
				< *RL*	Phenanthrene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< *RL*	Pyrene	1	0.02	0	0.02	0.02	0.02	n/a	n/a
				< *RL*	Antimony	4	15	5.774	10	20	15	20	20
				> *CL*	Arsenic	4	15.5	3.416	12	20	15	17	18.8
				< *CL*	Barium	4	480.5	261.8	324	869	364.5	521	729.8
				< *RL*	Beryllium	4	0.925	0.299	0.5	1.2	1	1.05	1.14
				< *RL*	Cadmium	4	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Chromium	4	40.25	8.057	32	51	39	43.5	48
				< *RL*	Cobalt	4	18.75	4.113	15	24	18	21	22.8
				< *RL*	Copper	4	46	4.397	41	51	46	48.75	50.1
				< *RL*	Lead	4	62.5	25	50	100	50	62.5	85
				< *RL*	Mercury	4	0.093	0.015	0.08	0.114	0.089	0.096	0.107
				< *RL*	Molybdenum	4	5	2	4	8	4	5	6.8
				< *RL*	Nickel	4	48	5.598	41	53	49	52.25	52.7
				< *RL*	Selenium	4	2	0	2	2	2	n/a	n/a
				< *RL*	Silver	4	2.5	1	2	4	2	2.5	3.4
				< *RL*	Tin	4	7.75	2.63	5	10	8	10	10
				< *RL*	Vanadium	4	92.5	38.388	58	131	90.5	122.75	127.7
				< *RL*	Zinc	4	123.25	12.816	111	141	120.5	127.5	135.6

SOIL -- Zones of Soil Contamination (referenced to attached Site Plan)

Map Area	Zone Area (m^2)	Depth Range (m)	Volume (m3)	Quality (CL, IL, etc)	Soil Contaminants (concentrations in µg/g) PCOC	Number of Analyses	Sample Mean	Standard Deviation	Minimum Value	Maximum Value	Median	75th Percentile	90th Percentile
Former				< *RL*	Antimony	1	10	0	10	10	10	n/a	n/a
Salt Shed				< *RL*	Arsenic	1	8	0	8	8	8	n/a	n/a
(BH01-6)				< *RL*	Barium	1	125	0	125	125	125	n/a	n/a
				< *RL*	Beryllium	1	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Cadmium	1	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Chromium	1	47	0	47	47	47	n/a	n/a
				< *RL*	Cobalt	1	12	0	12	12	12	n/a	n/a
				< *RL*	Copper	1	40	0	40	40	40	n/a	n/a
				< *RL*	Lead	1	50	0	50	50	50	n/a	n/a
				< *RL*	Mercury	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< *RL*	Molybdenum	1	4	0	4	4	4	n/a	n/a
				< *RL*	Nickel	1	22	0	22	22	22	n/a	n/a
				< *RL*	Selenium	1	3	0	3	3	3	n/a	n/a
				< *RL*	Silver	1	2	0	2	2	2	n/a	n/a
				< *RL*	Tin	1	5	0	5	5	5	n/a	n/a
				< *RL*	Vanadium	1	123	0	123	123	123	n/a	n/a
				< *RL*	Zinc	1	43	0	43	43	43	n/a	n/a
Southwest				< *RL*	Antimony	2	10	0	10	10	10	n/a	n/a
(BH01-8,				< *RL*	Arsenic	2	5.5	0.707	5	6	5.5	5.75	5.9
BH01-9)				< *RL*	Barium	2	197.5	38.891	170	225	197.5	211.25	219.5
				< *RL*	Beryllium	2	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Cadmium	2	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *RL*	Chromium	2	34	2.828	32	36	34	35	35.6
				< *RL*	Cobalt	2	7	0	7	7	7	n/a	n/a
				< *RL*	Copper	2	20.5	6.364	16	25	20.5	22.75	24.1
				< *RL*	Lead	2	50	0	50	50	50	n/a	n/a
				< *RL*	Mercury	2	0.05	0	0.05	0.05	0.05	n/a	n/a
				< *RL*	Molybdenum	2	4	0	4	4	4	n/a	n/a
				< *RL*	Nickel	2	16.5	0.707	16	17	16.5	16.75	16.9
				< *RL*	Selenium	2	2	0	2	2	2	n/a	n/a
				< *RL*	Silver	2	2	0	2	2	2	n/a	n/a
				< *RL*	Tin	2	5	0	5	5	5	n/a	n/a
				< *RL*	Vanadium	2	85	8.485	79	91	85	88	89.8
				< *RL*	Zinc	2	28.5	2.121	27	30	28.5	29.25	29.7

GROUNDWATER -- Groundwater Contaminant Plumes (referenced to attached Site Plan)

Plume Location	Plume Area (m^2)	Depth Range (m)	Velocity Linear (m/yr)	Quality (AW, DW, etc)	Groundwater Contaminants (concentrations in ug/L, except manganese, sodium and chloride) PCOCs & pH, Hardness	Number of Analyses	Sample Mean	Standard Deviation	Minimum Value	Maximum Value	Median	75th Percentile	90th Percentile
				< *DW*	Benzene	4	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *DW*	Ethylbenzene	4	0.5	0	0.5	0.5	0.5	n/a	n/a
				< *DW*	Toluene	4	0.575	0.15	0.5	0.8	0.5	0.575	0.71
				< *DW*	Xylenes	4	1.075	0.15	1	1.3	1	1.075	1.21
				< *DW*	VHw	4	100	0	100	100	100	n/a	n/a
				< *DW*	VPHw	4	100	0	100	100	100	n/a	n/a
				< *DW*	EPHC10-19	4	300	0	300	300	300	n/a	n/a
				< *DW*	LEPHw	1	300	0	300	300	300	n/a	n/a

GROUNDWATER -- Groundwater Contaminant Plumes (referenced to attached Site Plan)

Plume Location	Plume Area (m^2)	Depth Range (m)	Velocity Linear (m/yr)	Quality (AW, DW, etc.)	Groundwater Contaminants (concentrations in ug/L, except manganese, sodium and chloride)								
					PCOCs & pH, Hardness	Number of Analyses	Sample Mean	Standard Deviation	Minimum Value	Maximum Value	Median	75th Percentile	90th Percentile
				< DW	Acenaphthene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Acridine	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Anthracene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Benz(a)anthracene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Benzo(b)fluoranthene	1	0.03	0	0.03	0.03	0.03	n/a	n/a
				< DW	Chrysene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Fluoranthene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Fluorene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Naphthalene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Phenanthrene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				< DW	Pyrene	1	0.05	0	0.05	0.05	0.05	n/a	n/a
				> DW	Aluminum	6	133.333	81.65	100	300	100	100	200
				< DW	Antimony	6	100	0	100	100	100	n/a	n/a
				< DW	Arsenic	6	10	0	10	10	10	n/a	n/a
				< DW	Barium	6	165	115.196	20	330	160	235	290
				< DW	Beryllium	6	5	0	5	5	5	n/a	n/a
				< DW	Boron	6	100	0	100	100	100	n/a	n/a
				< DW	Cadmium	6	2	0	2	2	2	n/a	n/a
				> DW	Chromium	6	35	35.637	10	100	20	45	75
				> AW	Cobalt	6	11.667	4.082	10	20	10	10	15
				> AW	Copper	6	16.667	12.111	10	40	10	17.5	30
				> DW	Iron	6	300	431.741	30	1130	105	345	765
				< DW	Lead	6	10	0	10	10	10	n/a	n/a
				< DW	Magnesium	6	11.317	14.834	0.1	34.4	4050	20.65	29.8
				> DW	Manganese	6	2120	4282.48	10	10800	305	1117.5	6045
				< DW	Mercury	6	0.2	0	0.2	0.2	0.2	n/a	n/a
				< DW	Molybdenum	6	20	12.649	10	40	15	27.5	35
				< DW	Nickel	6	50	0	20	50	50	n/a	n/a
				< DW	Selenium	6	10	0	10	10	10	n/a	n/a
				< DW	Silver	6	1	0	1	1	1	n/a	n/a
				> DW	Sodium	6	124.833	64.136	52	207	124.5	172.25	192.5
				< DW	Thallium	6	2	0	2	2	2	n/a	n/a
				< DW	Uranium	6	3	2.445	2	8	2	2	5
				< DW	Zinc	6	50	0	50	50	50	n/a	n/a
				> DW	Chloride	9	328.856	449.373	25.1	1450	235	415	622.8

Linear velocity of plume = Darcy velocity (V_{Darcy}) divided by the effective porosity (n_e)

PCOC = potential contaminant of concern

The above information is a summary only and persons who may be relying on the report are encouraged to review the entire document so as to avoid the use of information out of context.

Date: Apr. 26/07

Site Data	
Total area of site (m^2)	11300
Total area of building(s) (m^2)	Approximately 200
Total paved surface area (m^2)	Approximately 500
Current land use	Highways works yard
Proposed land use	Unknown
Suspect land uses	As above
Contaminant source(s)	UST's, surficial staining
Presence of free product	LNAPL (Y/N) N DNAPL (Y/N) N
Number of soil contaminant zones	4
No. of groundwater contaminant plumes	1
Contaminant Migration potential	?: unknown Low: X High:

Area Information		SITE ID#	6994
Nearest groundwater water supply (m)	On-site		
Nearest surface water (m)	375		
Nearest sensitive area (m)	375		
Uses of adjacent water resources	Drinking Water		
Annual rainfall (mm) + snowfall (cm) (Comox)	Rainfall: 1091.4 Snowfall: 91.4		
100/200 year flood potential of site	n/a		
100/200 yr flood potential of area	n/a		
Adjacent land uses	Residential, commercial		

Soil Sample Information Excavated Soil Samples	
Number of testpits	0
Number of boreholes	0
Number of surface samples collected	0
Number of soil samples collected	16
Number of soil samples analyzed (n)	6
Soil Contaminant(s) PCOCs	Soil Quality (AL,PL, RL,CL,IL,W, SW)
Shallow (depth, m): 0 - 1.5 m	12 samples collected
	5 samples analyzed
	1 sample > CSR *CL* for VPH, > CSR *RL*
	for EPH C10-19
	1 sample > CSR *CL* for EPH C10-19,
	> CSR *RL* for xylenes, EPH C19-32
	1 sample > CSR *RL* for EPH C10-19
Intermediate (depth, m): 1.51 - 3.0 m	4 samples collected
	1 sample analyzed
	< CSR *RL* for BETX/VPH, LEPH, HEPH
Deep (depth, m): 3.01 m+	No samples collected or analyzed

Groundwater Sample Information Excavated Soil Samples	
Approx. depth to groundwater (m)	n/a
No. of affected aquifers & depths (m)	n/a
No. of monitoring wells developed	n/a
No. of groundwater samples collected	n/a
No. groundwater samples analyzed (n)	n/a
Groundwater Contaminant(s) PCOCs	Water Quality (AW, IW, LW, DW)
Shallow (depth, m): 0 - 1.5 m	n/a
Intermediate (depth, m): 1.51 - 3.0 m	n/a
Deep (depth, m): 3.01 m+	n/a

Notes: Migration potential refers to contaminant plume(s) and "?" = "unknown"
"surface samples" = soil samples obtained using hand trowels, shovels and hand augers at depths less than 0.5 metres
PCOC = Potential contaminants of concern

AL = Agricultural
PL = Urban Park
RL = Residential
CL = Commercial
IL = Industrial
W = Waste
SW = Special Waste

AW = Aquatic Life
LW = Livestock
IW = Irrigation
DW = Drinking Water

SOIL -- Zones of Soil Contamination (referenced to attached Site Plan)

Map Area	Zone Area (m^2)	Depth Range (m)	Volume (m3)	Quality (CL, IL, etc.)	Soil Contaminants (concentrations in µg/g)							
					PCOC	Number of Analyses	Sample Mean	Standard Deviation	Minimum Value	Maximum Value	Median	75th Percentile	90th Percentile
Former UST	250	0 - 3.2	360	< *RL*	Benzene	5	0.04	0	0.04	0.04	0.04	n/a	n/a
Nest				< *RL*	Ethylbenzene	5	0.212	0.254	0.05	0.63	0.05	0.28	0.49
				< *RL*	Toluene	5	0.05	0	0.05	0.05	0.05	n/a	n/a
				< *CL*	Xylenes	5	1.978	3.106	0.1	7.33	0.28	2.08	5.23
				> *CL*	VPH	5	174.6	84.657	100	306	176	191	260
				> *CL*	EPH C10-19	6	1508.67	1462.59	200	4120	1371	1787.5	2955
				< *CL*	EPH C19-32	6	446.5	319.212	200	1030	364	511.5	775.5
				< *RL*	LEPH	1	961	0	961	961	961	n/a	n/a
				< *RL*	HEPH	1	245	0	245	245	245	n/a	n/a
				< *RL*	Benz(a)anthracene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(a)pyrene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(b)fluoranthene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Benzo(k)fluoranthene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Dibenz(a,h)anthracene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Indeno(1,2,3-c,d)pyrene	1	0.01	0	0.01	0.01	0.01	n/a	n/a
				< *RL*	Naphthalene	1	0.8	0	0.8	0.8	0.8	n/a	n/a
				< *RL*	Phenanthrene	1	0.18	0	0.18	0.18	0.18	n/a	n/a
				< *RL*	Pyrene	1	0.08	0	0.08	0.08	0.08	n/a	n/a

The above information is a summary only and persons who may be relying on the report are encouraged to review the entire document so as to avoid the use of information out of context.

Date: Apr. 26/02

APPENDIX H – ERIS REPORT

Following 106 pages

DATABASE REPORT

Project Property:	*3661 Piercy Rd* *3661 Piercy Rd* *Denman Island BC*
Project No:	*2309*
Report Type:	*Quote - Custom-Build Your Own Report*
Order No:	*23100400832*
Requested by:	*Current Environmental Ltd.*
Date Completed:	*October 5, 2023*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Table of Contents

Executive Summary

Property Information:

Project Property:	*3661 Piercy Rd* *3661 Piercy Rd Denman Island BC*
Project No:	*2309*

Coordinates:

Latitude:	*49.5368399*
Longitude:	*-124.8195212*
UTM Northing:	*5,488,727.11*
UTM Easting:	*368,355.27*
UTM Zone:	*10U*

Elevation:	*151 FT* *46.05 M*

Order Information:

Order No:	*23100400832*
Date Requested:	*October 4, 2023*
Requested by:	*Current Environmental Ltd.*
Report Type:	*Quote - Custom-Build Your Own Report*

Historical/Products:

ERIS Xplorer	*ERIS Xplorer*

Executive Summary: Report Summary

Database	Name	Searched	Project Property	Within 0.25 km	Total
AMS	*Authorization Management System (formerly WASTE)*	Y	0	0	0
ARIS	*Assessment Report Indexing System*	Y	0	0	0
AUWR	*Automobile Wrecking & Supplies*	Y	0	0	0
BCIN	*BC Oil and Gas Commission Incidents*	Y	0	0	0
BOGW	*BC Oil and Gas Wells*	Y	0	0	0
CDRY	*Dry Cleaning Facilities*	Y	0	0	0
CHM	*Chemical Register*	Y	0	0	0
CNG	*Compressed Natural Gas Stations*	Y	0	0	0
COAL	*Coal Tar Sites*	Y	0	0	0
CONV	*Compliance and Enforcement Summary*	Y	0	0	0
DIS	*Wastewater Discharge Inventory*	Y	0	0	0
EEM	*Environmental Effects Monitoring*	Y	0	0	0
EHS	*ERIS Historical Searches*	Y	0	2	2
EIIS	*Environmental Issues Inventory System*	Y	0	0	0
EM	*Environmental Monitoring Locations*	Y	0	0	0
FCON	*Federal Convictions*	Y	0	0	0
FCS	*Contaminated Sites on Federal Land*	Y	0	0	0
FISH	*Commercial Fisheries*	Y	0	0	0
FOFT	*Fisheries & Oceans Fuel Tanks*	Y	0	0	0
FRST	*Federal Identification Registry for Storage Tank Systems (FIRSTS)*	Y	0	0	0
GEN	*Waste Generators Summary*	Y	0	0	0
GEN2	*Generators - Special Waste Information System (SWIS)*	Y	0	0	0
GHG	*Greenhouse Gas Emissions from Large Facilities*	Y	0	0	0
HWF	*Hazardous Waste Facilities*	Y	0	0	0
IAFT	*Indian & Northern Affairs Fuel Tanks*	Y	0	0	0
LUM	*Lumber Mills*	Y	0	0	0
MINE	*Canadian Mine Locations*	Y	0	0	0
MNR	*Minerals Deposits Database*	Y	0	0	0
NATE	*National Analysis of Trends in Emergencies System (NATES)*	Y	0	0	0
NCPL	*Non-Compliance Reports*	Y	0	0	0
NDFT	*National Defense & Canadian Forces Fuel Tanks*	Y	0	0	0
NDSP	*National Defense & Canadian Forces Spills*	Y	0	0	0
NDWD	*National Defence & Canadian Forces Waste Disposal Sites*	Y	0	0	0
NEBI	*National Energy Board Pipeline Incidents*	Y	0	0	0
NEBP	*National Energy Board Wells*	Y	0	0	0
NEES	*National Environmental Emergencies System (NEES)*	Y	0	0	0

Database	Name	Searched	Project Property	Within 0.25 km	Total
NPCB	National PCB Inventory	Y	0	0	0
NPR2	National Pollutant Release Inventory 1993-2020	Y	0	0	0
NPRI	National Pollutant Release Inventory - Historic	Y	0	0	0
OGCW	Oil Gas Commission Wells	Y	0	0	0
OGF	Oil and Gas Commission Facilities	Y	0	0	0
OGWW	Oil and Gas Wells	Y	0	0	0
PAP	Canadian Pulp and Paper	Y	0	0	0
PCB	Inventory of PCB Storage Sites	Y	0	0	0
PCFT	Parks Canada Fuel Storage Tanks	Y	0	0	0
PES	Pesticide Register	Y	0	0	0
PFCH	NPRI Reporters - PFAS Substances	Y	0	0	0
PFHA	Potential PFAS Handers from NPRI	Y	0	0	0
PRAI	Private Aggregate Inventory	Y	0	0	0
PUAI	Public Aggregate Inventory	Y	0	0	0
REC	Waste Receivers Summary	Y	0	0	0
REC2	Receivers - Special Waste Information System (SWIS)	Y	0	0	0
RST	Retail Fuel Storage Tanks	Y	0	0	0
SCT	Scott's Manufacturing Directory	Y	0	0	0
SREG	Site Registry	Y	1	0	1
STNK	Surrey Tank Construction Permits	Y	0	0	0
SUMP	Sump Locations	Y	0	0	0
TCFT	Transport Canada Fuel Storage Tanks	Y	0	0	0
VTNK	Vancouver Heating Oil Underground Storage Tanks	Y	0	0	0
WDS	Waste Disposal Site Inventory	Y	0	0	0
WWIS	Water Well Information System	Y	0	23	23
		Total:	1	25	26

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev diff (m)	Page Number
1	SREG	Denman Island Highways Yard	3661 PIERCY ROAD No Entry DENMAN ISLAND BC ***Site ID* | *Updated:*** 6994 | 18-Jan-2001	-/0.0	-3.86	16

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
2	WWIS		NORTHWEST ROAD DENMAN ISLAND BC	N/25.6	-4.84	17
3	WWIS		BC	ENE/87.6	-2.96	21
4	EHS		1151 Northwest Road Denman Island BC V0R 1T0	ESE/100.0	-0.80	24
4	EHS		1151 Northwest Road Denman Island BC V0R 1T0	ESE/100.0	-0.80	24
5	WWIS		KIRK ROAD & NORTHWEST ROAD 1151 Northwest Road Denman Island BC	ESE/101.4	-0.52	24
6	WWIS		1151 NORTHWEST ROAD DENMAN ISLAND BC	ESE/102.6	-0.52	28
7	WWIS		KIRK ROAD DENMAN ISLAND BC	WSW/111.1	-12.79	31
8	WWIS		1607 NORTHWEST RD DENMAN ISLAND BC	N/136.2	-3.86	34
9	WWIS		KIRK RD BC	SSW/143.3	-17.47	38
10	WWIS		3176 KIRK ROAD DENMAN ISLAND BC	WSW/146.3	-16.67	41
11	WWIS		DENMAN ISLAND BC	SSE/164.5	-11.32	45
12	WWIS		BC	WSW/173.4	-22.92	49

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number
13	WWIS		ABOVE FERRY DOCK BC	SE/193.2	-5.89	51
14	WWIS		NORTHWEST RD BC	ESE/198.4	-0.86	55
15	WWIS		1111 NORTHWEST ROAD DENMAN ISLAND BC	ESE/202.1	-3.62	58
16	WWIS		BC	E/205.5	1.82	61
17	WWIS		N W RD & KIRK RR BC	ESE/210.8	-5.53	63
18	WWIS		1169 NORTHWEST ROAD DENMAN ISLAND BC	E/211.4	1.82	66
19	WWIS		P#15501F/NORTHWEST ROAD DENMAN ISLAND BC	E/216.1	2.28	69
20	WWIS		BC	ESE/221.2	0.19	72
21	WWIS		KIRK RD BC	WSW/230.0	-28.51	75
22	WWIS		3135 KIRK ROAD DENMAN ISLAND BC	WSW/238.5	-28.51	79
23	WWIS		ABOVE FERRY DOCK BC	WSW/239.3	-27.31	82
24	WWIS		DIRECTLY ABOVE FERRY TERMINAL BC	SW/240.7	-27.44	86
25	WWIS		BC	S/242.6	-14.10	89

Map Key	DB	Company/Site Name	Address	Dir/Dist (m)	Elev Diff (m)	Page Number

Executive Summary: Summary By Data Source

EHS - ERIS Historical Searches

A search of the EHS database, dated 1999-Jun 30, 2023 has found that there are 2 EHS site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
	1151 Northwest Road Denman Island BC V0R 1T0	ESE	99.98	4
	1151 Northwest Road Denman Island BC V0R 1T0	ESE	99.98	4

SREG - Site Registry

A search of the SREG database, dated Jul 2023 has found that there are 1 SREG site(s) within approximately 0.25 kilometers of the project property.

Lower Elevation	Address	Direction	Distance (m)	Map Key
Denman Island Highways Yard	3661 PIERCY ROAD No Entry DENMAN ISLAND BC ***Site ID* | *Updated:*** 6994 | 18-Jan-2001	-	0.00	1

WWIS - Water Well Information System

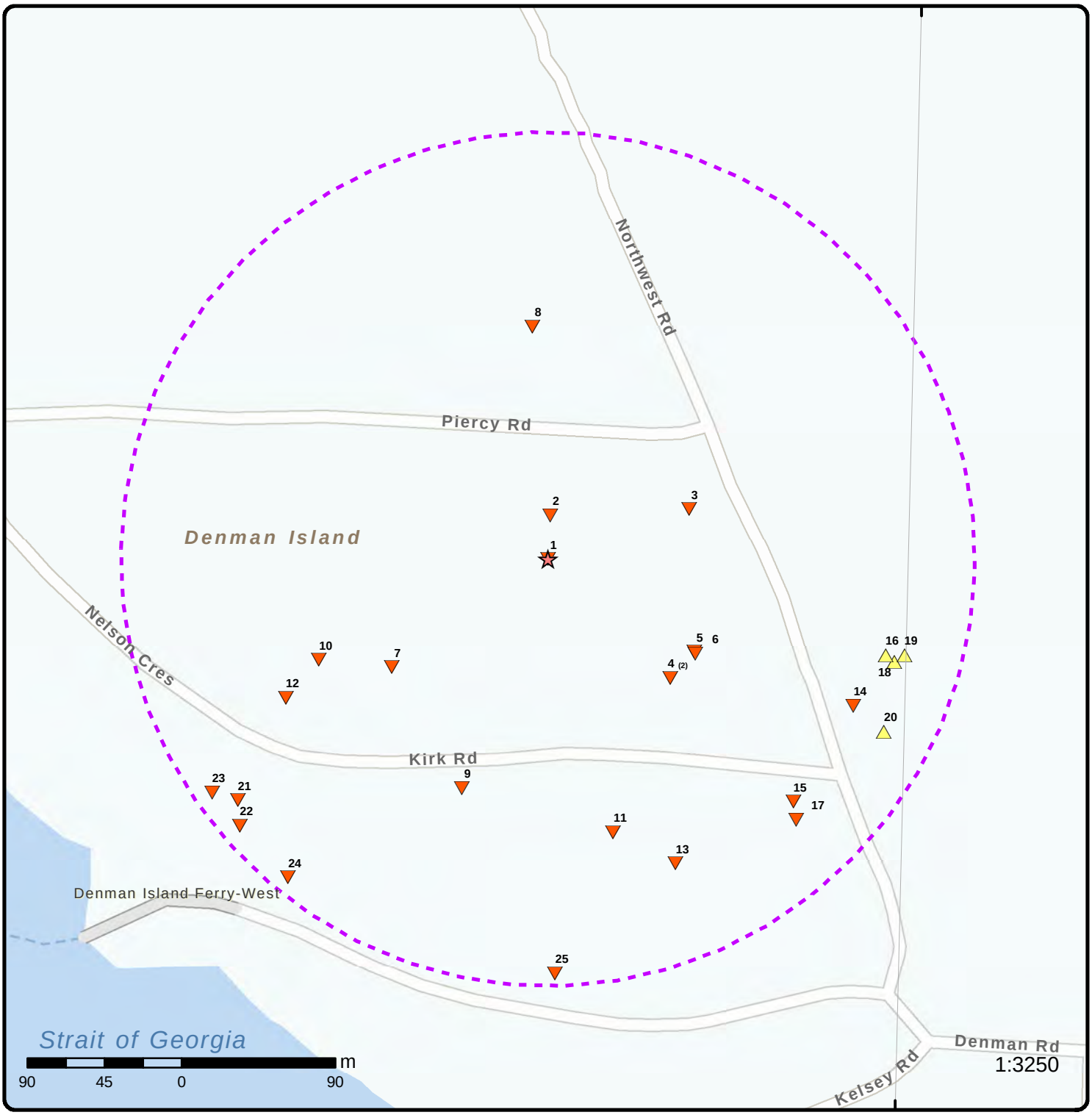
A search of the WWIS database, dated Aug 2023 has found that there are 23 WWIS site(s) within approximately 0.25 kilometers of the project property.

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
	BC	E	205.55	16
	1169 NORTHWEST ROAD DENMAN ISLAND BC	E	211.41	18
	P#15501F/NORTHWEST ROAD DENMAN ISLAND BC	E	216.14	19

Equal/Higher Elevation	Address	Direction	Distance (m)	Map Key
	BC	ESE	221.16	20

Lower Elevation	Address	Direction	Distance (m)	Map Key
	NORTHWEST ROAD DENMAN ISLAND BC	N	25.60	2
	BC	ENE	87.59	3
	KIRK ROAD & NORTHWEST ROAD 1151 Northwest Road Denman Island BC	ESE	101.43	5
	1151 NORTHWEST ROAD DENMAN ISLAND BC	ESE	102.62	6
	KIRK ROAD DENMAN ISLAND BC	WSW	111.09	7
	1607 NORTHWEST RD DENMAN ISLAND BC	N	136.22	8
	KIRK RD BC	SSW	143.26	9
	3176 KIRK ROAD DENMAN ISLAND BC	WSW	146.26	10
	DENMAN ISLAND BC	SSE	164.47	11
	BC	WSW	173.41	12

ABOVE FERRY DOCK BC	SE	193.15	13
NORTHWEST RD BC	ESE	198.40	14
1111 NORTHWEST ROAD DENMAN ISLAND BC	ESE	202.10	15
N W RD & KIRK RR BC	ESE	210.83	17
KIRK RD BC	WSW	229.96	21
3135 KIRK ROAD DENMAN ISLAND BC	WSW	238.47	22
ABOVE FERRY DOCK BC	WSW	239.26	23
DIRECTLY ABOVE FERRY TERMINAL BC	SW	240.67	24
BC	S	242.62	25



Map: 0.25 Kilometer Radius

Order Number: 23100400832

Address: 3661 Piercy Rd, Denman Island, BC

- Project Property
- Buffer Outline
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- Freeways; Highways
- Traffic Circle; Ramp
- Major Arterial; Minor Arterial
- Local Road
- Service Road; Traffic Circle; Ramp
- Rail
- Beach
- Airport
- Industrial Area
- Military Base
- Aircraft Roads
- Native Reservation
- Hospital
- Shopping & Sports Area
- University/College
- Cemetery; Golf Course
- Parkt (National)
- Park (City/County)

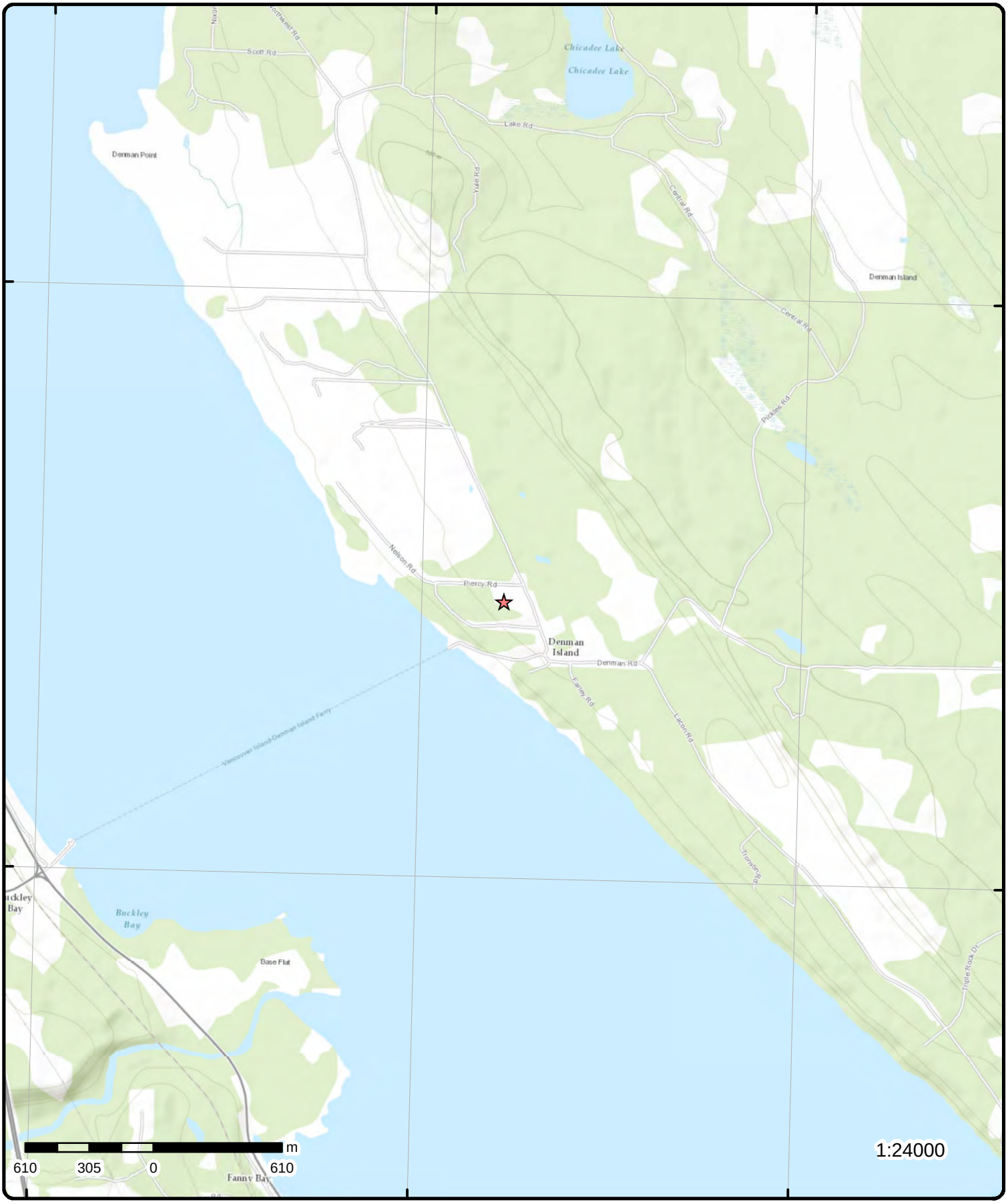
Aerial

Year: 2020

Order Number: 23100400832

Address: 3661 Piercy Rd, Denman Island, BC

Source: ESRI World Imagery



Topographic Map

Address: 3661 Piercy Rd, BC

Source: ESRI World Topographic Map

Order Number: 23100400832

Detail Report

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
1	1 of 1	-/0.0	42.2 / -3.86	Denman Island Highways Yard 3661 PIERCY ROAD No Entry DENMAN ISLAND BC	SREG

Site ID: 6994
Env Rmd ID:
Region:
Record Status: NOT ASSIGNED
Status as of: Jul 2023
Cleanup Status:
Category: Unranked
Registered: 03-Nov-2000
Victoria File No: No File
Regional File No: 26250-20/6994
Common Name:
Location Desc:
Addr (BC Data Catalogue):
Site Note: There are no Associated Sites for this site.

Updated: 18-Jan-2001
Detail Removed: 29-Nov-2000
Postal Code: No Entry
Latitude DMS:
Longitude DMS:
Latitude: 49.536667
Longitude: 124.817500

Registry Notations

Event ID: 37075
Notation Type and Act: NOTICE OF INDEPENDENT REMEDIATION INITIATION SUBMITTED (WMA 28(2)). Waste Management Act: Contaminated Sites Notations
Initiated Date: 16-Oct-2000
Approved Date: 16-Oct-2000
Region: Nanaimo, Vancouver Island
Ministry Contact: COLLISON-BAKER, JOHN
Notation Notes: No Notes Entered **Note: Many records provided by the department have a truncated [Notation Notes] field.
Required Actions: No Actions Entered
Requirement Due Date:
Requirement Received Date:

Participant: Seacor Environmental Engineering Inc (Nanaimo (Skinner Street))
Role: SUBMITTED BY

Site Participants

Participant: Bollans, Ron A
Participation Type: EMP
Start Date: Oct-16-2000
End Date: Mar-29-2002
Notes:

Participants Role: Main Ministry Contact

Site Participants

Participant: Bc Buildings Corporation (Victoria)
Participation Type: ORG
Start Date: Oct-16-2000
End Date:
Notes:

Participants Role: Property Owner

Site Participants

Participant: Collison-Baker, John
Participation Type: EMP
Start Date: Oct-16-2000
End Date:
Notes:

Participants Role: Alternate Ministry Contact

Site Participants

Participant: Seacor Environmental Engineering Inc (Nanaimo (Skinner Street))
Participation Type: ORG
Start Date: Oct-16-2000
End Date:
Notes:

Participants Role: Environmental Consultant/Contractor

Parcel Descriptions

Date Added: 11/29/2000
LTO PID(s): 000-250-069
Crown Land PIN No:
Crown Land File No:
Land Description:

---

2 | ***1 of 1*** | ***N/25.6*** | ***41.2 / -4.84*** | ***NORTHWEST ROAD DENMAN ISLAND BC*** | ***WWIS***

Well Tag No:	27383	***Status of Well Code:***	NEW
Filter Pack Size:		***Filter Pack Size Cd:***	
Filter Pack Mtl:		***Filter Pack Mtl Cd:***	
Surf Seal Flag:		***Surf Seal Mtl:***	
Surf Seal Mthd:		***Surface Seal Depth ft:***	
Constr Start Dt:	1972-12-04	***Constr End Dt:***	1972-12-04
Water Depth:		***Final Well Depth:***	235.00
Est. Yield:		***Use:***	
Constr Mthd:		***Class of Well:***	Water supply
SubClass of Well:	N/A	***Orientation of Well:***	
Well Status:	New	***Yield Unit Code:***	
Well Use Code:		***Constr Mthd Cd:***	
Class of Well Code:	WATR_SPPLY	***Subclass of Well Cd:***	NA
Surface Seal Mtl Cd:		***Surface Seal Mthd Cd:***	
Well ID:		***Constr Report Ind:***	
Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	OTHER
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	

Lot:	B	**Plan:**	19037
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.53707
Longitude:	-124.81951	**Zone:**	10
Easting:	368357	**Northing:**	5488753
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:	12.00	**Aquifer No:**	740
Aquifer Lithology Cd:	Bedrock	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	

UTM Accuracy Code: B
Location Accuracy: B (20 m) Digitized from 1:5,000 mapping
Accepted Status:
Class of Well Codclassified by:
Observ. Well Status:
Other Chemistry Data:
Filter Pack Mtl Thickness:
Yield Units:
Water Supply System Name: EMCON SERVICES INCORPORATED DENMAN ISLAND YARD
Water Supply Well Name: HIGHWAYS YARD WELL
Artesian Flow Unit Cd:
Orientation of Well Cd:
General Remarks:

Well Details (Cont.)

Permit No:		**Sealant Mtl:**	
Well ID Plate No:	14340	**Surfce Seal Length:**	
Cntrct Well Plate:		**Well Subclass by:**	
Well Sequence No:		**Type of Well Cap:**	
Observe Well No:		**User Guid:**	
Well Lic Gen Stat:		**Well Disinfect Ind:**	Not Disinfected
Old Well No:		**When Created:**	
Indian Reserve:		**Date Entered:**	
Legal Block:		**Crew Helper Name:**	
Liner Mtl Cd:		**Chemistry Lab Data:**	
Liner Mtl:		**Field Lab Data:**	
Lithology Flag:		**Other Chem Data:**	
Lith Measure Unit:		**Type of Work:**	
Lith Desc Count:		**Contractor Info 2:**	
Perforation Flag:		**Who Updated:**	
Plate Attached by:		**When Updated:**	
Product Tidal Flag:		**Other Information:**	
Quarter:		**Who Created:**	
Reports Flag:		**Info Other:**	
Ground Water Flag:		**Info Site:**	
Sieve Flag:		**Accepted by:**	
Site Flag:		**Source Application:**	
Other Flag:		**Well ID Plate Atta:**	TOP OF CASING
Pump Flag:		**Clos End Date:**	
Screen Flag:		**Clos Mthd Cd:**	
Screen Bottom Cd:		**Clos Mthd:**	
Screen Bottom:		**Clos Reason:**	
Screen Info Text:		**Clos Start Date:**	
Screen Intake Cd:		**Development Hours:**	
Screen Intake:		**Develop Method Cd:**	
Screen Length:		**Develop Meth Desc:**	
Screen Mfr:		**Final Casing Stick:**	
Screen Mtl Cd:		**Gnd Elev Mthd Cd:**	UNKNOWN

Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:	DEPT OF HIGHWAYS YARD WELL		
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Island Well Drilling
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DWS		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:			
Water Supply Sys Well Name:	HIGHWAYS YARD WELL		
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		
Artesian Pressure Head Ft Agl:			

Lithology Information

Lithology Seq No:		***Who Created:***	
Lithology Desc ID:		***When Created:***	
Lithology:		***When Updated:***	
Lithology Cd:		***Who Updated:***	
Lithology Desc:		***Depth:***	From 8.00 To 12.00
Lithology Colour Cd:		***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	

Lithology Mtl: ***Rel Hardness Cd:***
Material: soft, broken shale ***Rel Hardness:***
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: soft, broken shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No: ***Who Created:***
Lithology Desc ID: ***When Created:***
Lithology: ***When Updated:***
Lithology Cd: ***Who Updated:***
Lithology Desc: ***Depth:*** From 0.00 To 8.00
Lithology Colour Cd: ***Overburden Depth:***
Lithology Colour: ***Bedrock Depth:***
Lithology Mtl Cd: ***Total Depth:***
Lithology Mtl: ***Rel Hardness Cd:***
Material: clay hardpan ***Rel Hardness:***
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: clay hardpan
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No: ***Who Created:***
Lithology Desc ID: ***When Created:***
Lithology: ***When Updated:***
Lithology Cd: ***Who Updated:***
Lithology Desc: ***Depth:*** From 12.00 To 235.00
Lithology Colour Cd: ***Overburden Depth:***
Lithology Colour: ***Bedrock Depth:***
Lithology Mtl Cd: ***Total Depth:***
Lithology Mtl: ***Rel Hardness Cd:***
Material: shale - water at 98' and 235' ***Rel Hardness:***
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: shale - water at 98' and 235'
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No: ***Who Created:***
Lithology Desc ID: ***When Created:***
Lithology: ***When Updated:***
Lithology Cd: ***Who Updated:***
Lithology Desc: ***Depth:*** From 0.00 To 0.00
Lithology Colour Cd: ***Overburden Depth:***
Lithology Colour: ***Bedrock Depth:***
Lithology Mtl Cd: ***Total Depth:***
Lithology Mtl: ***Rel Hardness Cd:***
Material: Trace of water at 98' ***Rel Hardness:***
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: Trace of water at 98'
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Water Bearing Estimated Flow:

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 0.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	" " " " 235' (salty)	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	" " " " 235' (salty)		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

---

3 | ***1 of 1*** | ***ENE/87.6*** | ***43.1 / -2.96*** | ***BC*** | ***WWIS***

Well Tag No:	12994	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1950-01-01	**Constr End Dt:**	1950-01-01
Water Depth:		**Final Well Depth:**	0.00
Est. Yield:	0.000	**Use:**	
Constr Mthd:		**Class of Well:**	
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	UNK	**Subclass of Well Cd:**	
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:		**Plan:**	
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.53712
Longitude:	-124.81839	**Zone:**	10
Easting:	368438	**Northing:**	5488756
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	0.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:		**Aquifer No:**	
Aquifer Lithology Cd:	Unconsolidated	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	

Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	B		
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			

Testing Duration Hours:
Testing Method:
Specific Yield:
Specific Storage 1 M:
Hydraulic Conductivity:
Transmissivity:
Storativity:
AVI Years:

Well Details (Cont 2)

EMS ID:
EMS:
Filter Pack from:
Filter Pack to:
Liner Dia Inches:
Liner from:
Liner Thickness Inches:
Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: NA
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc:
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Liner to:
Other Screen Bottom:
Otr Screen Mater:
Person Responsible:
Drawdown:
Co Persn Respsble: Unknown
Consultant Name:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: shale with layers of shaley sandstone
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: shale with layers of shaley sandstone
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 5.00 To 190.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:

Who Created:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 5.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	broken shale	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	broken shale		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

---

4 **1 of 2** **ESE/100.0** **45.3 / -0.80** **1151 Northwest Road Denman Island BC V0R 1T0** **EHS**

Order No:	23033000161	**Nearest Intersection:**	
Status:	C	**Municipality:**	
Report Type:	Standard Express Report	**Client Prov/State:**	BC
Report Date:	30-MAR-23	**Search Radius (km):**	.25
Date Received:	30-MAR-23	**X:**	-124.8185071
Previous Site Name:		**Y:**	49.5362293
Lot/Building Size:			
Additional Info Ordered:			

---

4 **2 of 2** **ESE/100.0** **45.3 / -0.80** **1151 Northwest Road Denman Island BC V0R 1T0** **EHS**

Order No:	23033000161	**Nearest Intersection:**	
Status:	C	**Municipality:**	
Report Type:	Standard Express Report	**Client Prov/State:**	BC
Report Date:	30-MAR-23	**Search Radius (km):**	.25
Date Received:	30-MAR-23	**X:**	-124.8185071
Previous Site Name:		**Y:**	49.5362293
Lot/Building Size:			
Additional Info Ordered:			

---

5 **1 of 1** **ESE/101.4** **45.5 / -0.52** **KIRK ROAD & NORTHWEST ROAD 1151 Northwest Road Denman Island BC** **WWIS**

Well Tag No:	95563	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1991-06-18	**Constr End Dt:**	1991-06-18
Water Depth:		**Final Well Depth:**	52.00
Est. Yield:	4.000	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:	N/A	**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	USGPM
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	NA
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	

Crew Driller Name:	David Wishart	***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	CABLE_TOOL
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	393941
Lot:	B	***Plan:***	36263
Section:	18 & 19	***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.53637
Longitude:	-124.81832	***Zone:***	10
Easting:	368441	***Northing:***	5488673
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:		***Ttl Dpth Drilled Ft Bgl:***	52.00
Bedrock Depth:	0.00	***Aquifer No:***	740
Aquifer Lithology Cd:	Bedrock	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	H		
Location Accuracy:	H (10 m) Handheld GPS with accuracy of +/- 10 metres		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:	RAWGANIQUE NATURAL BOUTIQUE, CAFE & WHOLE FOODS WATER SYSTEM		
Water Supply Well Name:	RAWGANIQUE WELL		
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:	13957	***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	

Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	6 INCHES FROM TOP OF WELL CASING
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	24.000
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:	CORNER KIRK ROAD & NORTHWEST ROAD		
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	Wishart
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Gulf Island Well Drillers
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DWS		
Licenced Status Code:	LICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:	6.00		
Water Supply Sys Well Name:	RAWGANIQUE WELL		
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:	BAILING		
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		

Artesian Pressure Head Ft Agl:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material:
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data:
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 2.00 To 15.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd: soft
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material:
Well Yield Unit Code:
Lithology Observation: AT TIME OF DRILLING 17' - 4 GPM.
Lithology Edited Data:
Lithology Raw Data:
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow: 4.0000

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 17.00 To 52.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd: hard
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material:
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data:
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 2.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd: hard

Who Created:
When Created:
When Updated:
Who Updated:

Lithology Desc:		***Depth:***	From 15.00 To 17.00
Lithology Colour Cd:		***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:		***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:			
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Casing Data

Casing ID:		***Table Used Flag:***	
Who Created:		***Casing Wall:***	
When Created:		***Casing to:***	15.00
Standard Used:		***Casing from:***	0.00
Material Code:	STEEL	***Total Length:***	
Casing Size:		***Who Updated:***	
Diameter Inches:	6.000	***When Updated:***	
Drive Shoe Ind:	Not Installed		
Casing Code:			

Production Data (as of Jan 31, 2018)

Production ID:	27504	***Max Out feet:***	
Who Created:	PROXY_EWELLS_USER	***Max Out gph:***	
When Created:	09-NOV-09	***Max Out gpm:***	
Static Level:		***Pump Gallons:***	
Tidal Flag:		***Pump Setting:***	
Test Rate:		***Pump Setting from:***	
Test Rate Units Cd:	GPM	***Pump Setting gpmh:***	
Test Duration:		***Who Updated:***	
Net Drawdown:		***When Updated:***	
Yield Estimated Method Code:	BAILING		
Recommended Pump Depth:			
Recommended Pump Rate:			

---

6 ***1 of 1*** ***ESE/102.6*** ***45.5 / -0.52*** ***1151 NORTHWEST ROAD DENMAN ISLAND BC*** ***WWIS***

Well Tag No:	93936	***Status of Well Code:***	NEW
Filter Pack Size:		***Filter Pack Size Cd:***	
Filter Pack Mtl:		***Filter Pack Mtl Cd:***	
Surf Seal Flag:		***Surf Seal Mtl:***	
Surf Seal Mthd:		***Surface Seal Depth ft:***	
Constr Start Dt:		***Constr End Dt:***	
Water Depth:		***Final Well Depth:***	
Est. Yield:		***Use:***	
Constr Mthd:		***Class of Well:***	Water supply
SubClass of Well:	N/A	***Orientation of Well:***	
Well Status:	New	***Yield Unit Code:***	
Well Use Code:		***Constr Mthd Cd:***	
Class of Well Code:	WATR_SPPLY	***Subclass of Well Cd:***	NA
Surface Seal Mtl Cd:		***Surface Seal Mthd Cd:***	
Well ID:		***Constr Report Ind:***	
Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	

Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:		***Range:***	
Township:		***PID:***	
Lot:		***Plan:***	
Section:		***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.53636
Longitude:	-124.81831	***Zone:***	10
Easting:	368442	***Northing:***	5488672
Legal Land Distr Cd:		***Legal Misc:***	
Well Diameter:	6.0	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:		***Aquifer No:***	
Aquifer Lithology Cd:	Unknown	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	

UTM Accuracy Code: H
Location Accuracy: H (10 m) Handheld GPS with accuracy of +/- 10 metres
Accepted Status:
Class of Well Codclassified by:
Observ. Well Status:
Other Chemistry Data:
Filter Pack Mtl Thickness:
Yield Units:
Water Supply System Name: RAWGANIQUE NATURAL BOUTIQUE, CAFE & WHOLE FOODS WATER SYSTEM
Water Supply Well Name: RAWGANIQUE WELL
Artesian Flow Unit Cd:
Orientation of Well Cd:
General Remarks:

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	

Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DWS		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:			
Water Supply Sys Well Name:	RAWGANIQUE WELL		
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		
Artesian Pressure Head Ft Agl:			

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
7	1 of 1	WSW/111.1	33.3 / -12.79	KIRK ROAD DENMAN ISLAND BC	WWIS

Well Tag No:	74354	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1987-04-23	**Constr End Dt:**	1987-04-23
Water Depth:		**Final Well Depth:**	96.00
Est. Yield:	0.000	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:	N/A	**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	NA
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	CABLE_TOOL
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:	15	**Plan:**	12330
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.53625
Longitude:	-124.82076	**Zone:**	10
Easting:	368264	**Northing:**	5488664
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:		**Aquifer No:**	
Aquifer Lithology Cd:	Unknown	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	
UTM Accuracy Code:	J		
Location Accuracy:	J (unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Gulf Island Well Drillers
Liner Thickness		***Consultant Name:***	

Inches:
Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: DOM
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 12.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: 1 TO 2 GPM
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: 1 TO 2 GPM
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 0.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SHALE VARYING DEGREES OF HARDNESS
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: SHALE VARYING DEGREES OF HARDNESS
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 8.00 To 96.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Who Created:

Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 8.00 To 10.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	FRACTURED SHALE	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	FRACTURED SHALE		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 8.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	BROWN CLAY & SHALE	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	BROWN CLAY & SHALE		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 0.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	AT TIME OF DRILLING	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	AT TIME OF DRILLING		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
8	1 of 1	N/136.2	42.2 / -3.86	1607 NORTHWEST RD DENMAN ISLAND BC	WWIS

Well Tag No:	68240	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1992-05-25	**Constr End Dt:**	1992-05-25

Water Depth:		**Final Well Depth:**	75.00
Est. Yield:	3.000	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	USGPM
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	CABLE_TOOL
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	16051831
Lot:	3	**Plan:**	50107
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.53806
Longitude:	-124.81969	**Zone:**	10
Easting:	368346	**Northing:**	5488863
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6.0	**Ttl Dpth Drilled Ft Bgl:**	75.00
Bedrock Depth:	11.00	**Aquifer No:**	
Aquifer Lithology Cd:	Bedrock	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	
UTM Accuracy Code:	H		
Location Accuracy:	H (10 m) Handheld GPS with accuracy of +/- 10 metres		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		**Sealant Mtl:**	
Well ID Plate No:		**Surfce Seal Length:**	
Cntrct Well Plate:		**Well Subclass by:**	
Well Sequence No:		**Type of Well Cap:**	
Observe Well No:		**User Guid:**	
Well Lic Gen Stat:		**Well Disinfect Ind:**	Not Disinfected
Old Well No:		**When Created:**	
Indian Reserve:		**Date Entered:**	
Legal Block:		**Crew Helper Name:**	
Liner Mtl Cd:		**Chemistry Lab Data:**	

Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	12.000
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:	NORTHWEST ROAD/PIERCY ROAD		
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Gulf Island Well Drillers
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DOM		
Licenced Status Code:	UNLICENSED		

Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 3.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: LOAM & CLAY
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: LOAM & CLAY
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 11.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SHALE & SANDSTONE
Well Yield Unit Code:
Lithology Observation: 2-3 GPM AT 19' TO 51'
Lithology Edited Data:
Lithology Raw Data: SHALE & SANDSTONE
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow: 2.0000
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 11.00 To 75.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Casing Data

Casing ID:
Who Created:
When Created:
Standard Used:
Material Code: STEEL
Casing Size:
Diameter Inches: 6.000
Drive Shoe Ind:
Casing Code:
Table Used Flag:
Casing Wall: 0.188
Casing to: 11.00
Casing from: 0.00
Total Length:
Who Updated:
When Updated:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
9	1 of 1	SSW/143.3	28.6 / -17.47	KIRK RD BC	WWIS

Well Tag No:	53383	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	Other
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1984-03-14	**Constr End Dt:**	
Water Depth:		**Final Well Depth:**	142.00
Est. Yield:	1.000	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	GPM
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	
Surface Seal Mtl Cd:	OTHER	**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	OTHER
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:	14	**Plan:**	12330
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.535623
Longitude:	-124.820171	**Zone:**	10
Easting:	368305	**Northing:**	5488593
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:	3.00	**Aquifer No:**	740
Aquifer Lithology Cd:	Bedrock	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	

UTM Accuracy Code:	B
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping
Accepted Status:	
Class of Well Codclassified by:	
Observ. Well Status:	
Other Chemistry Data:	
Filter Pack Mtl Thickness:	
Yield Units:	Gallons per Minute (U.S./Imperial)
Water Supply System Name:	
Water Supply Well Name:	
Artesian Flow Unit Cd:	
Orientation of Well Cd:	
General Remarks:	

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:	OTHER	***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:	Other	***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Island Well Drilling
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			

Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: DOM
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 8.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: 1 GPM
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: 1 GPM
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 0.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: clay till
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: clay till
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 3.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Who Created:
When Created:
When Updated:

Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 3.00 To 6.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	brown shale	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	brown shale		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 6.00 To 142.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	black shale	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	black shale		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

---

10 | **1 of 1** | **WSW/146.3** | **29.4 / -16.67** | **3176 KIRK ROAD DENMAN ISLAND BC** | **WWIS**

Well Tag No:	83424	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	Bentonite clay
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	2001-10-05	**Constr End Dt:**	2001-10-05
Water Depth:		**Final Well Depth:**	160.00
Est. Yield:		**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:	N/A	**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	NA
Surface Seal Mtl Cd:	BNTITE_CLY	**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:	ANDY NEGGERS	**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	AIR_ROTARY
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	

Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:	14	**Plan:**	32
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.53628
Longitude:	-124.82135	**Zone:**	10
Easting:	368221	**Northing:**	5488668
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6	**Ttl Dpth Drilled Ft Bgl:**	160.00
Bedrock Depth:		**Aquifer No:**	
Aquifer Lithology Cd:	Unknown	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	

UTM Accuracy Code: J

Location Accuracy: J (unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel

Accepted Status:
Class of Well Codclassified by:
Observ. Well Status:
Other Chemistry Data:
Filter Pack Mtl Thickness:
Yield Units:
Water Supply System Name:
Water Supply Well Name:
Artesian Flow Unit Cd:
Orientation of Well Cd:
General Remarks:

Well Details (Cont.)

Permit No:		**Sealant Mtl:**	
Well ID Plate No:		**Surfce Seal Length:**	
Cntrct Well Plate:		**Well Subclass by:**	
Well Sequence No:		**Type of Well Cap:**	
Observe Well No:		**User Guid:**	
Well Lic Gen Stat:		**Well Disinfect Ind:**	Not Disinfected
Old Well No:		**When Created:**	
Indian Reserve:		**Date Entered:**	
Legal Block:		**Crew Helper Name:**	
Liner Mtl Cd:		**Chemistry Lab Data:**	
Liner Mtl:		**Field Lab Data:**	
Lithology Flag:		**Other Chem Data:**	
Lith Measure Unit:		**Type of Work:**	
Lith Desc Count:		**Contractor Info 2:**	
Perforation Flag:		**Who Updated:**	
Plate Attached by:		**When Updated:**	
Product Tidal Flag:		**Other Information:**	
Quarter:		**Who Created:**	
Reports Flag:		**Info Other:**	
Ground Water Flag:		**Info Site:**	
Sieve Flag:		**Accepted by:**	
Site Flag:		**Source Application:**	
Other Flag:		**Well ID Plate Atta:**	
Pump Flag:		**Clos End Date:**	
Screen Flag:		**Clos Mthd Cd:**	
Screen Bottom Cd:		**Clos Mthd:**	
Screen Bottom:		**Clos Reason:**	
Screen Info Text:		**Clos Start Date:**	
Screen Intake Cd:		**Development Hours:**	
Screen Intake:		**Develop Method Cd:**	

Screen Length:		**Develop Meth Desc:**	
Screen Mfr:		**Final Casing Stick:**	18.000
Screen Mtl Cd:		**Gnd Elev Mthd Cd:**	UNKNOWN
Screen Mtl:		**Gnd Elev Mthd:**	
Screen Opening Cd:		**Old Mapsheet:**	
Screen Opening:		**Coordinate X:**	
Screen Type Cd:		**Coordinate Z:**	
Screen Type:		**Coordinate Y:**	
Screen Wire:		**Pump Desc:**	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		**Liner to:**	
EMS:		**Other Screen Bottom:**	
Filter Pack from:		**Otr Screen Mater:**	
Filter Pack to:		**Person Responsible:**	
Liner Dia Inches:		**Drawdown:**	
Liner from:		**Co Persn Respsble:**	Red William's Drilling
Liner Thickness Inches:		**Consultant Name:**	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DOM		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:			
Water Supply Sys Well Name:			
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		
Artesian Pressure Head Ft Agl:			

Lithology Information

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 2.00

Lithology Colour Cd:		***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:	BROWN SOIL	***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	BROWN SOIL		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		***Who Created:***	
Lithology Desc ID:		***When Created:***	
Lithology:		***When Updated:***	
Lithology Cd:		***Who Updated:***	
Lithology Desc:		***Depth:***	From 2.00 To 160.00
Lithology Colour Cd:		***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:	SHALEY SANDSTONE	***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	SHALEY SANDSTONE		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Casing Data

Casing ID:		***Table Used Flag:***	
Who Created:		***Casing Wall:***	0.188
When Created:		***Casing to:***	8.50
Standard Used:		***Casing from:***	1.50
Material Code:	STEEL	***Total Length:***	
Casing Size:		***Who Updated:***	
Diameter Inches:	6.000	***When Updated:***	
Drive Shoe Ind:	Not Installed		
Casing Code:			

Casing ID:		***Table Used Flag:***	
Who Created:		***Casing Wall:***	
When Created:		***Casing to:***	160.00
Standard Used:		***Casing from:***	8.50
Material Code:	OPEN_HOLE	***Total Length:***	
Casing Size:		***Who Updated:***	
Diameter Inches:		***When Updated:***	
Drive Shoe Ind:	Not Installed		
Casing Code:			

Production Data (as of Jan 31, 2018)

Production ID:	13450	***Max Out feet:***	
Who Created:	WELLS	***Max Out gph:***	
When Created:	09-NOV-05	***Max Out gpm:***	
Static Level:		***Pump Gallons:***	
Tidal Flag:	No	***Pump Setting:***	GrdLvl
Test Rate:		***Pump Setting from:***	

Test Rate Units Cd:	UNK	**Pump Setting gpmh:**	
Test Duration:		**Who Updated:**	PROXY_WELLS_CONVERSION
Net Drawdown:		**When Updated:**	13-FEB-07
Yield Estimated Method Code:	UNK		
Recommended Pump Depth:			
Recommended Pump Rate:			

11 **1 of 1** **SSE/164.5** **34.7 / -11.32** **DENMAN ISLAND BC** **WWIS**

Well Tag No:	97106	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1992-09-12	**Constr End Dt:**	1992-09-12
Water Depth:		**Final Well Depth:**	115.00
Est. Yield:	1.330	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:	N/A	**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	GPH
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	NA
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:	DAVID WISHART	**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	CABLE_TOOL
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	290483
Lot:		**Plan:**	34413
Section:		**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.53541
Longitude:	-124.81894	**Zone:**	10
Easting:	368393	**Northing:**	5488567
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:		**Ttl Dpth Drilled Ft Bgl:**	115.00
Bedrock Depth:		**Aquifer No:**	
Aquifer Lithology Cd:	Bedrock	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	
UTM Accuracy Code:	G		
Location Accuracy:	G (unknown, accuracy based on parcel size) No ICF cadastre, poor or no location sketch; site located in center of primary parcel		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:	Gallons per Hour (U.S./Imperial)		
Water Supply System Name:			

Water Supply Well Name:
Artesian Flow Unit Cd:
Orientation of Well Cd:
General Remarks:

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	20.000
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:	ILLEGIBLE ON FORM		
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	

EMS:
Filter Pack from:
Filter Pack to:
Liner Dia Inches:
Liner from:
Liner Thickness Inches:
Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: DOM
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc:
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code: BAILING
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Other Screen Bottom:
Otr Screen Mater:
Person Responsible:
Drawdown:
Co Persn Respsble: Gulf Island Well Drillers
Consultant Name:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: OVERBURDEN
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: OVERBURDEN
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 3.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SHALE
Well Yield Unit Code:
Lithology Observation: AT TIME OF DRILLING: 21 TRICKLE, 55 TRICKLE, 88 WATER/ 80GPH
Lithology Edited Data:
Lithology Raw Data: SHALE

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 12.00 To 115.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SHALE
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: SHALE
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 8.00 To 12.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd: Soft
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: CLAY
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: CLAY
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 3.00 To 8.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Casing Data

Casing ID:
Who Created:
When Created:
Standard Used:
Material Code: STEEL
Casing Size:
Diameter Inches: 6.000
Drive Shoe Ind: Not Installed
Casing Code:

Table Used Flag:
Casing Wall: 0.188
Casing to: 12.33
Casing from: 0.00
Total Length:
Who Updated:
When Updated:

Production Data (as of Jan 31, 2018)

Production ID: 29298
Who Created: PROXY_EWELLS_USER
When Created: 13-JAN-10
Static Level:
Tidal Flag:
Test Rate:

Max Out feet:
Max Out gph:
Max Out gpm:
Pump Gallons:
Pump Setting:
Pump Setting from:

Test Rate Units Cd:	GPM	**Pump Setting gpmh:**	
Test Duration:		**Who Updated:**	
Net Drawdown:		**When Updated:**	
Yield Estimated Method Code:	BAILING		
Recommended Pump Depth:			
Recommended Pump Rate:			

12 **1 of 1** **WSW/173.4** **23.1 / -22.92** **BC** **WWIS**

Well Tag No:	12989	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1950-01-01	**Constr End Dt:**	1950-01-01
Water Depth:		**Final Well Depth:**	23.00
Est. Yield:	0.000	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	EXCAVATING
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:		**Plan:**	
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.536077
Longitude:	-124.821611	**Zone:**	10
Easting:	368202	**Northing:**	5488646
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	0.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:		**Aquifer No:**	740
Aquifer Lithology Cd:	Bedrock	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	
UTM Accuracy Code:	B		
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			

Artesian Flow Unit Cd:
Orientation of Well Cd:
General Remarks:

Well Details (Cont.)

Permit No:
Well ID Plate No:
Cntrct Well Plate:
Well Sequence No:
Observe Well No:
Well Lic Gen Stat:
Old Well No:
Indian Reserve:
Legal Block:
Liner Mtl Cd:
Liner Mtl:
Lithology Flag:
Lith Measure Unit:
Lith Desc Count:
Perforation Flag:
Plate Attached by:
Product Tidal Flag:
Quarter:
Reports Flag:
Ground Water Flag:
Sieve Flag:
Site Flag:
Other Flag:
Pump Flag:
Screen Flag:
Screen Bottom Cd:
Screen Bottom:
Screen Info Text:
Screen Intake Cd:
Screen Intake:
Screen Length:
Screen Mfr:
Screen Mtl Cd:
Screen Mtl:
Screen Opening Cd:
Screen Opening:
Screen Type Cd:
Screen Type:
Screen Wire:
Boundary Effect Code:
Closure Details:
Development Notes:
Well Location:
Legal Miscellaneous:
Analytic Solution Type:
Testing Duration Hours:
Testing Method:
Specific Yield:
Specific Storage 1 M:
Hydraulic Conductivity:
Transmissivity:
Storativity:
AVI Years:

Sealant Mtl:
Surfce Seal Length:
Well Subclass by:
Type of Well Cap:
User Guid:
Well Disinfect Ind: Not Disinfected
When Created:
Date Entered:
Crew Helper Name:
Chemistry Lab Data:
Field Lab Data:
Other Chem Data:
Type of Work:
Contractor Info 2:
Who Updated:
When Updated:
Other Information:
Who Created:
Info Other:
Info Site:
Accepted by:
Source Application:
Well ID Plate Atta:
Clos End Date:
Clos Mthd Cd:
Clos Mthd:
Clos Reason:
Clos Start Date:
Development Hours:
Develop Method Cd:
Develop Meth Desc:
Final Casing Stick:
Gnd Elev Mthd Cd: UNKNOWN
Gnd Elev Mthd:
Old Mapsheet:
Coordinate X:
Coordinate Z:
Coordinate Y:
Pump Desc:

Well Details (Cont 2)

EMS ID:
EMS:

Liner to:
Other Screen Bottom:

Filter Pack from:		**Otr Screen Mater:**	
Filter Pack to:		**Person Responsible:**	
Liner Dia Inches:		**Drawdown:**	
Liner from:		**Co Persn Respsble:**	Unknown
Liner Thickness Inches:		**Consultant Name:**	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DOM		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:	20.00		
Water Supply Sys Well Name:			
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		
Artesian Pressure Head Ft Agl:			

Lithology Information

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 0.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	Aquifer data: shale	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	Aquifer data: shale		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

---

13 | ***1 of 1*** | ***SE/193.2*** | ***40.2 / -5.89*** | ***ABOVE FERRY DOCK BC*** | ***WWIS***

Well Tag No:	32822	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1975-06-30	**Constr End Dt:**	1975-06-30
Water Depth:		**Final Well Depth:**	115.00
Est. Yield:	0.000	**Use:**	
Constr Mthd:		**Class of Well:**	
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	

Well Use Code:		***Constr Mthd Cd:***	
Class of Well Code:	UNK	***Subclass of Well Cd:***	
Surface Seal Mtl Cd:		***Surface Seal Mthd Cd:***	
Well ID:		***Constr Report Ind:***	
Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	OTHER
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	
Lot:	11	***Plan:***	12330
Section:	18	***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.535255
Longitude:	-124.818429	***Zone:***	10
Easting:	368430	***Northing:***	5488549
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:	6.0	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:	7.00	***Aquifer No:***	740
Aquifer Lithology Cd:	Bedrock	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	B		
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	

Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Island Well Drilling
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	UNK		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:	4.00		
Water Supply Sys Well Name:			
Well Orientation:	VERTICAL		

Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: soft shale
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: soft shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 7.00 To 12.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: clay hardpan
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: clay hardpan
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 7.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: shale
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 12.00 To 115.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
14	1 of 1	ESE/198.4	45.2 / -0.86	NORTHWEST RD BC	WWIS

Well Tag No:	55564	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	Other
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1985-11-28	**Constr End Dt:**	
Water Depth:		**Final Well Depth:**	147.00
Est. Yield:	1.000	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	GPM
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	
Surface Seal Mtl Cd:	OTHER	**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	OTHER
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:	N	**Plan:**	981R
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.536105
Longitude:	-124.817023	**Zone:**	10
Easting:	368534	**Northing:**	5488641
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:	3.00	**Aquifer No:**	740
Aquifer Lithology Cd:	Bedrock	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	

UTM Accuracy Code:	B
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping
Accepted Status:	
Class of Well Codclassified by:	
Observ. Well Status:	
Other Chemistry Data:	
Filter Pack Mtl Thickness:	
Yield Units:	Gallons per Minute (U.S./Imperial)
Water Supply System Name:	
Water Supply Well Name:	
Artesian Flow Unit Cd:	
Orientation of Well Cd:	
General Remarks:	

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:	OTHER	***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:	Other	***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Gulf Island Well Drillers
Liner Thickness Inches:		***Consultant Name:***	

Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: DOM
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 45.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: sandstone and shale
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: sandstone and shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 0.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: conglomerate
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: conglomerate
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 2.50 To 9.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Who Created:
When Created:

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB

Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 2.50
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	sand and gravel	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	sand and gravel		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 9.00 To 147.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	sandstone with odd layers of intermitten	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	sandstone with odd layers of intermitten		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 0.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	at time of drilling - 1 to 2 GPM	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	at time of drilling - 1 to 2 GPM		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

15	***1 of 1***	***ESE/202.1***	***42.4 / -3.62***	***1111 NORTHWEST ROAD DENMAN ISLAND BC***	***WWIS***

Well Tag No:	93993	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:		**Constr End Dt:**	
Water Depth:		**Final Well Depth:**	185.00

Est. Yield:		***Use:***	
Constr Mthd:		***Class of Well:***	Water supply
SubClass of Well:	N/A	***Orientation of Well:***	
Well Status:	New	***Yield Unit Code:***	
Well Use Code:		***Constr Mthd Cd:***	
Class of Well Code:	WATR_SPPLY	***Subclass of Well Cd:***	NA
Surface Seal Mtl Cd:		***Surface Seal Mthd Cd:***	
Well ID:		***Constr Report Ind:***	
Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:		***Range:***	
Township:		***PID:***	
Lot:		***Plan:***	
Section:		***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.535594
Longitude:	-124.817488	***Zone:***	10
Easting:	368499	***Northing:***	5488585
Legal Land Distr Cd:		***Legal Misc:***	
Well Diameter:	6	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:		***Aquifer No:***	
Aquifer Lithology Cd:	Unknown	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	H		
Location Accuracy:	H (10 m) Handheld GPS with accuracy of +/- 10 metres		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:	13960	***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	

Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	TOP OF CASING
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DWS		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			

Static Level Before Test:	
Static Water Level Ft Btoc:	
Water Supply Sys Well Name:	
Well Orientation:	VERTICAL
Yield Estimation Duration:	
Yield Estimation Method Code:	
Yield Estimation Rate:	
Alternative Specs Submitted:	False
Artesian Conditions:	False
Artesian Pressure Head Ft Agl:	

16 **1 of 1** **E/205.5** **47.9 / 1.82** **BC** **WWIS**

Well Tag No:	12996	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1950-01-01	**Constr End Dt:**	1950-01-01
Water Depth:		**Final Well Depth:**	13.00
Est. Yield:	0.000	**Use:**	
Constr Mthd:		**Class of Well:**	
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	UNK	**Subclass of Well Cd:**	
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:	1	**Plan:**	981R
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.536378
Longitude:	-124.816771	**Zone:**	10
Easting:	368553	**Northing:**	5488671
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	0.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:		**Aquifer No:**	
Aquifer Lithology Cd:	Unconsolidated	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	
UTM Accuracy Code:	B		
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			

Filter Pack Mtl Thickness:
Yield Units:
Water Supply System Name:
Water Supply Well Name:
Artesian Flow Unit Cd:
Orientation of Well Cd:
General Remarks:

Well Details (Cont.)

Permit No:
Well ID Plate No:
Cntrct Well Plate:
Well Sequence No:
Observe Well No:
Well Lic Gen Stat:
Old Well No:
Indian Reserve:
Legal Block:
Liner Mtl Cd:
Liner Mtl:
Lithology Flag:
Lith Measure Unit:
Lith Desc Count:
Perforation Flag:
Plate Attached by:
Product Tidal Flag:
Quarter:
Reports Flag:
Ground Water Flag:
Sieve Flag:
Site Flag:
Other Flag:
Pump Flag:
Screen Flag:
Screen Bottom Cd:
Screen Bottom:
Screen Info Text:
Screen Intake Cd:
Screen Intake:
Screen Length:
Screen Mfr:
Screen Mtl Cd:
Screen Mtl:
Screen Opening Cd:
Screen Opening:
Screen Type Cd:
Screen Type:
Screen Wire:
Boundary Effect Code:
Closure Details:
Development Notes:
Well Location:
Legal Miscellaneous:
Analytic Solution Type:
Testing Duration Hours:
Testing Method:
Specific Yield:
Specific Storage 1 M:
Hydraulic Conductivity:
Transmissivity:
Storativity:
AVI Years:

Sealant Mtl:
Surfce Seal Length:
Well Subclass by:
Type of Well Cap:
User Guid:
Well Disinfect Ind: Not Disinfected
When Created:
Date Entered:
Crew Helper Name:
Chemistry Lab Data:
Field Lab Data:
Other Chem Data:
Type of Work:
Contractor Info 2:
Who Updated:
When Updated:
Other Information:
Who Created:
Info Other:
Info Site:
Accepted by:
Source Application:
Well ID Plate Atta:
Clos End Date:
Clos Mthd Cd:
Clos Mthd:
Clos Reason:
Clos Start Date:
Development Hours:
Develop Method Cd:
Develop Meth Desc:
Final Casing Stick:
Gnd Elev Mthd Cd: UNKNOWN
Gnd Elev Mthd:
Old Mapsheet:
Coordinate X:
Coordinate Z:
Coordinate Y:
Pump Desc:

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Unknown
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	UNK		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:	4.00		
Water Supply Sys Well Name:			
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		
Artesian Pressure Head Ft Agl:			

17	***1 of 1***	***ESE/210.8***	***40.5 / -5.53***	***N W RD & KIRK RR BC***	***WWIS***

Well Tag No:	46980	***Status of Well Code:***	NEW
Filter Pack Size:		***Filter Pack Size Cd:***	
Filter Pack Mtl:		***Filter Pack Mtl Cd:***	
Surf Seal Flag:		***Surf Seal Mtl:***	
Surf Seal Mthd:		***Surface Seal Depth ft:***	
Constr Start Dt:	1981-01-01	***Constr End Dt:***	1981-01-01
Water Depth:		***Final Well Depth:***	185.00
Est. Yield:	0.200	***Use:***	
Constr Mthd:		***Class of Well:***	Water supply
SubClass of Well:		***Orientation of Well:***	
Well Status:	New	***Yield Unit Code:***	GPM
Well Use Code:		***Constr Mthd Cd:***	
Class of Well Code:	WATR_SPPLY	***Subclass of Well Cd:***	
Surface Seal Mtl Cd:		***Surface Seal Mthd Cd:***	
Well ID:		***Constr Report Ind:***	
Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	OTHER
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	

Lot:	9	**Plan:**	12330
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.5355
Longitude:	-124.81746	**Zone:**	10
Easting:	368501	**Northing:**	5488575
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:	5.00	**Aquifer No:**	740
Aquifer Lithology Cd:	Unconsolidated	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	

UTM Accuracy Code: B
Location Accuracy: B (20 m) Digitized from 1:5,000 mapping
Accepted Status:
Class of Well Codclassified by:
Observ. Well Status:
Other Chemistry Data:
Filter Pack Mtl Thickness:
Yield Units: Gallons per Minute (U.S./Imperial)
Water Supply System Name:
Water Supply Well Name:
Artesian Flow Unit Cd:
Orientation of Well Cd:
General Remarks:

Well Details (Cont.)

Permit No:		**Sealant Mtl:**	
Well ID Plate No:		**Surfce Seal Length:**	
Cntrct Well Plate:		**Well Subclass by:**	
Well Sequence No:		**Type of Well Cap:**	
Observe Well No:		**User Guid:**	
Well Lic Gen Stat:		**Well Disinfect Ind:**	Not Disinfected
Old Well No:		**When Created:**	
Indian Reserve:		**Date Entered:**	
Legal Block:		**Crew Helper Name:**	
Liner Mtl Cd:		**Chemistry Lab Data:**	
Liner Mtl:		**Field Lab Data:**	
Lithology Flag:		**Other Chem Data:**	
Lith Measure Unit:		**Type of Work:**	
Lith Desc Count:		**Contractor Info 2:**	
Perforation Flag:		**Who Updated:**	
Plate Attached by:		**When Updated:**	
Product Tidal Flag:		**Other Information:**	
Quarter:		**Who Created:**	
Reports Flag:		**Info Other:**	
Ground Water Flag:		**Info Site:**	
Sieve Flag:		**Accepted by:**	
Site Flag:		**Source Application:**	
Other Flag:		**Well ID Plate Atta:**	
Pump Flag:		**Clos End Date:**	
Screen Flag:		**Clos Mthd Cd:**	
Screen Bottom Cd:		**Clos Mthd:**	
Screen Bottom:		**Clos Reason:**	
Screen Info Text:		**Clos Start Date:**	
Screen Intake Cd:		**Development Hours:**	
Screen Intake:		**Develop Method Cd:**	
Screen Length:		**Develop Meth Desc:**	
Screen Mfr:		**Final Casing Stick:**	
Screen Mtl Cd:		**Gnd Elev Mthd Cd:**	UNKNOWN

Screen Mtl:
Screen Opening Cd:
Screen Opening:
Screen Type Cd:
Screen Type:
Screen Wire:
Boundary Effect Code:
Closure Details:
Development Notes:
Well Location:
Legal Miscellaneous:
Analytic Solution Type:
Testing Duration Hours:
Testing Method:
Specific Yield:
Specific Storage 1 M:
Hydraulic Conductivity:
Transmissivity:
Storativity:
AVI Years:

Gnd Elev Mthd:
Old Mapsheet:
Coordinate X:
Coordinate Z:
Coordinate Y:
Pump Desc:

Well Details (Cont 2)

EMS ID:
EMS:
Filter Pack from:
Filter Pack to:
Liner Dia Inches:
Liner from:
Liner Thickness Inches:
Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: DOM
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 5.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Liner to:
Other Screen Bottom:
Otr Screen Mater:
Person Responsible:
Drawdown:
Co Persn Respsble: Island Well Drilling
Consultant Name:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 5.00
Overburden Depth:
Bedrock Depth:
Total Depth:

Lithology Mtl: | **Rel Hardness Cd:**
Material: clay | **Rel Hardness:**
Well Yield Unit Code:
Lithology Observation: overburden
Lithology Edited Data:
Lithology Raw Data: clay
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No: | **Who Created:**
Lithology Desc ID: | **When Created:**
Lithology: | **When Updated:**
Lithology Cd: | **Who Updated:**
Lithology Desc: | **Depth:** From 5.00 To 208.00
Lithology Colour Cd: | **Overburden Depth:**
Lithology Colour: | **Bedrock Depth:**
Lithology Mtl Cd: | **Total Depth:**
Lithology Mtl: | **Rel Hardness Cd:**
Material: shale | **Rel Hardness:**
Well Yield Unit Code:
Lithology Observation: source of water: 108' - 15 GPM (fresh), 225' - 1 GPM (salty). open hole, from 20-185'
Lithology Edited Data:
Lithology Raw Data: shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No: | **Who Created:**
Lithology Desc ID: | **When Created:**
Lithology: | **When Updated:**
Lithology Cd: shaley | **Who Updated:**
Lithology Desc: | **Depth:** From 208.00 To 242.00
Lithology Colour Cd: | **Overburden Depth:**
Lithology Colour: | **Bedrock Depth:**
Lithology Mtl Cd: | **Total Depth:**
Lithology Mtl: | **Rel Hardness Cd:**
Material: sandstone | **Rel Hardness:**
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: sandstone
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

---

18 | **1 of 1** | **E/211.4** | **47.9 / 1.82** | **1169 NORTHWEST ROAD DENMAN ISLAND BC** | **WWIS**

Well Tag No: 93988 | **Status of Well Code:** NEW
Filter Pack Size: | **Filter Pack Size Cd:**
Filter Pack Mtl: | **Filter Pack Mtl Cd:**
Surf Seal Flag: | **Surf Seal Mtl:**
Surf Seal Mthd: | **Surface Seal Depth ft:**
Constr Start Dt: | **Constr End Dt:**
Water Depth: | **Final Well Depth:**
Est. Yield: | **Use:**
Constr Mthd: | **Class of Well:** Water supply
SubClass of Well: N/A | **Orientation of Well:**
Well Status: New | **Yield Unit Code:**
Well Use Code: | **Constr Mthd Cd:**
Class of Well Code: WATR_SPPLY | **Subclass of Well Cd:** NA

Surface Seal Mtl Cd:		***Surface Seal Mthd Cd:***	
Well ID:		***Constr Report Ind:***	
Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	
Lot:		***Plan:***	
Section:		***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.536344
Longitude:	-124.816701	***Zone:***	10
Easting:	368558	***Northing:***	5488667
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:	6	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:		***Aquifer No:***	
Aquifer Lithology Cd:	Unknown	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	H		
Location Accuracy:	H (10 m) Handheld GPS with accuracy of +/- 10 metres		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:	DENMAN ISLAND PRESCHOOL AND COMMUNITY HALL		
Water Supply Well Name:	DENMAN ISLAND COMMUNITY HALL		
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:	14314	***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	

Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	TOP OF CASING
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DWS		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:			
Water Supply Sys Well Name:	DENMAN ISLAND COMMUNITY HALL		
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			

Yield Estimation Rate:	
Alternative Specs Submitted:	False
Artesian Conditions:	False
Artesian Pressure Head Ft Agl:	

Map Key	Number of Records	Direction/ Distance (m)	Elev/Diff (m)	Site	DB
19	1 of 1	E/216.1	48.3 / 2.28	P#15501F/NORTHWEST ROAD DENMAN ISLAND BC	WWIS

Well Tag No:	74925	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	Other
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1998-08-29	**Constr End Dt:**	
Water Depth:		**Final Well Depth:**	124.00
Est. Yield:	3.000	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	USGPM
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	
Surface Seal Mtl Cd:	OTHER	**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	OTHER
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	
BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:		**Plan:**	15501
Section:		**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.536381
Longitude:	-124.816619	**Zone:**	10
Easting:	368564	**Northing:**	5488671
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:	13.00	**Aquifer No:**	740
Aquifer Lithology Cd:	Bedrock	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	
UTM Accuracy Code:	B		
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			

General Remarks:

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:	OTHER	***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:	Other	***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	

Liner Dia Inches:
Liner from:
Liner Thickness Inches:
Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: DOM
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 17.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Drawdown:
Co Persn Respsble: Gulf Island Well Drillers
Consultant Name:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: Soft Shale
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: Soft Shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 8.00 To 13.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: Intermitten layers Hard/Soft Shale
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: Intermitten layers Hard/Soft Shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 18.00 To 124.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Water Bearing Estimated Flow:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: Conglomerate
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: Conglomerate
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 8.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: Hard Shale
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: Hard Shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 13.00 To 18.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

---

20 ***1 of 1*** ***ESE/221.2*** ***46.2 / 0.19*** ***BC*** ***WWIS***

Well Tag No: 32364
Filter Pack Size:
Filter Pack Mtl:
Surf Seal Flag:
Surf Seal Mthd:
Constr Start Dt: 1975-04-25
Water Depth:
Est. Yield: 0.000
Constr Mthd:
SubClass of Well:
Well Status: New
Well Use Code:
Class of Well Code: UNK
Surface Seal Mtl Cd:
Well ID:
Consultant Company:
Crew Driller Name:
Gravel Packed From:
Driller Company Cd:
Driller Well ID:
Meridian:
Drilling Mthd:

Status of Well Code: NEW
Filter Pack Size Cd:
Filter Pack Mtl Cd:
Surf Seal Mtl:
Surface Seal Depth ft:
Constr End Dt: 1975-04-25
Final Well Depth: 101.00
Use:
Class of Well:
Orientation of Well:
Yield Unit Code:
Constr Mthd Cd:
Subclass of Well Cd:
Surface Seal Mthd Cd:
Constr Report Ind:
Contractor Info 1:
Gravel Packed Flag:
Gravel Packed To:
Drilling Company:
Surfac Seal Thck (In):
Drilling Mthd Cd: OTHER
Elevation:

Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	
Lot:	N	***Plan:***	981R
Section:	18	***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.535974
Longitude:	-124.81677	***Zone:***	10
Easting:	368552	***Northing:***	5488626
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:	6.0	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:	9.00	***Aquifer No:***	740
Aquifer Lithology Cd:	Bedrock	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	B		
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	

Screen Bottom:
Screen Info Text:
Screen Intake Cd:
Screen Intake:
Screen Length:
Screen Mfr:
Screen Mtl Cd:
Screen Mtl:
Screen Opening Cd:
Screen Opening:
Screen Type Cd:
Screen Type:
Screen Wire:
Boundary Effect Code:
Closure Details:
Development Notes:
Well Location:
Legal Miscellaneous:
Analytic Solution Type:
Testing Duration Hours:
Testing Method:
Specific Yield:
Specific Storage 1 M:
Hydraulic Conductivity:
Transmissivity:
Storativity:
AVI Years:

Clos Reason:
Clos Start Date:
Development Hours:
Develop Method Cd:
Develop Meth Desc:
Final Casing Stick:
Gnd Elev Mthd Cd: UNKNOWN
Gnd Elev Mthd:
Old Mapsheet:
Coordinate X:
Coordinate Z:
Coordinate Y:
Pump Desc:

Well Details (Cont 2)

EMS ID:
EMS:
Filter Pack from:
Filter Pack to:
Liner Dia Inches:
Liner from:
Liner Thickness Inches:
Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: UNK
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 9.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Liner to:
Other Screen Bottom:
Otr Screen Mater:
Person Responsible:
Drawdown:
Co Persn Respsble: Island Well Drilling
Consultant Name:

Lithology Information

Lithology Seq No:

Who Created:

Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 9.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	stoney clay	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	stoney clay		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 9.00 To 101.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:		**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	shale	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	shale		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

---

21 **1 of 1** **WSW/230.0** **17.5 / -28.51** **KIRK RD BC** **WWIS**

Well Tag No:	47773	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1981-04-28	**Constr End Dt:**	1981-04-28
Water Depth:		**Final Well Depth:**	162.00
Est. Yield:	0.700	**Use:**	
Constr Mthd:		**Class of Well:**	Water supply
SubClass of Well:	N/A	**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	GPM
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	WATR_SPPLY	**Subclass of Well Cd:**	NA
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	AIR_ROTARY
Drilling Mthd:		**Elevation:**	
Existing Well Tag No:		**Chemistry Site ID:**	
Observ. Well No:		**Well Owner:**	
Owner's Well No:		**Accepted Status Cd:**	

BCGS ID:		**BCGS Mapsheet:**	
Seq No:		**District Lot:**	
Land District:	NANAIMO	**Range:**	
Township:		**PID:**	
Lot:	B	**Plan:**	34413
Section:	18	**Island:**	
Constr Rpt Rcvd Ind:		**Latitude:**	49.53553
Longitude:	-124.82198	**Zone:**	10
Easting:	368174	**Northing:**	5488586
Legal Land Distr Cd:	32	**Legal Misc:**	
Well Diameter:	6.0	**Ttl Dpth Drilled Ft Bgl:**	
Bedrock Depth:	5.00	**Aquifer No:**	740
Aquifer Lithology Cd:	Bedrock	**Aquifer Lithology:**	
Artesian Flow:		**Artesian Units:**	
Artesian P PSI:		**Alteration End Date:**	
Alteration Start Date:		**Alt Specs Ind:**	
Alt Specs Rcvd Ind:		**Backfill Depth ft:**	
Backfill Material:		**Backfill Type:**	
Capture Zone Flag:		**Water Quality Colour:**	
Water Quality Odour:		**Water Utility Flag:**	

UTM Accuracy Code:	B
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping
Accepted Status:	
Class of Well Codclassified by:	
Observ. Well Status:	
Other Chemistry Data:	
Filter Pack Mtl Thickness:	
Yield Units:	Gallons per Minute (U.S./Imperial)
Water Supply System Name:	
Water Supply Well Name:	
Artesian Flow Unit Cd:	
Orientation of Well Cd:	
General Remarks:	

Well Details (Cont.)

Permit No:		**Sealant Mtl:**	
Well ID Plate No:		**Surfce Seal Length:**	
Cntrct Well Plate:		**Well Subclass by:**	
Well Sequence No:		**Type of Well Cap:**	
Observe Well No:		**User Guid:**	
Well Lic Gen Stat:		**Well Disinfect Ind:**	Not Disinfected
Old Well No:		**When Created:**	
Indian Reserve:		**Date Entered:**	
Legal Block:		**Crew Helper Name:**	
Liner Mtl Cd:		**Chemistry Lab Data:**	
Liner Mtl:		**Field Lab Data:**	
Lithology Flag:		**Other Chem Data:**	
Lith Measure Unit:		**Type of Work:**	
Lith Desc Count:		**Contractor Info 2:**	
Perforation Flag:		**Who Updated:**	
Plate Attached by:		**When Updated:**	
Product Tidal Flag:		**Other Information:**	
Quarter:		**Who Created:**	
Reports Flag:		**Info Other:**	
Ground Water Flag:		**Info Site:**	
Sieve Flag:		**Accepted by:**	
Site Flag:		**Source Application:**	
Other Flag:		**Well ID Plate Atta:**	
Pump Flag:		**Clos End Date:**	
Screen Flag:		**Clos Mthd Cd:**	
Screen Bottom Cd:		**Clos Mthd:**	
Screen Bottom:		**Clos Reason:**	
Screen Info Text:		**Clos Start Date:**	
Screen Intake Cd:		**Development Hours:**	

Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Island Well Drilling
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	DOM		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:	11.00		
Water Supply Sys Well Name:			
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		
Artesian Pressure Head Ft Agl:			

Lithology Information

Lithology Seq No:		***Who Created:***	
Lithology Desc ID:		***When Created:***	
Lithology:		***When Updated:***	
Lithology Cd:		***Who Updated:***	

Lithology Desc:		***Depth:***	From 5.00 To 11.00
Lithology Colour Cd:	brown	***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:	shale	***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	shale		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		***Who Created:***	
Lithology Desc ID:		***When Created:***	
Lithology:		***When Updated:***	
Lithology Cd:		***Who Updated:***	
Lithology Desc:		***Depth:***	From 0.00 To 5.00
Lithology Colour Cd:		***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:	clay till	***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:	overburden		
Lithology Edited Data:			
Lithology Raw Data:	clay till		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		***Who Created:***	
Lithology Desc ID:		***When Created:***	
Lithology:		***When Updated:***	
Lithology Cd:	shaley	***Who Updated:***	
Lithology Desc:		***Depth:***	From 106.00 To 162.00
Lithology Colour Cd:		***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:	sandstone	***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:	30 GPH at 130'		
Lithology Edited Data:			
Lithology Raw Data:	sandstone		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		***Who Created:***	
Lithology Desc ID:		***When Created:***	
Lithology:		***When Updated:***	
Lithology Cd:		***Who Updated:***	
Lithology Desc:		***Depth:***	From 11.00 To 106.00
Lithology Colour Cd:	black	***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:	shale	***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:	5 GPH at 30', 5GPH at 114'		
Lithology Edited Data:			

Lithology Raw Data: shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Casing Data

Casing ID:
Who Created:
When Created:
Standard Used:
Material Code:
Casing Size:
Diameter Inches: 6.000
Drive Shoe Ind:
Casing Code: OPEN
Table Used Flag:
Casing Wall:
Casing to: 162.00
Casing from: 17.00
Total Length:
Who Updated:
When Updated:

Casing ID:
Who Created:
When Created:
Standard Used:
Material Code: STEEL
Casing Size:
Diameter Inches: 6.000
Drive Shoe Ind: Not Installed
Casing Code: PRODUCTION
Table Used Flag:
Casing Wall: 0.188
Casing to: 17.00
Casing from: 0.00
Total Length:
Who Updated:
When Updated:

22	1 of 1	WSW/238.5	17.5 / -28.51	3135 KIRK ROAD DENMAN ISLAND BC	WWIS

Well Tag No: 105775
Filter Pack Size:
Filter Pack Mtl:
Surf Seal Flag:
Surf Seal Mthd:
Constr Start Dt: 1971-08-09
Water Depth:
Est. Yield: 4.000
Constr Mthd:
SubClass of Well: N/A
Well Status: New
Well Use Code:
Class of Well Code: WATR_SPPLY
Surface Seal Mtl Cd:
Well ID:
Consultant Company:
Crew Driller Name: W.J. WILLIAMS
Gravel Packed From:
Driller Company Cd:
Driller Well ID:
Meridian:
Drilling Mthd:
Existing Well Tag No:
Observ. Well No:
Owner's Well No:
BCGS ID:
Seq No:
Land District: NANAIMO
Township:
Lot: 18
Section: 18&19
Constr Rpt Rcvd Ind:
Longitude: -124.821959
Status of Well Code: NEW
Filter Pack Size Cd:
Filter Pack Mtl Cd:
Surf Seal Mtl:
Surface Seal Depth ft:
Constr End Dt: 1971-08-12
Final Well Depth: 90.00
Use:
Class of Well: Water supply
Orientation of Well:
Yield Unit Code: GPM
Constr Mthd Cd:
Subclass of Well Cd: NA
Surface Seal Mthd Cd:
Constr Report Ind:
Contractor Info 1:
Gravel Packed Flag:
Gravel Packed To:
Drilling Company:
Surfac Seal Thck (In):
Drilling Mthd Cd:
Elevation:
Chemistry Site ID:
Well Owner:
Accepted Status Cd:
BCGS Mapsheet:
District Lot:
Range:
PID: 5003067
Plan: PLAN 12330
Island:
Latitude: 49.535397
Zone: 10

Easting:	368175	***Northing:***	5488571
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:	6	***Ttl Dpth Drilled Ft Bgl:***	90.00
Bedrock Depth:		***Aquifer No:***	
Aquifer Lithology Cd:	Unknown	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	J		
Location Accuracy:	J (unknown, accuracy based on parcel size) ICF cadastre, poor or no location sketch, arbitrarily located in center of parcel		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:	Gallons per Minute (U.S./Imperial)		
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	6.000
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	

Screen Type Cd:
Screen Type:
Screen Wire:
Boundary Effect Code:
Closure Details:
Development Notes:
Well Location: DIRECTLY ABOVE FERRY RAMP
Legal Miscellaneous:
Analytic Solution Type:
Testing Duration Hours:
Testing Method:
Specific Yield:
Specific Storage 1 M:
Hydraulic Conductivity:
Transmissivity:
Storativity:
AVI Years:
Coordinate Z:
Coordinate Y:
Pump Desc:

Well Details (Cont 2)

EMS ID:
EMS:
Filter Pack from:
Filter Pack to:
Liner Dia Inches:
Liner from:
Liner Thickness Inches:
Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: DOM
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 26.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:
Liner to:
Other Screen Bottom:
Otr Screen Mater:
Person Responsible:
Drawdown:
Co Persn Respsble: Island Well Drilling
Consultant Name:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd: shale
Lithology Mtl:
Material: SHALE
Well Yield Unit Code:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 8.00 To 90.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	SHALE		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		**Who Created:**	
Lithology Desc ID:		**When Created:**	
Lithology:		**When Updated:**	
Lithology Cd:		**Who Updated:**	
Lithology Desc:		**Depth:**	From 0.00 To 8.00
Lithology Colour Cd:		**Overburden Depth:**	
Lithology Colour:		**Bedrock Depth:**	
Lithology Mtl Cd:	hardpan	**Total Depth:**	
Lithology Mtl:		**Rel Hardness Cd:**	
Material:	CLAY, STONE HARDPAN	**Rel Hardness:**	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	CLAY, STONE HARDPAN		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Casing Data

Casing ID:		**Table Used Flag:**	
Who Created:		**Casing Wall:**	
When Created:		**Casing to:**	9.50
Standard Used:		**Casing from:**	0.00
Material Code:		**Total Length:**	
Casing Size:		**Who Updated:**	
Diameter Inches:	6.000	**When Updated:**	
Drive Shoe Ind:	Not Installed		
Casing Code:			

---

23 | ***1 of 1*** | ***WSW/239.3*** | ***18.7 / -27.31*** | ***ABOVE FERRY DOCK BC*** | ***WWIS***

Well Tag No:	40772	**Status of Well Code:**	NEW
Filter Pack Size:		**Filter Pack Size Cd:**	
Filter Pack Mtl:		**Filter Pack Mtl Cd:**	
Surf Seal Flag:		**Surf Seal Mtl:**	
Surf Seal Mthd:		**Surface Seal Depth ft:**	
Constr Start Dt:	1978-10-02	**Constr End Dt:**	1978-10-02
Water Depth:		**Final Well Depth:**	207.00
Est. Yield:	1.000	**Use:**	
Constr Mthd:		**Class of Well:**	
SubClass of Well:		**Orientation of Well:**	
Well Status:	New	**Yield Unit Code:**	GPH
Well Use Code:		**Constr Mthd Cd:**	
Class of Well Code:	UNK	**Subclass of Well Cd:**	
Surface Seal Mtl Cd:		**Surface Seal Mthd Cd:**	
Well ID:		**Constr Report Ind:**	
Consultant Company:		**Contractor Info 1:**	
Crew Driller Name:		**Gravel Packed Flag:**	
Gravel Packed From:		**Gravel Packed To:**	
Driller Company Cd:		**Drilling Company:**	
Driller Well ID:		**Surfac Seal Thck (In):**	
Meridian:		**Drilling Mthd Cd:**	OTHER
Drilling Mthd:		**Elevation:**	

Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	
Lot:	18	***Plan:***	12330
Section:	18	***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.53557
Longitude:	-124.82219	***Zone:***	10
Easting:	368159	***Northing:***	5488591
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:	6.0	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:	7.00	***Aquifer No:***	740
Aquifer Lithology Cd:	Bedrock	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	B		
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:	Gallons per Hour (U.S./Imperial)		
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	

Screen Bottom:		**Clos Reason:**	
Screen Info Text:		**Clos Start Date:**	
Screen Intake Cd:		**Development Hours:**	
Screen Intake:		**Develop Method Cd:**	
Screen Length:		**Develop Meth Desc:**	
Screen Mfr:		**Final Casing Stick:**	
Screen Mtl Cd:		**Gnd Elev Mthd Cd:**	UNKNOWN
Screen Mtl:		**Gnd Elev Mthd:**	
Screen Opening Cd:		**Old Mapsheet:**	
Screen Opening:		**Coordinate X:**	
Screen Type Cd:		**Coordinate Z:**	
Screen Type:		**Coordinate Y:**	
Screen Wire:		**Pump Desc:**	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		**Liner to:**	
EMS:		**Other Screen Bottom:**	
Filter Pack from:		**Otr Screen Mater:**	
Filter Pack to:		**Person Responsible:**	
Liner Dia Inches:		**Drawdown:**	
Liner from:		**Co Persn Respsble:**	Island Well Drilling
Liner Thickness Inches:		**Consultant Name:**	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	NA		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:	29.00		
Water Supply Sys Well Name:			
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		
Artesian Pressure Head Ft Agl:			

Lithology Information

Lithology Seq No:		**Who Created:**	

Lithology Desc ID: ***When Created:***
Lithology: ***When Updated:***
Lithology Cd: ***Who Updated:***
Lithology Desc: ***Depth:*** From 0.00 To 2.00
Lithology Colour Cd: ***Overburden Depth:***
Lithology Colour: ***Bedrock Depth:***
Lithology Mtl Cd: ***Total Depth:***
Lithology Mtl: ***Rel Hardness Cd:***
Material: topsoil ***Rel Hardness:***
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: topsoil
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No: ***Who Created:***
Lithology Desc ID: ***When Created:***
Lithology: ***When Updated:***
Lithology Cd: ***Who Updated:***
Lithology Desc: ***Depth:*** From 0.00 To 0.00
Lithology Colour Cd: ***Overburden Depth:***
Lithology Colour: ***Bedrock Depth:***
Lithology Mtl Cd: ***Total Depth:***
Lithology Mtl: ***Rel Hardness Cd:***
Material: Total flow is 50 GPH ***Rel Hardness:***
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: Total flow is 50 GPH
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No: ***Who Created:***
Lithology Desc ID: ***When Created:***
Lithology: ***When Updated:***
Lithology Cd: ***Who Updated:***
Lithology Desc: ***Depth:*** From 2.00 To 7.00
Lithology Colour Cd: ***Overburden Depth:***
Lithology Colour: ***Bedrock Depth:***
Lithology Mtl Cd: ***Total Depth:***
Lithology Mtl: ***Rel Hardness Cd:***
Material: brown clay till ***Rel Hardness:***
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: brown clay till
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No: ***Who Created:***
Lithology Desc ID: ***When Created:***
Lithology: ***When Updated:***
Lithology Cd: ***Who Updated:***
Lithology Desc: ***Depth:*** From 0.00 To 0.00
Lithology Colour Cd: ***Overburden Depth:***
Lithology Colour: ***Bedrock Depth:***
Lithology Mtl Cd: ***Total Depth:***
Lithology Mtl: ***Rel Hardness Cd:***
Material: Rock well: dia. 6" from 13' to 207' ***Rel Hardness:***

Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: Rock well: dia. 6" from 13' to 207'
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: brown soft shale
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 7.00 To 9.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: brown soft shale
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: shale with thin sandstone lenses
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 9.00 To 207.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: shale with thin sandstone lenses
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

---

24 ***1 of 1*** ***SW/240.7*** ***18.6 / -27.44*** ***DIRECTLY ABOVE FERRY TERMINAL BC*** ***WWIS***

Well Tag No: 27394
Filter Pack Size:
Filter Pack Mtl:
Surf Seal Flag:
Surf Seal Mthd:
Constr Start Dt: 1972-12-08
Water Depth:
Est. Yield: 6.000
Constr Mthd:
SubClass of Well:
Well Status: New
Well Use Code:
Class of Well Code: UNK
Surface Seal Mtl Cd:
Well ID:
Status of Well Code: NEW
Filter Pack Size Cd:
Filter Pack Mtl Cd:
Surf Seal Mtl:
Surface Seal Depth ft:
Constr End Dt: 1972-12-08
Final Well Depth: 100.00
Use:
Class of Well:
Orientation of Well:
Yield Unit Code: GPM
Constr Mthd Cd:
Subclass of Well Cd:
Surface Seal Mthd Cd:
Constr Report Ind:

Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	OTHER
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	
Lot:	17	***Plan:***	12330
Section:	18	***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.53513
Longitude:	-124.82156	***Zone:***	10
Easting:	368203	***Northing:***	5488541
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:	6.0	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:	9.00	***Aquifer No:***	740
Aquifer Lithology Cd:	Bedrock	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:	B		
Location Accuracy:	B (20 m) Digitized from 1:5,000 mapping		
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:	Gallons per Minute (U.S./Imperial)		
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			
General Remarks:			

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	

Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Island Well Drilling
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	NA		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:	27.00		
Water Supply Sys Well Name:			
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		

Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Lithology Information

Lithology Seq No:		***Who Created:***	
Lithology Desc ID:		***When Created:***	
Lithology:		***When Updated:***	
Lithology Cd:		***Who Updated:***	
Lithology Desc:		***Depth:***	From 0.00 To 8.50
Lithology Colour Cd:	brown	***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:	stoney brown clay	***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:			
Lithology Edited Data:			
Lithology Raw Data:	stoney brown clay		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:			

Lithology Seq No:		***Who Created:***	
Lithology Desc ID:		***When Created:***	
Lithology:		***When Updated:***	
Lithology Cd:		***Who Updated:***	
Lithology Desc:		***Depth:***	From 8.50 To 100.00
Lithology Colour Cd:		***Overburden Depth:***	
Lithology Colour:		***Bedrock Depth:***	
Lithology Mtl Cd:		***Total Depth:***	
Lithology Mtl:		***Rel Hardness Cd:***	
Material:	shale	***Rel Hardness:***	
Well Yield Unit Code:			
Lithology Observation:	water at: 30' 4 gph, 42' 8 gph, 6 gpm at 98'		
Lithology Edited Data:			
Lithology Raw Data:	shale		
Lithology Meas Unit:			
Water Bearing Est Flw Unt Cd:			
Water Bearing Est Flw Unt:			
Water Bearing Estimated Flow:	6.0000		

---

25 ***1 of 1*** ***S/242.6*** ***31.9 / -14.10*** ***BC*** ***WWIS***

Well Tag No:	22024	***Status of Well Code:***	NEW
Filter Pack Size:		***Filter Pack Size Cd:***	
Filter Pack Mtl:		***Filter Pack Mtl Cd:***	
Surf Seal Flag:		***Surf Seal Mtl:***	
Surf Seal Mthd:		***Surface Seal Depth ft:***	
Constr Start Dt:	1969-01-01	***Constr End Dt:***	1969-01-01
Water Depth:		***Final Well Depth:***	125.00
Est. Yield:	0.000	***Use:***	
Constr Mthd:		***Class of Well:***	
SubClass of Well:		***Orientation of Well:***	
Well Status:	New	***Yield Unit Code:***	
Well Use Code:		***Constr Mthd Cd:***	
Class of Well Code:	UNK	***Subclass of Well Cd:***	
Surface Seal Mtl Cd:		***Surface Seal Mthd Cd:***	
Well ID:		***Constr Report Ind:***	
Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	

Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	
Lot:	3	***Plan:***	12330
Section:	18	***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	49.53466
Longitude:	-124.81938	***Zone:***	10
Easting:	368360	***Northing:***	5488485
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:	0.0	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:		***Aquifer No:***	740
Aquifer Lithology Cd:	Unconsolidated	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	

UTM Accuracy Code: B
Location Accuracy: B (20 m) Digitized from 1:5,000 mapping
Accepted Status:
Class of Well Codclassified by:
Observ. Well Status:
Other Chemistry Data:
Filter Pack Mtl Thickness:
Yield Units:
Water Supply System Name:
Water Supply Well Name:
Artesian Flow Unit Cd:
Orientation of Well Cd:
General Remarks:

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	

Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Unknown
Liner Thickness Inches:		***Consultant Name:***	
Decommission Backfill Mater:			
Decommission Details:			
Decommission End Date:			
Decommission Method Code:			
Decommission Reason:			
Decommission Sealant Mater:			
Decommission Start Date:			
Hydro Fracturing Performed:	False		
Hydro Fracturing Yield Increas:			
Intended Water Use Code:	NA		
Licenced Status Code:	UNLICENSED		
Screen Intake Method Code:			
Static Level Before Test:			
Static Water Level Ft Btoc:			
Water Supply Sys Well Name:			
Well Orientation:	VERTICAL		
Yield Estimation Duration:			
Yield Estimation Method Code:			
Yield Estimation Rate:			
Alternative Specs Submitted:	False		
Artesian Conditions:	False		
Artesian Pressure Head Ft Agl:			

Unplottable Summary

Total: 1 Unplottable sites

DB	Company Name/Site Name	Address	City	Postal
WWIS		NORTHWEST RD	DENMAN ISLAND BC	

Unplottable Report

Site:

NORTHWEST RD DENMAN ISLAND BC

Database:
WWIS

Well Tag No:	73758	***Status of Well Code:***	NEW
Filter Pack Size:		***Filter Pack Size Cd:***	
Filter Pack Mtl:		***Filter Pack Mtl Cd:***	
Surf Seal Flag:		***Surf Seal Mtl:***	
Surf Seal Mthd:		***Surface Seal Depth ft:***	
Constr Start Dt:	1985-10-09	***Constr End Dt:***	
Water Depth:		***Final Well Depth:***	120.00
Est. Yield:	1.000	***Use:***	
Constr Mthd:		***Class of Well:***	Water supply
SubClass of Well:		***Orientation of Well:***	
Well Status:	New	***Yield Unit Code:***	USGPM
Well Use Code:		***Constr Mthd Cd:***	
Class of Well Code:	WATR_SPPLY	***Subclass of Well Cd:***	
Surface Seal Mtl Cd:		***Surface Seal Mthd Cd:***	
Well ID:		***Constr Report Ind:***	
Consultant Company:		***Contractor Info 1:***	
Crew Driller Name:		***Gravel Packed Flag:***	
Gravel Packed From:		***Gravel Packed To:***	
Driller Company Cd:		***Drilling Company:***	
Driller Well ID:		***Surfac Seal Thck (In):***	
Meridian:		***Drilling Mthd Cd:***	OTHER
Drilling Mthd:		***Elevation:***	
Existing Well Tag No:		***Chemistry Site ID:***	
Observ. Well No:		***Well Owner:***	
Owner's Well No:		***Accepted Status Cd:***	
BCGS ID:		***BCGS Mapsheet:***	
Seq No:		***District Lot:***	
Land District:	NANAIMO	***Range:***	
Township:		***PID:***	
Lot:		***Plan:***	
Section:		***Island:***	
Constr Rpt Rcvd Ind:		***Latitude:***	
Longitude:		***Zone:***	
Easting:		***Northing:***	
Legal Land Distr Cd:	32	***Legal Misc:***	
Well Diameter:	6.0	***Ttl Dpth Drilled Ft Bgl:***	
Bedrock Depth:		***Aquifer No:***	
Aquifer Lithology Cd:	Unknown	***Aquifer Lithology:***	
Artesian Flow:		***Artesian Units:***	
Artesian P PSI:		***Alteration End Date:***	
Alteration Start Date:		***Alt Specs Ind:***	
Alt Specs Rcvd Ind:		***Backfill Depth ft:***	
Backfill Material:		***Backfill Type:***	
Capture Zone Flag:		***Water Quality Colour:***	
Water Quality Odour:		***Water Utility Flag:***	
UTM Accuracy Code:			
Location Accuracy:			
Accepted Status:			
Class of Well Codclassified by:			
Observ. Well Status:			
Other Chemistry Data:			
Filter Pack Mtl Thickness:			
Yield Units:			
Water Supply System Name:			
Water Supply Well Name:			
Artesian Flow Unit Cd:			
Orientation of Well Cd:			

General Remarks:

Well Details (Cont.)

Permit No:		***Sealant Mtl:***	
Well ID Plate No:		***Surfce Seal Length:***	
Cntrct Well Plate:		***Well Subclass by:***	
Well Sequence No:		***Type of Well Cap:***	
Observe Well No:		***User Guid:***	
Well Lic Gen Stat:		***Well Disinfect Ind:***	Not Disinfected
Old Well No:		***When Created:***	
Indian Reserve:		***Date Entered:***	
Legal Block:		***Crew Helper Name:***	
Liner Mtl Cd:		***Chemistry Lab Data:***	
Liner Mtl:		***Field Lab Data:***	
Lithology Flag:		***Other Chem Data:***	
Lith Measure Unit:		***Type of Work:***	
Lith Desc Count:		***Contractor Info 2:***	
Perforation Flag:		***Who Updated:***	
Plate Attached by:		***When Updated:***	
Product Tidal Flag:		***Other Information:***	
Quarter:		***Who Created:***	
Reports Flag:		***Info Other:***	
Ground Water Flag:		***Info Site:***	
Sieve Flag:		***Accepted by:***	
Site Flag:		***Source Application:***	
Other Flag:		***Well ID Plate Atta:***	
Pump Flag:		***Clos End Date:***	
Screen Flag:		***Clos Mthd Cd:***	
Screen Bottom Cd:		***Clos Mthd:***	
Screen Bottom:		***Clos Reason:***	
Screen Info Text:		***Clos Start Date:***	
Screen Intake Cd:		***Development Hours:***	
Screen Intake:		***Develop Method Cd:***	
Screen Length:		***Develop Meth Desc:***	
Screen Mfr:		***Final Casing Stick:***	
Screen Mtl Cd:		***Gnd Elev Mthd Cd:***	UNKNOWN
Screen Mtl:		***Gnd Elev Mthd:***	
Screen Opening Cd:		***Old Mapsheet:***	
Screen Opening:		***Coordinate X:***	
Screen Type Cd:		***Coordinate Z:***	
Screen Type:		***Coordinate Y:***	
Screen Wire:		***Pump Desc:***	
Boundary Effect Code:			
Closure Details:			
Development Notes:			
Well Location:			
Legal Miscellaneous:			
Analytic Solution Type:			
Testing Duration Hours:			
Testing Method:			
Specific Yield:			
Specific Storage 1 M:			
Hydraulic Conductivity:			
Transmissivity:			
Storativity:			
AVI Years:			

Well Details (Cont 2)

EMS ID:		***Liner to:***	
EMS:		***Other Screen Bottom:***	
Filter Pack from:		***Otr Screen Mater:***	
Filter Pack to:		***Person Responsible:***	
Liner Dia Inches:		***Drawdown:***	
Liner from:		***Co Persn Respsble:***	Gulf Island Well Drillers
Liner Thickness Inches:		***Consultant Name:***	

Decommission Backfill Mater:
Decommission Details:
Decommission End Date:
Decommission Method Code:
Decommission Reason:
Decommission Sealant Mater:
Decommission Start Date:
Hydro Fracturing Performed: False
Hydro Fracturing Yield Increas:
Intended Water Use Code: DOM
Licenced Status Code: UNLICENSED
Screen Intake Method Code:
Static Level Before Test:
Static Water Level Ft Btoc: 0.00
Water Supply Sys Well Name:
Well Orientation: VERTICAL
Yield Estimation Duration:
Yield Estimation Method Code:
Yield Estimation Rate:
Alternative Specs Submitted: False
Artesian Conditions: False
Artesian Pressure Head Ft Agl:

Lithology Information

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SANDSTONE & SHALE
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: SANDSTONE & SHALE
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 17.00 To 42.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SHALE
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: SHALE
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 8.00 To 17.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 42.00 To 93.00
Overburden Depth:

Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SANDSTONE VERY LITTLE SHALE
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: SANDSTONE VERY LITTLE SHALE
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SAND & GRAVEL
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: SAND & GRAVEL
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 2.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: SANDSTONE & SHALE
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: SANDSTONE & SHALE
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 93.00 To 120.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: CONGLOMERATE
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: CONGLOMERATE
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:
Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 2.00 To 8.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Lithology Seq No:
Lithology Desc ID:
Lithology:
Lithology Cd:
Lithology Desc:
Lithology Colour Cd:
Lithology Colour:
Lithology Mtl Cd:
Lithology Mtl:
Material: 21 WATER 1 GPM
Well Yield Unit Code:
Lithology Observation:
Lithology Edited Data:
Lithology Raw Data: 21 WATER 1 GPM
Lithology Meas Unit:
Water Bearing Est Flw Unt Cd:
Water Bearing Est Flw Unt:
Water Bearing Estimated Flow:

Who Created:
When Created:
When Updated:
Who Updated:
Depth: From 0.00 To 0.00
Overburden Depth:
Bedrock Depth:
Total Depth:
Rel Hardness Cd:
Rel Hardness:

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ***Note:*** *Databases denoted with " * " indicates that the database will no longer be updated. See the individual database description for more information.*

Authorization Management System (formerly WASTE): Provincial AMS

AMS is the Ministry of Environment's waste permit administration system. It maintains data related to the administration of permits issued under the Environmental Management Act and registrations under various regulations where the regulation requires a discharger to register. It will include information such as companies or individuals permitted to discharge waste; type of business and locations at which waste disposal is permitted; the types, amounts and frequency of waste products that are permitted to be discharged at given locations; issue date and more. This was previously referred to as the "WASTE" database.

Government Publication Date: 1957-Aug 31, 2022

Assessment Report Indexing System: Provincial ARIS

Within British Columbia, the "Mineral Tenure Act Regulation", requires that results of mineral exploration and development programs be submitted to the British Columbia Ministry of Employment and Investment, where they are then maintained and housed by the Geological Survey Branch. The assessment reports provided by the Geological Survey Branch contain summary information for reports approved to November 1998; on geology, geophysics, geochemistry, drilling, prospecting and physical work.

Government Publication Date: Feb 28, 2022

Automobile Wrecking & Supplies: Private AUWR

This database provides an inventory of known locations that are involved in the scrap metal, automobile wrecking/recycling, and automobile parts & supplies industry. Information is provided on the company name, location and business type.

Government Publication Date: 1999-Feb 28, 2022

BC Oil and Gas Commission Incidents: Provincial BCIN

A list of oil and gas pipeline incidents in British Columbia made available by BC Oil and Gas Commission. An incident is defined as a present or imminent event or circumstance, resulting from oil and gas activity that is outside the scope of normal operations which may or may not be an emergency. Includes pipeline spills, releases, and damage to active and discontinued pipelines; does not include incidents that did not result in damage to the pipeline or a release of contents.

Government Publication Date: Dec 31, 2022

BC Oil and Gas Wells: Provincial BOGW

The BC Oil and Gas Wells database was collected from the BC Oil and Gas Commission and is a comprehensive database that includes information regarding well number, well name, operator name, location, depth, status, as well as drill date and type. Please note that this database will not be updated, information on wells drilled after January 2006 can be found in the Oil and Gas Wells (OGW) database under the 'Private Source Database' section.

Government Publication Date: 1918-Jan 2006*

Dry Cleaning Facilities: Federal CDRY

List of dry cleaning facilities made available by Environment and Climate Change Canada. Environment and Climate Change Canada's Tetrachloroethylene (Use in Dry Cleaning and Reporting Requirements) Regulations (SOR/2003-79) are intended to reduce releases of tetrachloroethylene to the environment from dry cleaning facilities.

Government Publication Date: Jan 2004-Dec 2021

Chemical Register: Private CHM

This database includes a listing of locations of facilities within the Province or Territory that either manufacture and/or distributes chemicals.

Government Publication Date: 1999-Feb 28, 2023

Compressed Natural Gas Stations: Private CNG

Canada has a network of public access compressed natural gas (CNG) refuelling stations. These stations dispense natural gas in compressed form at 3,000 pounds per square inch (psi), the pressure which is allowed within the current Canadian codes and standards. The majority of natural gas refuelling is located at existing retail gasoline that have a separate refuelling island for natural gas. This list of stations is made available by the Canadian Natural Gas Vehicle Alliance.

Government Publication Date: Dec 2012 -Aug 2023

Coal Tar Sites: Provincial COAL

This one-time study is an inventory of all known and historical coal tar sites, identifying sites that produced coal tar and other related tars during the mid 1800's to the mid 1900's.

Government Publication Date: 1992*

Compliance and Enforcement Summary: Provincial CONV

This database summarizes orders, tickets and convictions issued by the Ministry of the Environment under applicable ministry and federal legislation. Orders are issued when action is required to prevent or stop actual or potential impact to the environment. Tickets apply to all tickets paid, deemed guilty by non-payment or expiry, or contested in court and found guilty by a judge. Convictions apply to all court convictions of ministry legislation as well as federal legislation where the ministry has taken action. This reporting summary began in January 2006, replacing Non-Compliance Reports by the former Ministry of Water, Land & Air Protection. See the Non-Compliance Reports (NCPL) database below for more information. This database is part of a larger COORS (Conservation Officer On-Line Reporting System) database controlled by the Ministry of Environment in BC.

Government Publication Date: 1990-May 31, 2022

Wastewater Discharge Inventory: Provincial DIS

This inventory contains information regarding direct dischargers of toxic pollutants for the following operations: Industrial; Commercial; Agricultural; Mining; Municipal; Urban; Aquaculture; and Pulp & Paper, operating under provincial permits. Please note that this program was discontinued and therefore the database will not be updated.

Government Publication Date: 1957-1995*

Environmental Effects Monitoring: Federal EEM

The Environmental Effects Monitoring program assesses the effects of effluent from industrial or other sources on fish, fish habitat and human usage of fisheries resources. Since 1992, pulp and paper mills have been required to conduct EEM studies under the Pulp and Paper Effluent Regulations. This database provides information on the mill name, geographical location and sub-lethal toxicity data.

Government Publication Date: 1992-2007*

ERIS Historical Searches: Private EHS

ERIS has compiled a database of all environmental risk reports completed since March 1999. Available fields for this database include: site location, date of report, type of report, and search radius. As per all other databases, the ERIS database can be referenced on both the map and "Statistical Profile" page.

Government Publication Date: 1999-Jun 30, 2023

Environmental Issues Inventory System: Federal EIIS

The Environmental Issues Inventory System was developed through the implementation of the Environmental Issues and Remediation Plan. This plan was established to determine the location and severity of contaminated sites on inhabited First Nation reserves, and where necessary, to remediate those that posed a risk to health and safety; and to prevent future environmental problems. The EIIS provides information on the reserve under investigation, inventory number, name of site, environmental issue, site action (Remediation, Site Assessment), and date investigation completed.

Government Publication Date: 1992-2001*

Environmental Monitoring Locations: Provincial EM

List of environmental monitoring locations included in the Environmental Monitoring System (EMS) maintained by BC's Ministry of the Environment. EMS is the ministry's primary monitoring data repository. The system was designed to capture data covering physical/chemical and biological analyses performed on water, air, solid waste discharges and ambient monitoring sites throughout the province.

Government Publication Date: Mar 2011-Aug 31, 2023

Federal Convictions: Federal FCON

Environment Canada maintains a database referred to as the "Environmental Registry" that details prosecutions under the Canadian Environmental Protection Act (CEPA) and the Fisheries Act (FA). Information is provided on the company name, location, charge date, offence and penalty.

Government Publication Date: 1988-Jun 2007*

Contaminated Sites on Federal Land: Federal FCS

The Federal Contaminated Sites Inventory includes information on known federal contaminated sites under the custodianship of departments, agencies and consolidated Crown corporations as well as those that are being or have been investigated to determine whether they have contamination arising from past use that could pose a risk to human health or the environment. The inventory also includes non-federal contaminated sites for which the Government of Canada has accepted some or all financial responsibility. It does not include sites where contamination has been caused by, and which are under the control of, enterprise Crown corporations, private individuals, firms or other levels of government. Includes fire training sites and sites at which Per- and Polyfluoroalkyl Substances (PFAS) are a concern.

Government Publication Date: Jun 2000-Jun 2023

Commercial Fisheries: Provincial FISH

The Fisheries, Aquaculture & Commercial Fisheries Branch of the Ministry of Water, Land & Air Protection maintains a database of fish processing plant approvals, licenses and activities. Each year, licenses need to be renewed.

Government Publication Date: 1993-2022

Fisheries & Oceans Fuel Tanks: Federal FOFT

Fisheries & Oceans Canada maintains an inventory of aboveground & underground fuel storage tanks located on Fisheries & Oceans property or controlled by DFO. Our inventory provides information on the site name, location, tank owner, tank operator, facility type, storage tank location, tank contents & capacity, and date of tank installation.

Government Publication Date: 1964-Sep 2019

Federal Identification Registry for Storage Tank Systems (FIRSTS): Federal FRST

A list of federally regulated Storage tanks from the Federal Identification Registry for Storage Tank Systems (FIRSTS). FIRSTS is Environment and Climate Change Canada's database of storage tank systems subject to the Storage Tank for Petroleum Products and Allied Petroleum Products Regulations. The main objective of the Regulations is to prevent soil and groundwater contamination from storage tank systems located on federal and aboriginal lands. Storage tank systems that do not have a valid identification number displayed in a readily visible location on or near the storage tank system may be refused product delivery.

Government Publication Date: May 31, 2018

Waste Generators Summary: Provincial GEN

Within British Columbia, the Special Waste Regulation defines a waste generator as any site, equipment and/or operation involved in the production, collection, handling and/or storage of regulated wastes. A generator of regulated waste is required to register the waste generation site and each waste produced, collected, handled, or stored at the site. This database contains the registration number (BCG#), company name and address of registered generators; including the types of hazardous wastes generated and the form of treatment used in the handling of the waste. Some of the "Waste Generators Summary" addresses may represent mailing addresses rather than waste/hazardous sites. This database is a summary of waste generators from the hazardous waste transport manifests from June 1993 to September 2010. This listing also includes active registered waste generators from the Generator Registration Data CD. Please note that a British Columbia Generator number (BCG#) are not unique to a company. This database is part of a larger SWIS (Special Waste Information System) database controlled by the Ministry of Environment in BC.

Government Publication Date: 1993-Oct 31, 2022

Generators - Special Waste Information System (SWIS): Provincial GEN2

The Special Waste Information System (SWIS) maintained by the BC Ministry of Environment holds information related to the generation and transportation of hazardous waste under the Hazardous Waste Regulation. This is a list of waste shipper sites (waste generators) included in hazardous waste transport manifests from 2011 - 2014, accompanied by manifest details.

Government Publication Date: Jan 2011-Dec 2014

Greenhouse Gas Emissions from Large Facilities: Federal GHG

List of greenhouse gas emissions from large facilities made available by Environment Canada. Greenhouse gas emissions in kilotonnes of carbon dioxide equivalents (kt CO2 eq).

Government Publication Date: 2013-Dec 2019

Hazardous Waste Facilities: Provincial HWF

A list of Hazardous Waste Facilities in British Columbia made available by the Ministry of Jobs, Trade and Technology in the BC Data Catalogue.

Government Publication Date: Jan 31, 2022

Indian & Northern Affairs Fuel Tanks: Federal IAFT

The Department of Indian & Northern Affairs Canada (INAC) maintains an inventory of aboveground & underground fuel storage tanks located on both federal and crown land. Our inventory provides information on the reserve name, location, facility type, site/facility name, tank type, material & ID number, tank contents & capacity, and date of tank installation.

Government Publication Date: 1950-Aug 2003*

Lumber Mills: Provincial LUM

This database provides information regarding the general location and estimated annual output capacity of major timber processing facilities within the province of British Columbia.

Government Publication Date: 1997-2021

Canadian Mine Locations: Private MINE

This information is collected from the Canadian & American Mines Handbook. The Mines database is a national database that provides over 290 listings on mines (listed as public companies) dealing primarily with precious metals and hard rocks. Listed are mines that are currently in operation, closed, suspended, or are still being developed (advanced projects). Their locations are provided as geographic coordinates (x, y and/or longitude, latitude). As of 2002, data pertaining to Canadian smelters and refineries has been appended to this database.

Government Publication Date: 1998-2009*

Minerals Deposits Database: Provincial MNR

The Ministry of Energy and Mines maintains a database of more than 12,000 metallic mineral, industrial mineral and coal deposits and occurrences within British Columbia. Information within our report pertains to primary name, elevation, mining division, commodities, and status. Please note that as of January 27, 1999, information included within this database was divided into 2 categories: released and unreleased areas. Records for unreleased areas may contain incomplete, unedited, and/or inaccurate data.

Government Publication Date: Jun 2022

National Analysis of Trends in Emergencies System (NATES): Federal NATE

In 1974 Environment Canada established the National Analysis of Trends in Emergencies System (NATES) database, for the voluntary reporting of significant spill incidents. The data was to be used to assist in directing the work of the emergencies program. NATES ran from 1974 to 1994. Extensive information is available within this database including company names, place where the spill occurred, date of spill, cause, reason and source of spill, damage incurred, and amount, concentration, and volume of materials released.

Government Publication Date: 1974-1994*

Non-Compliance Reports: Provincial NCPL

From 1990 to March 2001 the Ministry of Water, Land & Air Protection maintained a reporting system that identified any reported concern that pertained to compliance with authorized waste management permits or plans, approvals, orders, operational certificates and regulations, or any other activity under the Waste Management Act. This reporting system was discontinued in April of 2001; therefore there will be no updates to this database. However, beginning in January 2006 the Ministry of the Environment began publishing Compliance and Enforcement Summaries. See the Compliance and Enforcement Summary (CPL) database above for more information.

Government Publication Date: 1990-Mar 2001*

National Defense & Canadian Forces Fuel Tanks: Federal NDFT

The Department of National Defense and the Canadian Forces maintains an inventory of all aboveground & underground fuel storage tanks located on DND lands. Our inventory provides information on the base name, location, tank type & capacity, tank contents, tank class, date of tank installation, date tank last used, and status of tank as of May 2001. This database will no longer be updated due to the new National Security protocols which have prohibited any release of this database.

Government Publication Date: Up to May 2001*

National Defense & Canadian Forces Spills: Federal NDSP

The Department of National Defense and the Canadian Forces maintains an inventory of spills to land and water. All spill sites have been classified under the "Transportation of Dangerous Goods Act - 1992". Our inventory provides information on the facility name, location, spill ID #, spill date, type of spill, as well as the quantity of substance spilled & recovered.

Government Publication Date: Mar 1999-Oct 2022

National Defence & Canadian Forces Waste Disposal Sites: Federal NDWD

The Department of National Defence and the Canadian Forces maintains an inventory of waste disposal sites located on DND lands. Where available, our inventory provides information on the base name, location, type of waste received, area of site, depth of site, year site opened/closed and status.

Government Publication Date: 2001-Apr 2007*

National Energy Board Pipeline Incidents: Federal NEBI

Locations of pipeline incidents from 2008 to present, made available by the Canada Energy Regulator (CER) - previously the National Energy Board (NEB). Includes incidents reported under the Onshore Pipeline Regulations and the Processing Plant Regulations related to pipelines under federal jurisdiction, does not include incident data related to pipelines under provincial or territorial jurisdiction.

Government Publication Date: 2008-Jun 30, 2021

National Energy Board Wells: Federal NEBP

The NEBW database contains information on onshore & offshore oil and gas wells that are outside provincial jurisdiction(s) and are thereby regulated by the National Energy Board. Data is provided regarding the operator, well name, well ID No./UWI, status, classification, well depth, spud and release date.

Government Publication Date: 1920-Feb 2003*

National Environmental Emergencies System (NEES): Federal NEES

In 2000, the Emergencies program implemented NEES, a reporting system for spills of hazardous substances. For the most part, this system only captured data from the Atlantic Provinces, some from Quebec and Ontario and a portion from British Columbia. Data for Alberta, Saskatchewan, Manitoba and the Territories was not captured. However, NEES is also a repository for previous Environment Canada spill datasets. NEES is composed of the historic datasets ' or Trends ' which dates from approximately 1974 to present. NEES Trends is a compilation of historic databases, which were merged and includes data from NATES (National Analysis of Trends in Emergencies System), ARTS (Atlantic Regional Trends System), and NEES. In 2001, the Emergencies Program determined that variations in reporting regimes and requirements between federal and provincial agencies made national spill reporting and trend analysis difficult to achieve. As a consequence, the department has focused efforts on capturing data on spills of substances which fall under its legislative authority only (CEPA and FA). As such, the NEES database will be decommissioned in December 2004.

Government Publication Date: 1974-2003*

National PCB Inventory: Federal NPCB

Environment Canada's National PCB inventory includes information on in-use PCB containing equipment in Canada including federal, provincial and private facilities. Federal out-of-service PCB containing equipment and PCB waste owned by the federal government or by federally regulated industries such as airlines, railway companies, broadcasting companies, telephone and telecommunications companies, pipeline companies, etc. are also listed. Although it is not Environment Canada's mandate to collect data on non-federal PCB waste, the National PCB inventory includes some information on provincial and private PCB waste and storage sites. Some addresses provided may be Head Office addresses and are not necessarily the location of where the waste is being used or stored.

Government Publication Date: 1988-2008*

National Pollutant Release Inventory 1993-2020: Federal NPR2

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of pollutant releases (to air, water and land), disposals, and transfers for recycling. The inventory, managed by Environment and Climate Change Canada, tracks over 300 substances. Under the authority of the Canadian Environmental Protection Act (CEPA), owners or operators of facilities that meet published reporting requirements are required to report to the NPRI.

Government Publication Date: Sep 2020

National Pollutant Release Inventory - Historic: Federal NPRI

Environment Canada has defined the National Pollutant Release Inventory ("NPRI") as a federal government initiative designed to collect comprehensive national data regarding releases to air, water, or land, and waste transfers for recycling for more than 300 listed substances. This data holds historic records; current records are found in NPR2.

Government Publication Date: 1993-May 2017

Oil Gas Commission Wells: Provincial OGCW

List of well surface and bottom hole locations made available by the BC Oil & Gas Commission. Provides non-confidential information about the surface hole locations and sub-surface bottom hole locations of wells, including the current status and drilling information.

Government Publication Date: Mar 2023

Oil and Gas Commission Facilities: Provincial OGF

A list of oil and gas facilities. Facilities are an oil and gas activity, defined in the Oil and Gas Activities Act as a system of vessels, piping, valves, tanks and other equipment used to gather, process, measure, store or dispose of petroleum, natural gas, water or a substance referred to in paragraph (d) or (e) of the definition of pipeline. This list is made available by the BC Oil and Gas Commission.

Government Publication Date: May 31, 2020

Oil and Gas Wells: Private OGWW

The Nickle's Energy Group (publisher of the Daily Oil Bulletin) collects information on drilling activity including operator and well statistics. The well information database includes name, location, class, status and depth. The main Nickle's database is updated on a daily basis, however, this database is updated on a monthly basis. More information is available at www.nickles.com.

Government Publication Date: 1988-Aug 31, 2023

Canadian Pulp and Paper: Private PAP

This information is part of the Pulp and Paper Canada Directory. The Directory provides a comprehensive listing of the locations of pulp and paper mills and the products that they produce.

Government Publication Date: 1999, 2002, 2004, 2005, 2009-2014

Inventory of PCB Storage Sites: Provincial PCB

The Ministry of Water, Land & Air Protection maintains a database of all active Polychlorinated Biphenyls (PCB) waste storage sites within the Special Waste Information System. Please note that there is no requirement to maintain an accurate listing of all inactive PCB waste storage equipment and/or disposal sites. The records within this database provide information regarding site name, location, an inventory of stored wastes and quantities, and status date (when site first active/inactive). Previous to May 1993, data was collected from a different source and is only available for 1989. Inventory of PCB Storage Sites data are historic and no longer being updated.

Government Publication Date: 1989, May 1993-2010*

Parks Canada Fuel Storage Tanks: Federal PCFT

Canadian Heritage maintains an inventory of known fuel storage tanks operated by Parks Canada, in both National Parks and at National Historic Sites. The database details information on site name, location, tank install/removal date, capacity, fuel type, facility type, tank design and owner/operator.

Government Publication Date: 1920-Jan 2005*

Pesticide Register: Provincial PES

This is a database of individuals who apply for a service or vendor license for the use of registered pesticides. A service license is denoted by an "S" in the license number, likewise, a vendor license by a "V" in the license number.

Government Publication Date: 1989-Jun 2023

NPRI Reporters - PFAS Substances: Federal PFCH

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of releases, disposals, and transfers, tracking over 320 pollutants. Per - and polyfluoroalkyl substances (PFAS) are a group of over 4,700 human-made substances for which adverse environmental and health effects have been observed. This listing of PFAS substance reporters includes those NPRI facilities that reported substances that are found in either: a) the Comprehensive Global Database of PFASs compiled by the Organisation for Economic Co-operation and Development (OECD), b) the US Environmental Protection Agency (US EPA) Master List of PFAS Substances, c) the US EPA list of PFAS chemicals without explicit structures, or d) the US EPA list of PFAS structures (encompassing the largest set of structures having sufficient levels of fluorination to potentially impart PFAS-type properties).

Government Publication Date: Sep 2020

Potential PFAS Handers from NPRI: Federal PFHA

The National Pollutant Release Inventory (NPRI) is Canada's public inventory of releases, disposals, and transfers, tracking over 320 pollutants. Per - and polyfluoroalkyl substances (PFAS) are a group of over 4,700 human-made substances for which adverse environmental and health effects have been observed. This list of potential PFAS handlers includes those NPRI facilities that reported business activity (NAICS code) included in the US Environmental Protection Agency (US EPA) list of Potential PFAS-Handling Industry Sectors, further described as operating in industry sectors where literature reviews indicate that PFAS may be handled and/or released. Inclusion of a facility in this listing does not indicate that PFAS are being manufactured, processed, used, or released by the facility - these are facilities that potentially handle PFAS based on their industrial profile.

Government Publication Date: Sep 2020

Private Aggregate Inventory: Provincial PRAI

Within British Columbia, aggregate pits are designated as mines; and as such, the Ministry of Energy and Mines is responsible for their planning, management and regulation, including permitting, health, safety and reclamation. Owners or operators of all private aggregate pits must file Notices of Work as part of the permitting and reclamation process. In 1994, the Geological Survey Branch initiated the Aggregate Program, in order to establish an inventory of natural and crushed aggregate pits. Information about each pit in the database file includes its location, NTS map sheet number, Notice of Work file number and status (active/inactive) and the type of landform hosting the pit. This database was a one-time inventory and will not be updated.

Government Publication Date: 1975-1996*

Public Aggregate Inventory: Provincial PUAI

Information about public aggregate pits in British Columbia is collected and managed by the Ministry of Transportation and Highways. Data has been gathered on more than 2000 pits, in respect to pit name, type and geographical location.

Government Publication Date: 1960-2001*

Waste Receivers Summary: Provincial REC

The Special Waste Regulation defines the disposal of regulated waste through an operating waste management system or a waste disposal site operated or used pursuant to the terms and conditions of a Certificate of Approval or a Provisional Certificate of Approval. A waste receiving location is any site or facility to which waste is transferred through a waste carrier. A receiver of regulated waste is required to register the waste receiving facility. This database represents registered receivers of regulated wastes, identified by registration number, company name and address. Some of "Waste Receivers Summary" addresses may represent mailing addresses rather than waste/hazardous sites. This database is part of a larger SWIS (Special Waste Information System) database controlled by the Ministry of Environment in BC. Waste Receivers Summary data are historic and no longer being updated.

Government Publication Date: 1992-2010*

Receivers - Special Waste Information System (SWIS): Provincial REC2

The Special Waste Information System (SWIS) maintained by the BC Ministry of Environment holds information related to the generation and transportation of hazardous waste under the Hazardous Waste Regulation. This is a list of waste receiver sites included in hazardous waste transport manifests from 2011 - 2014, accompanied by manifest details.

Government Publication Date: Jan 2011-Dec 2014

Retail Fuel Storage Tanks: Private RST

This database includes an inventory of retail fuel outlet locations (including marinas) that have on their property gasoline, oil, waste oil, natural gas and / or propane storage tanks.

Government Publication Date: 1999-Feb 28, 2023

Scott's Manufacturing Directory: Private SCT

Scott's Directories is a data bank containing information on over 200,000 manufacturers across Canada. Even though Scott's listings are voluntary, it is the most comprehensive database of Canadian manufacturers available. Information concerning a company's address, plant size, and main products are included in this database.

Government Publication Date: 1992-Mar 2011*

Site Registry: Provincial SREG

This information is collected from the Ministry of Environment's Site Registry. It is not a registry of contaminated sites, although some sites on the registry are contaminated. Most sites have already been investigated and require minor remediation, or have already been cleaned up to government requirements. The Registry also stores environmentally relevant historic information about sites including: names of participants, legal and administrative notations, references to pertinent documents submitted to the ministry, associations with other sites, and much more.
1. Please note the information provided in the Detail Reports have been updated to the best of our ability as provided by the source, BC Government. For more information, please contact your ERIS sales representative.

Government Publication Date: Jul 2023

Surrey Tank Construction Permits: Provincial STNK

A list of building permits issued for the removal, construction, and decommissioning of storage tanks in the City of Surrey. This list is made available by the City of Surrey Building Division of the Department of Planning and Development.

Government Publication Date: Jul 2023

Sump Locations: Provincial SUMP

Locations of sump sites used for drilling waste disposal. All operators in British Columbia are required to handle and dispose of drilling waste in accordance with the requirements of the Oil and Gas Waste Regulation and the Oil and Gas Handbook. The Waste Disposal application requires that each company maintain an inventory of sump/pit data. A pit is an earthen excavation for purposes of containing drilling waste. A sump is a grouping of one or more pits found at a geographic location. This list is made available by the BC Oil and Gas Commission.

Government Publication Date: Jun 2023

Transport Canada Fuel Storage Tanks: Federal TCFT

List of fuel storage tanks currently or previously owned or operated by Transport Canada. This inventory also includes tanks on The Pickering Lands, which refers to 7,530 hectares (18,600 acres) of land in Pickering, Markham, and Uxbridge owned by the Government of Canada since 1972; properties on this land has been leased by the government since 1975, and falls under the Site Management Policy of Transport Canada, but is administered by Public Works and Government Services Canada. This inventory provides information on the site name, location, tank age, capacity and fuel type.

Government Publication Date: 1970 - Apr 2023

Vancouver Heating Oil Underground Storage Tanks: Provincial VTNK

A list of heating oil Underground Storage Tanks made available by the City of Vancouver. The City of Vancouver maintains records of UST removals, abandonments, and installations for heating oil storage tanks.

Government Publication Date: Jun 1995 - May 2023

Waste Disposal Site Inventory: Provincial WDS

This inventory pertains to active, regulated waste disposal sites within the province of British Columbia. Registered companies may hold a permit or certificate for release of the following waste types: Effluent, Refuse, Air and Special Waste Storage. Information on Waste Disposal Sites after 1998 is contained within the Authorizations (AUTH) database.

Government Publication Date: 1980-1998*

Water Well Information System: Provincial WWIS

This database was collected from the Groundwater Information Center of the Ministry of Water, Land & Air Protection and contains over 90,000 records. Comprehensive information is available for each well including: well location (address/site area), latitude/longitude, legal description (section, lot, plan, district lot, range, township), BCGS Mapsheet No., depth of well, construction dates, well status and lithology. The accuracy of well locations is also provided, as well as the reference source for obtaining geographic coordinates. The Groundwater Wells and Aquifers application may not include all groundwater wells as registration with the Province was voluntary until February 2016. The Ministry notes that the data is provided on an "as is" basis, may be subject to change.

Government Publication Date: Aug 2023

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.