

April 10, 2008

310 East Esplanade, North Vancouver, B.C. V7L 1A4  
Tel.: (604) 986-0233 Fax: (604) 986-8583 Web Site: [www.envirochem.com](http://www.envirochem.com)

Peter Woods, District of Squamish (Coordinator/Chair of SERC)  
Ph: 604-815-5027  
Email: [pwoods@squamish.ca](mailto:pwoods@squamish.ca)

Brian Naito, Fisheries and Oceans Canada (SERC representative)  
Ph: 604-666-8190  
Email: [naitob@pac.dfo-mpo.gc.ca](mailto:naitob@pac.dfo-mpo.gc.ca)

Mike Willcox, BC Environment (SERC representative)  
Ph: 604-582-5356  
Email: [michael.willcox@gov.bc.ca](mailto:michael.willcox@gov.bc.ca)

Julia Brydon, Environment Canada (SERC representative)  
Ph: 604-666-2399  
Email: [julia.brydon@ec.gc.ca](mailto:julia.brydon@ec.gc.ca)

Dear SERC Members:

**Re: Squamish Terminals Ltd. (STL) Berth 2  
SERC Application for Maintenance Dredging**

On behalf of STL, please find attached an application for maintenance dredging Berth 2. The dredging is currently scheduled for May, 2008, coincident with maintenance dredging at Berth 1.

Chemical data generated through a sampling and chemical analysis program shows compliance with Environment Canada Disposal at Sea criteria for all contaminants of concern, and compliance with the BC MOE typical criteria for mercury in sediments.

Attached is a letter describing the sampling program (letter of March 14, 2008 –D.B. Technical Services to Environment Canada), a site plan showing the sampling stations occupied, and a copy of the chemical data report (L610446).

Thank you for your attention in this matter. If you have any questions, or wish further discussions with regards to this application, please contact me.

**Re: Squamish Terminals Ltd. (STL) Berth 2  
SERC Application for Maintenance Dredging**

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Yours truly,

**ENVIROCHEM SERVICES INC.**



Thomas W. Finnbogason, B.Sc.

TWF/npdc

**Attachments:**

- SERC Application for Squamish Terminals Ltd. –Berth 2
- letter of March 14, 2008 –D.B. Technical Services to Environment Canada
- site plan showing sampling stations in Berth 2
- ALS Chemical Data report L610446 – Berth 2

**Cc:** Ron Anderson, Squamish Terminals  
John Shevchuk, Lex Pacifica Law Corp.  
John McLachlan, Lex Pacifica Law Corp.  
Disposal at Sea Permit Issuing Office (e-mail [sean.standing@ec.gc.ca](mailto:sean.standing@ec.gc.ca))  
Jim Schellenberg, Transport Canada Navigable Waters Protection  
(e-mail: [schellj@tc.gc.ca](mailto:schellj@tc.gc.ca))

PO Box 310  
Squamish, BC  
V0N 3G0  
tel: 604-892-5217  
fax 604-815-5013

**SQUAMISH  
ESTUARY  
REVIEW  
COMMITTEE**

**COORDINATED  
PROJECT REVIEW**  
Application Form

<b>PROPONENT:</b> Squamish Terminals Ltd												
<b>ADDRESS:</b> 37500 3 <sup>rd</sup> Avenue, PO Box 1520, Squamish, BC V0N 3G0		<b>CONTACT:</b> Mr. Ronald K. Anderson										
<b>TEL</b> 604-892-3511	<b>FAX</b> 604-892-5623	<b>EMAIL</b> <a href="mailto:Ron_Anderson@sqterminals.com">Ron_Anderson@sqterminals.com</a>										
<b>PURPOSE OF APPLICATION:</b> <input type="checkbox"/> NEW <input checked="" type="checkbox"/> RENEWAL <input type="checkbox"/> AMENDMENT <input type="checkbox"/> OTHER (SPECIFY) _____												
<table border="0"><tr><td><input checked="" type="checkbox"/> MAINTENANCE DREDGING (TYPE 1)</td><td><input type="checkbox"/> DYKE / RIP-RAP REPAIR (TYPE 1)</td></tr><tr><td><input type="checkbox"/> NEW DREDGING</td><td><input type="checkbox"/> NEW DYKE CONSTRUCTION</td></tr><tr><td><input type="checkbox"/> CONSTRUCTION APPROVAL</td><td><input type="checkbox"/> FORESHORE LEASE</td></tr><tr><td><input type="checkbox"/> WLAP WASTE MANAGEMENT PERMIT</td><td><input type="checkbox"/> FEDERAL FISHERIES ACT AUTHORIZATION</td></tr><tr><td><input type="checkbox"/> OTHER (SPECIFY) _____</td><td><input checked="" type="checkbox"/> OCEAN DISPOSAL</td></tr></table>			<input checked="" type="checkbox"/> MAINTENANCE DREDGING (TYPE 1)	<input type="checkbox"/> DYKE / RIP-RAP REPAIR (TYPE 1)	<input type="checkbox"/> NEW DREDGING	<input type="checkbox"/> NEW DYKE CONSTRUCTION	<input type="checkbox"/> CONSTRUCTION APPROVAL	<input type="checkbox"/> FORESHORE LEASE	<input type="checkbox"/> WLAP WASTE MANAGEMENT PERMIT	<input type="checkbox"/> FEDERAL FISHERIES ACT AUTHORIZATION	<input type="checkbox"/> OTHER (SPECIFY) _____	<input checked="" type="checkbox"/> OCEAN DISPOSAL
<input checked="" type="checkbox"/> MAINTENANCE DREDGING (TYPE 1)	<input type="checkbox"/> DYKE / RIP-RAP REPAIR (TYPE 1)											
<input type="checkbox"/> NEW DREDGING	<input type="checkbox"/> NEW DYKE CONSTRUCTION											
<input type="checkbox"/> CONSTRUCTION APPROVAL	<input type="checkbox"/> FORESHORE LEASE											
<input type="checkbox"/> WLAP WASTE MANAGEMENT PERMIT	<input type="checkbox"/> FEDERAL FISHERIES ACT AUTHORIZATION											
<input type="checkbox"/> OTHER (SPECIFY) _____	<input checked="" type="checkbox"/> OCEAN DISPOSAL											
<b>REQUIRED ATTACHMENTS:</b> PLEASE NOTE THAT THE FOLLOWING ATTACHMENTS ARE <b>REQUIRED</b> . FAILURE TO PROVIDE ACCURATE AND COMPLETE INFORMATION WILL RESULT IN SIGNIFICANT DELAYS AS A NEW OR REVISED APPLICATION WILL BE REQUIRED.												
<p><b>1. FOLDED COPIES OF ALL RELEVANT PLANS MUST ACCOMPANY THE APPLICATION. THESE PLANS MUST DELINEATE THE FOLLOWING INFORMATION:</b></p> <ul style="list-style-type: none"><li>• LOCATION (Property Boundaries, High Water Line)</li><li>• DESIGN DETAILS (Proposed Structures, Existing Structures, Structures to be Removed, Structural Details)</li><li>• CONSTRUCTION METHODOLOGY</li><li>• DREDGE AREA BOUNDARIES (If Applicable)</li><li>• SCHEDULING OF WORKS</li><li>• OPERATION PLAN (Drainage Plan)</li><li>• SITE BIOPHYSICAL INFORMATION Including, but not limited to, Habitat Types, Vegetation Present, Species Present</li></ul> <p><b>2. A COPY OF THE SEMP MAP WITH LOCATION INDICATED.</b></p>												
<b>LEAD AGENCY:</b> District of Squamish		<b>LEAD AGENCY FILE NUMBER:</b>										

**SQUAMISH  
ESTUARY  
REVIEW  
COMMITTEE**

**COORDINATED  
PROJECT REVIEW  
Application Form**

I, Thomas Finnbogason, certify that all information contained herein is true to the best of my knowledge. (PLEASE PRINT)

Applicant or Representative's Signature

Date Signed

**A. APPLICANT**

Name

**Squamish Terminals Ltd.**

Address

**37500 3<sup>rd</sup> Avenue, PO Box 1520, Squamish, BC**

Postal Code

**V0N 3G0**

Email Address

**Ron\_Anderson@saterminals.com**

Contact

**Mr. Ronald K. Anderson**

Telephone

**604-892-3511**

Cellular

Fax

**604-892-5623**

Occupation

**President**

Company Incorporation No.

**103990**

**B. APPLICANT'S REPRESENTATIVE (if different from above)**

Name

**Envirochem Services Inc**

Address

**310 East Esplanade, North Vancouver, BC**

Postal Code

**V7L 1A4**

Email Address

**thomas@envirochem.com**

Contact

**Thomas Finnbogason**

Telephone

**604-986-0233**

Cellular

Fax

**S22**

**604-986-8583**

**C. RIPARIAN OWNER**

Name

**BCR Properties Inc.**

Address

**506-221 West Esplanade, North Vancouver, BC**

Postal Code

**V7M 3J3**

Email Address

Contact

**Mr. Richard Myhill-Jones**

Telephone

**604-678-4703**

Cellular

Fax

**604-678-4702**

**D. PROPOSED USE OF AREA ON COMPLETION OF WORKS**

**Continued use as Bulk Shipping Terminal**

**E. PROJECT LOCATION**

Legal Description of Upland

**Lot E, DL 3220, 4271, 4272 PL 14953**

Street Address

**37500 3<sup>rd</sup> Avenue**

GPS Coordinates (if available)

**49° 41.13' N**

**123° 10.30 W**

## F. PROJECT DETAILS

### DOES THE PROJECT...

**Note: ITEMS BELOW MARKED WITH ASTERISK MAY REQUIRE A SEPARATE APPLICATION TO THE AGENCY INDICATED**

- |     |   |   |
|-----|---|---|
| a)  | Involve the construction of new structures or expansion/improvement of existing facilities?<br>If yes, explain  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| b)  | Involve demolition or removal and disposal of existing structures?<br>If yes, explain   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| c)  | Involve dyke construction or affect existing dykes?<br>If yes, explain  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| d)* | Involve diversion or consumption of water? *(MWLAP Water License Application)<br>If yes, explain  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| e)* | Generate wastes requiring disposal? *(MWLAP Waste Management Permit Application)<br>If yes, describe type and quantity  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| f)* | Involve use, production or handling of hazardous materials?*(MWLAP Waste Management Permit)<br>If yes, explain  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| g)* | Involve use or application of pesticides or herbicides? *(MWLAP Pesticide Permit Application)<br>If yes, explain  | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| h)* | Involve ocean disposal of material? *(DOE Ocean Disposal Permit Application)<br>If yes, explain<br><b>Squamish Terminals intends to maintenance dredge up to 4000 m<sup>3</sup> of sediment adjacent to Berth 2 where in-fill has reduced vessel clearance. The dredged material meets the Environment Canada Disposal at Sea guidelines.</b> | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| i)  | Require municipal servicing?<br>If yes, explain   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |

## G. PROPOSED WORKS AND CONSTRUCTION METHODS

**STL intends to perform maintenance dredging in the existing dredge pocket for Berth 2, north west of the existing wharf. The dredging is required to remove up to 4000 m<sup>3</sup> of sediment infill which is affecting the safe movement of vessel traffic. The sediment will be removed using a clam shell dredge to a depth consistent with the remainder of the dredge pocket. The dredged material will be dumped at an approved Disposal at Sea site under a valid Disposal at Sea Permit.**

Proposed Commencement Date for Works

**May 12, 2008**

Proposed Completion Date for Works

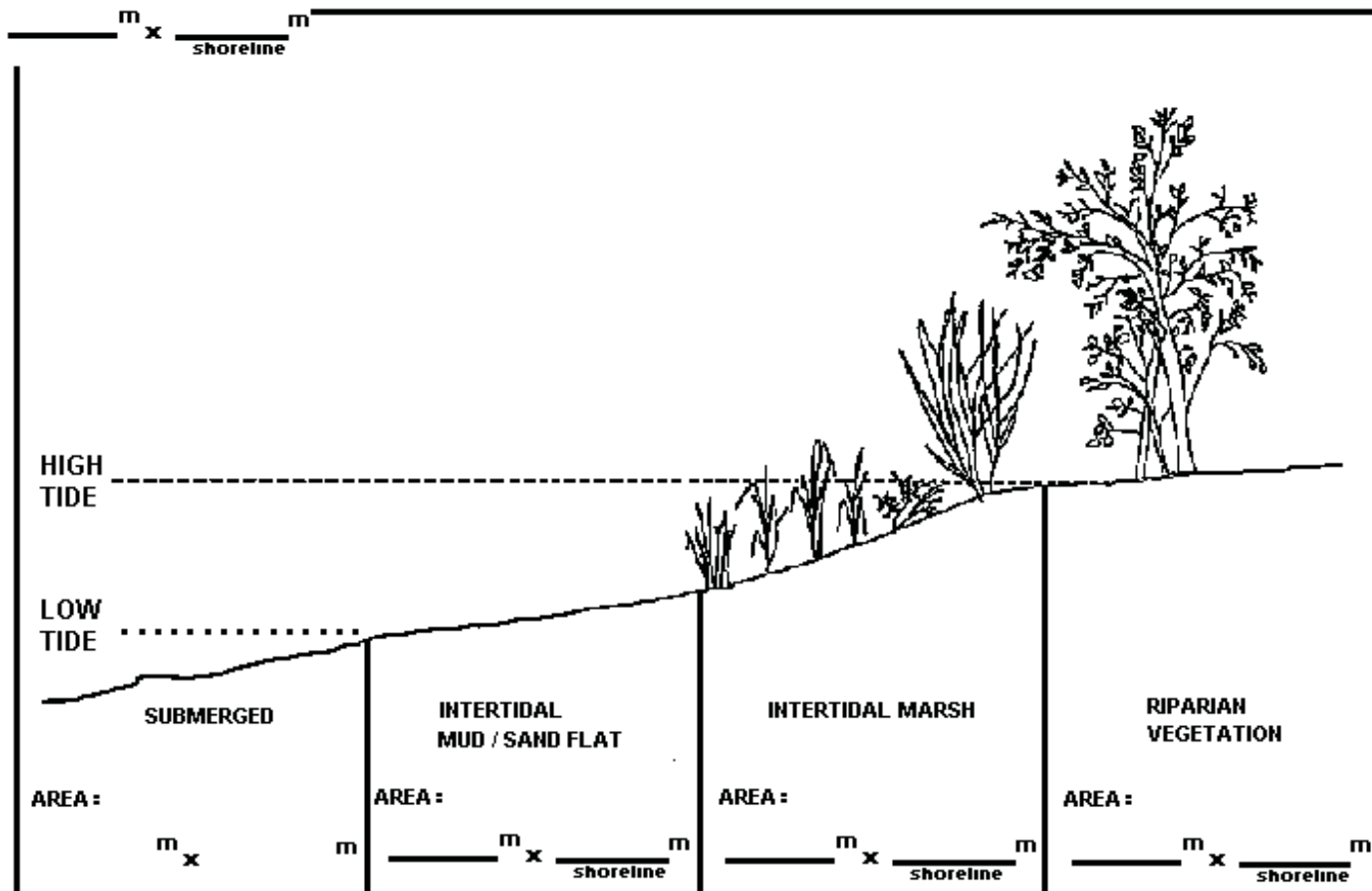
**May 30, 2008**

Hours of Construction:

**7: 00 AM – 7:00 (depending on tides)**

## H. DETAILS

Indicate the area affected using the diagram below as a guide to zones. Enter area affected in the appropriate space in the diagram.



## DOES THIS PROJECT REQUIRE...

If any of the following apply to your project, make sure you have completed Section G appropriately.

- |  |  |   |
|--|--|---|
| <input type="checkbox"/> FILL                | Area: $\underline{\hspace{2cm}} \text{ m} \times \underline{\hspace{2cm}} \text{ m}$ | Volume: $\underline{\hspace{2cm}} \text{ m}^3$                |
| <input checked="" type="checkbox"/> DREDGING | Area: $\underline{175} \text{ m} \times \underline{40} \text{ m}$                    | Volume: $\underline{<4000} \text{ m}^3$                       |
| <input type="checkbox"/> RIP RAP             | Area: $\underline{\hspace{2cm}} \text{ m} \times \underline{\hspace{2cm}} \text{ m}$ | Linear Shoreline Length: $\underline{\hspace{2cm}} \text{ m}$ |
| <input type="checkbox"/> PILES               | Number: $\underline{\hspace{2cm}}$   | Type: $\underline{\hspace{2cm}}$                              |

## I. LOCATION MAP

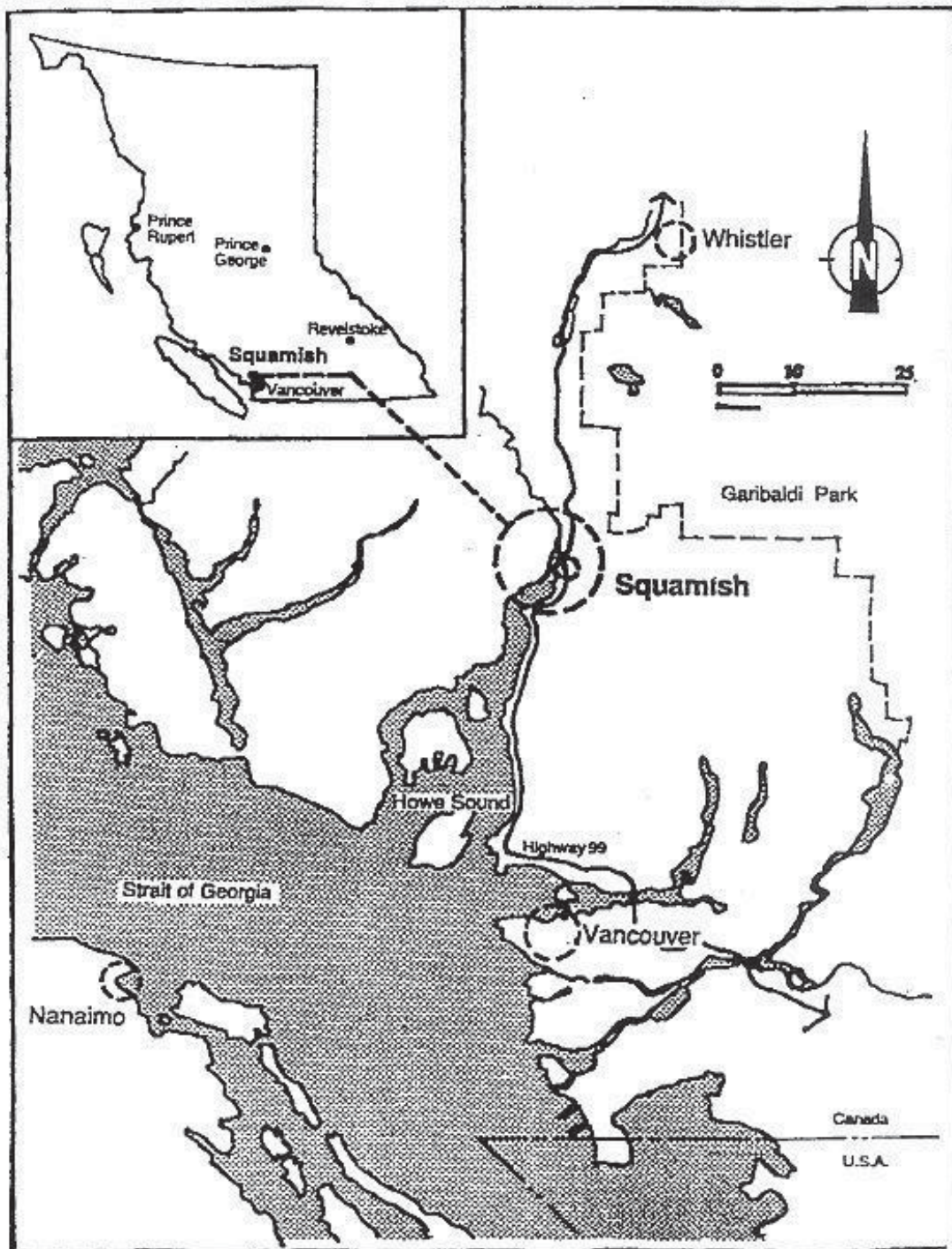
Indicate the location of the project on the map on the following page. Please add any additional references which will help to locate your project. (e.g. street names, landmarks, etc.)

If you have GPS coordinates for your project site, please include this information in Section F.



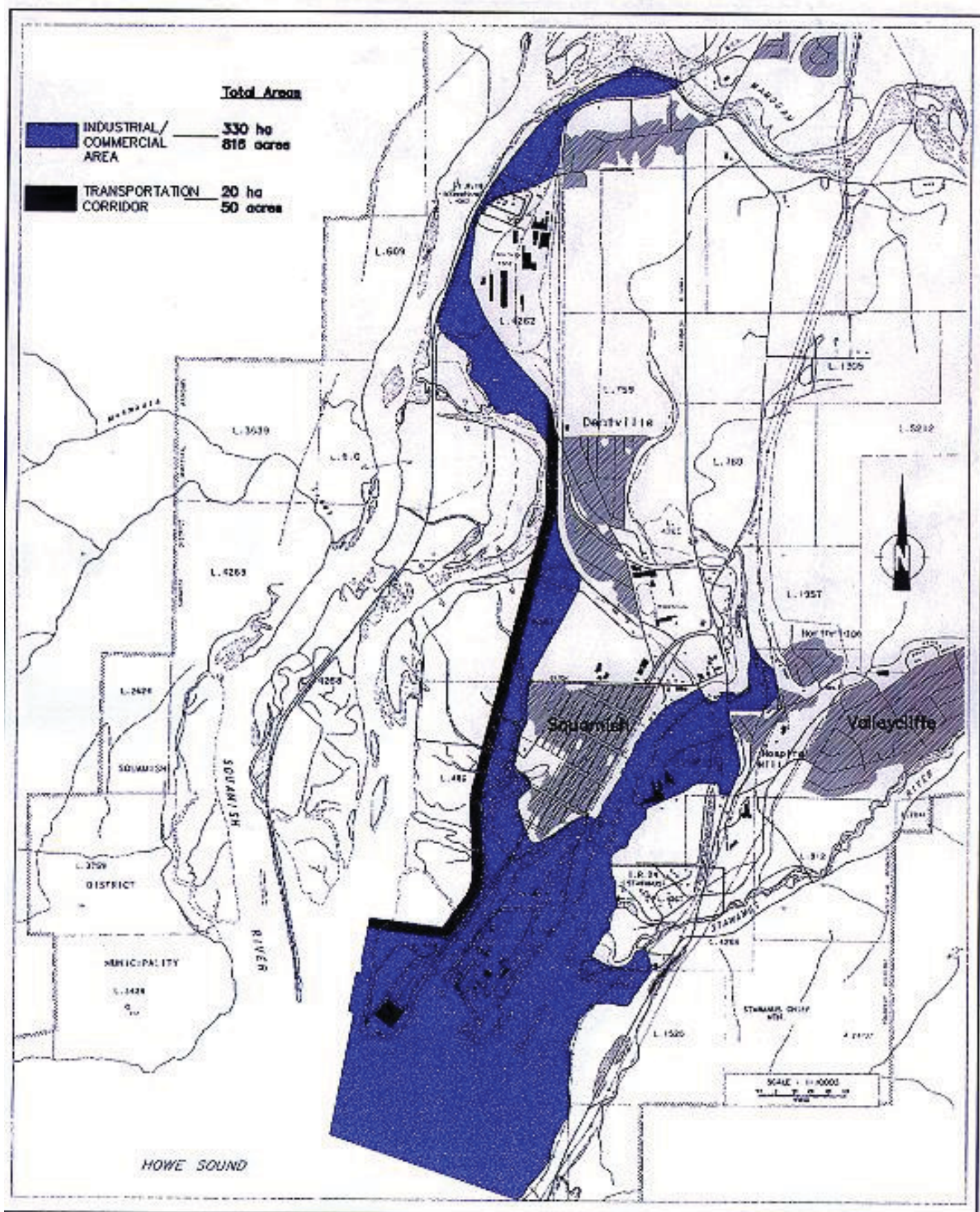
# I. LOCATION MAP

Squamish Location





### Figure 7 - Development







SUPERVISOR: ITT	DATE OF WORK:
DRAWN BY: HAH	DATE DRAWN: 02-OCT-04
REVIEWED BY: CT	DATE REVIEWED: 12-AUG-05
PROJECT NO.: 4045	DRAWING NO.: 4045-SH 2202.dwg

TITLE	FIGURE
SITE MAP	1
PROJECT:	
SOUANISH TERMINALS	

**D.B. TECHNICAL SERVICES INC.**

**4663 Woodridge Place**  
**West Vancouver, B.C. V7S 2X1**  
phone – 604-926-0675  
fax – 604-926-6090  
cel – **S22**

2008 March 14

Environment Canada  
Pacific and Yukon Region  
201 – 401 Burrard Street  
Vancouver, B.C. V6C 3S5

Attention: Ocean Disposal Permit Issuing Office by fax 604-666-9107

Subject: Sampling in support of Loading and Disposal at Sea


Site: Squamish Terminals Ltd. (STL)  
West Berth (Berth 2)  
Squamish, B.C.

Please refer to previous correspondence regarding the subject site.

Fifteen samples were taken March 13 as shown on the appended site plan. The fifteen samples will be composited by the lab into five composite samples for analyses pursuant to the standard suite for dredged material.

Thank you for your attendance at the site and your attention in this matter. If you have any questions, please contact me.

Regards,

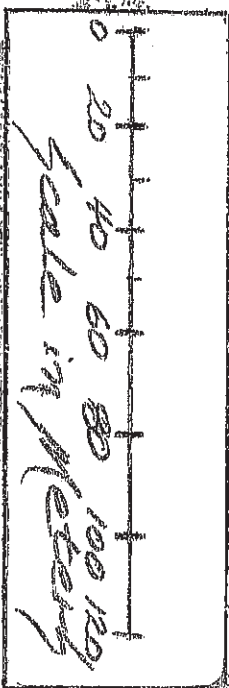
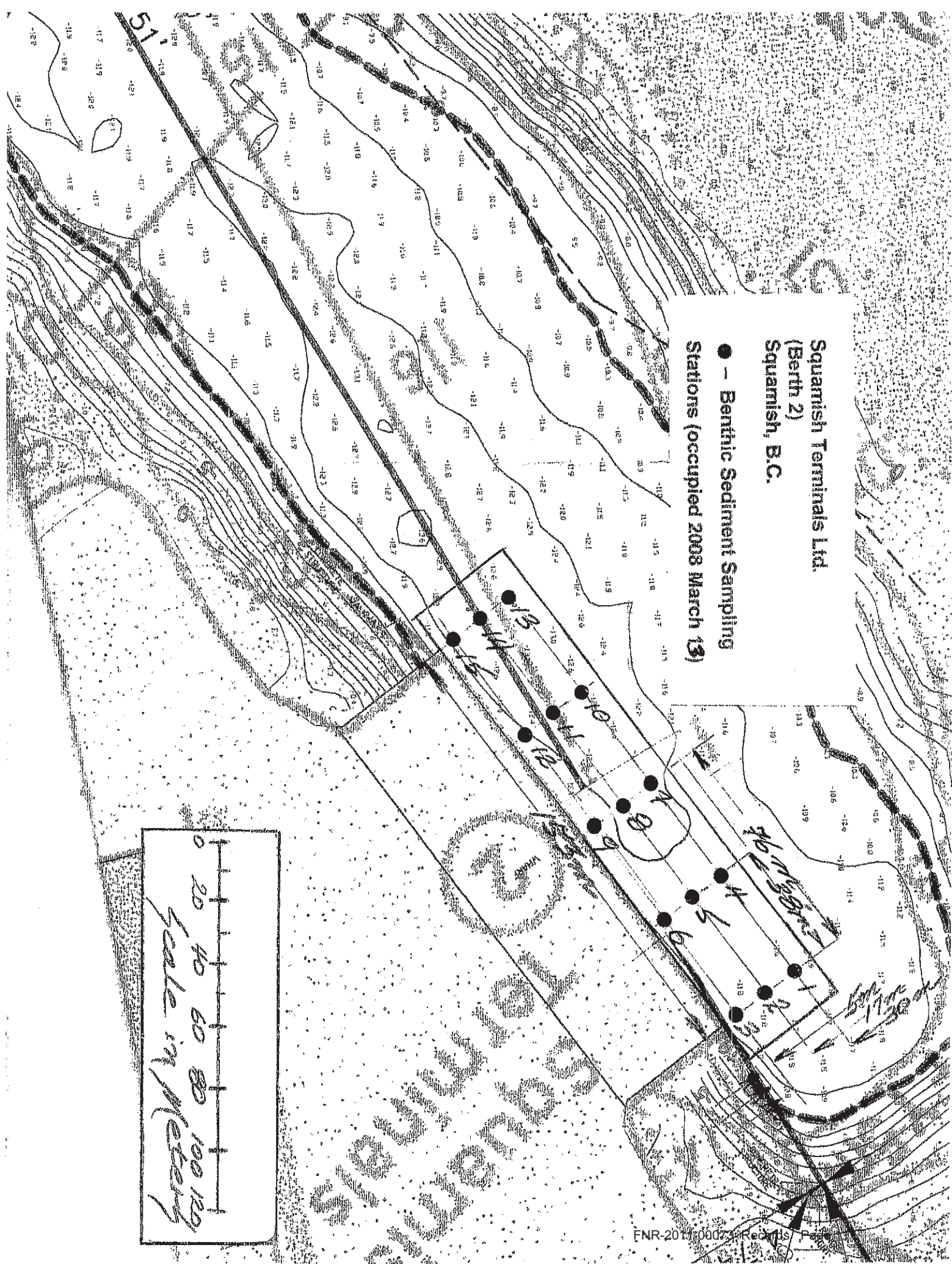


Duane E. Brothers,  
D.B. Technical Services Inc.

Cc: Thomas Finnbogason, Envirochem Services Inc.  
Ron Anderson, Squamish Terminals

Squamish Terminals Ltd.  
(Berth 2)  
Squamish, B.C.

● - Benthic Sediment Sampling  
Stations (occupied 2008 March 13)





**Environmental Division**

**ANALYTICAL REPORT**

ENVIROCHEM SERVICES INC.

**ATTN:** THOMAS FINNBOGASON

310 EAST ESPLANADE

NORTH VANCOUVER BC V7L 1A4

**Reported On:** 03-APR-08 04:47 PM

**Revision:** 2

**Lab Work Order #:** L610446

**Date Received:** 14-MAR-08

**Project P.O. #:**


**Job Reference:** SQUAMISH TERMINALS-BERTH 2 SQUAMISH, BC

**Legal Site Desc:**

**CofC Numbers:**

**Other Information:**

**Comments:** ADDITIONAL 26-MAR-08 18:45

  
\_\_\_\_\_  
Joyce Chow  
General Manager, Vancouver

**For any questions about this report please contact your Account Manager:**

**Jerry Holzbecher**

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.  
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU  
REQUIRE ADDITIONAL SAMPLE STORAGE TIME.



## ALS LABORATORY GROUP ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L610446-4	L610446-8	L610446-12	L610446-16	L610446-20
Grouping	Analyte		ENVIRO-STL- BRTH 2 (COMP 1-3)	ENVIRO-STL- BRTH 2 (COMP 4-6)	ENVIRO-STL- BRTH 2 (COMP 7-9)	ENVIRO-STL- BRTH 2 (COMP 10-12)	ENVIRO-STL- BRTH 2 (COMP 13-15)
<b>SOIL</b>							
<b>Physical Tests</b>	% Moisture (%)		38.7	38.5	40.0	36.8	35.2
<b>Metals</b>	Cadmium (Cd) (mg/kg)		0.14	0.15	0.16	0.12	0.12
	Lead (Pb) (mg/kg)		<30	<30	<30	<30	<30
	Mercury (Hg) (mg/kg)		0.0417	0.0474	0.0445	0.0381	0.0300
<b>Polycyclic Aromatic Hydrocarbons</b>	Acenaphthene (mg/kg)		<0.040	<0.040	<0.040	<0.040	<0.040
	Acenaphthylene (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Anthracene (mg/kg)		<0.050	<0.050	0.061	<0.050	<0.050
	Benz(a)anthracene (mg/kg)		0.086	0.057	0.132	<0.050	0.054
	Benzo(a)pyrene (mg/kg)		<0.050	<0.050	0.053	<0.050	<0.050
	Benzo(b)fluoranthene (mg/kg)		0.074	0.058	0.134	<0.050	<0.050
	Benzo(k)fluoranthene (mg/kg)		<0.050	<0.050	0.051	<0.050	<0.050
	Benzo(g,h,i)perylene (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Chrysene (mg/kg)		0.119	<0.050	0.239	<0.050	0.050
	Dibenz(a,h)anthracene (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Fluoranthene (mg/kg)		0.201	0.260	0.610	0.135	0.249
	Fluorene (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Indeno(1,2,3-c,d)pyrene (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Naphthalene (mg/kg)		<0.050	<0.050	<0.050	<0.050	<0.050
	Phenanthrene (mg/kg)		<0.050	<0.050	0.243	<0.050	<0.050
	Pyrene (mg/kg)		0.142	0.158	0.395	0.083	0.151
	Total PAHs (mg/kg)		0.62	0.53	1.92	0.22	0.50
	Light Molecular Wt. Pah Sum (mg/kg)		<0.10	<0.10	0.30	<0.10	<0.10
	Heavy Molecular Wt. Pah Sum (mg/kg)		0.62	0.53	1.61	0.22	0.50
	Surrogate: d12-Chrysene (SS) (%)		93	98	101	101	100
	Surrogate: d10-Acenaphthene (SS) (%)		94	96	98	98	97
	Surrogate: d8-Naphthalene (SS) (%)		94	95	97	97	95
	Surrogate: d10-Phenanthrene (SS) (%)		99	101	101	100	100
<b>Organic Parameters</b>	Total Organic Carbon (%)		1.0	1.0	1.0	0.9	0.7
<b>Particle Size</b>	% Gravel (>2mm) (%)		<1	<1	<1	<1	<1
	% Clay (<4um) (%)		11	12	11	10	9
	% Sand (2.0mm - 0.063mm) (%)		15	24	29	20	29
	% Silt (0.063mm - 4um) (%)		74	64	61	70	62

## ALS LABORATORY GROUP ANALYTICAL REPORT

		Sample ID Description Sampled Date Sampled Time Client ID	L610446-21	L610446-22	L610446-23	L610446-24	L610446-25
Grouping	Analyte		ENVIRO-STL- BRTH 2 (COMP 1-3 PAH QC)	ENVIRO-STL- BRTH 2 (COMP 13-15 METALS QC1)	ENVIRO-STL- BRTH 2 (COMP 13-15 METALS QC2)	ENVIRO-STL- BRTH 2 (COMP 13-15 METALS QC3)	ENVIRO-STL- BRTH 2 (COMP 13-15 METALS QC4)
<b>SOIL</b>							
<b>Physical Tests</b>	% Moisture (%)		39.3	36.0	35.8	36.4	34.9
<b>Metals</b>	Cadmium (Cd) (mg/kg)			0.11	0.14	0.11	0.10
	Lead (Pb) (mg/kg)			<30	<30	<30	<30
	Mercury (Hg) (mg/kg)			0.0329	0.0372	0.0340	0.0347
<b>Polycyclic Aromatic Hydrocarbons</b>	Acenaphthene (mg/kg)		<0.040				
	Acenaphthylene (mg/kg)		<0.050				
	Anthracene (mg/kg)		0.084				
	Benzo(a)anthracene (mg/kg)		0.099				
	Benzo(a)pyrene (mg/kg)		<0.050				
	Benzo(b)fluoranthene (mg/kg)		0.073				
	Benzo(k)fluoranthene (mg/kg)		<0.050				
	Benzo(g,h,i)perylene (mg/kg)		<0.050				
	Chrysene (mg/kg)		0.116				
	Dibenz(a,h)anthracene (mg/kg)		<0.050				
	Fluoranthene (mg/kg)		0.279				
	Fluorene (mg/kg)		<0.050				
	Indeno(1,2,3-c,d)pyrene (mg/kg)		<0.050				
	Naphthalene (mg/kg)		<0.050				
	Phenanthrene (mg/kg)		0.098				
	Pyrene (mg/kg)		0.189				
	Total PAHs (mg/kg)		0.94				
	Light Molecular Wt. Pah Sum (mg/kg)		0.18				
	Heavy Molecular Wt. Pah Sum (mg/kg)		0.76				
	Surrogate: d12-Chrysene (SS) (%)		104				
	Surrogate: d10-Acenaphthene (SS) (%)		102				
	Surrogate: d8-Naphthalene (SS) (%)		101				
	Surrogate: d10-Phenanthrene (SS) (%)		104				
<b>Organic Parameters</b>	Total Organic Carbon (%)						
<b>Particle Size</b>	% Gravel (>2mm) (%)						
	% Clay (<4um) (%)						
	% Sand (2.0mm - 0.063mm) (%)						
	% Silt (0.063mm - 4um) (%)						

## Reference Information

### Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
<b>C-TOT-ORG-LECO-SK</b>	Soil	Organic Carbon by combustion method	SSSA (1996) p. 973
Total Organic Carbon (C-TOT-ORG-LECO-SK, C-TOT-ORG-SK)			
Total C and inorganic C are determined on separate samples. The total C is determined by combustion and thermal conductivity detection, while inorganic C is determined by weight loss after addition of hydrochloric acid. Organic C is calculated by the difference between these two determinations.			
Reference for Total C: Nelson, D.W. and Sommers, L.E. 1996. Total Carbon, organic carbon and organic matter. P. 961-1010 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5			
Reference for Inorganic C: Loeppert, R.H. and Suarez, D.L. 1996. Gravimetric Method for Loss of Carbon Dioxide. P. 455-456 In: J.M. Bartels et al. (ed.) Methods of soil analysis: Part 3 Chemical methods. (3rd ed.) ASA and SSSA, Madison, WI. Book series no. 5			
<b>HG-HOTP-CVAFS-VA</b>	Soil	Mercury in Soil by CVAFS	EPA 3050B/7471A/245.7
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3050B 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 hotplate using a 1:1 ratio of nitric acid and hydrochloric acid. Instrumental analysis is by atomic fluorescence spectrophotometry (EPA 7471A/245.7).			
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 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.			
<b>MET-HOTP-MS-VA</b>	Soil	Metals in Soil by ICPMS	EPA 3050B/6020A
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 Method 3050B 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 hotplate using a 1:1 ratio of nitric acid and hydrochloric acid. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).			
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 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.			
<b>MOISTURE-VA</b>	Soil	% Moisture	ASTM METHOD D2794-00
This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.			
<b>PAH-HIGHLOW-CALC-VA</b>	Soil	Sum of low,high PAH's	CALCULATION
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).			
<b>PAH-SUM-CALC-VA</b>	Soil	Sum of PAH's	CALCULATION
Total PAH represents the sum of all PAH analytes reported for a given sample. Note that regulatory agencies and criteria differ in their definitions of Total PAH in terms of the individual PAH analytes to be included.			
<b>PAH-TUMB-H/A-MS-VA</b>	Soil	PAH by Tumbler HEX/ACE with GCMS	EPA METHODS 3570 & 8270.
Polycyclic Aromatic Hydrocarbons in Sediment/Soil This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3570 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses a mechanical shaking technique 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. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation.			

## Reference Information

### Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Analytical Method Reference(Based On)
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**PSA-PIPET+GRAVEL-SK** Soil Particle size - Sieve and Pipette FORESTRY CANADA (1991) P. 46-48 MOD

Particle size analysis involves the measurement of the proportions of the various primary soil particle sizes (ie. clay < 0.004 mm, silt 0.004-0.063 mm, sand 0.063-2.0 mm and gravel > 2.0 mm). In this method, the gravel and sand portions are determined by sieving, while the clay portion is determined by sedimentation using Stokes Law, which relates the radius of the particles to the velocity of the sedimentation in water. Silt is calculated as 100% - (sand% + clay%)

Pretreatment of the soil with Calgon (sodium hexametaphosphate) is used to ensure the complete dispersion of the primary soil particles. Additional pretreatment may be necessary to remove cementing materials such as CaCO<sub>3</sub> and organic matter.

#### Reference

Y.P. Kalra, and D.G. Maynard, 1991. Methods Manual For Forest Soil and Plant Analysis, Northwest Region. Forestry Canada (modified sand, silt and clay size ranges)

**\*\* Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies. The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:**

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
SK	ALS LABORATORY GROUP - SASKATOON, SASKATCHEWAN, CANADA	VA	ALS LABORATORY GROUP - VANCOUVER, BC, CANADA

### GLOSSARY OF REPORT TERMS

*Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.*

*The reported surrogate recovery value provides a measure of method efficiency.*

*mg/kg (units) - unit of concentration based on mass, parts per million*

*mg/L (units) - unit of concentration based on volume, parts per million*

*N/A - Result not available. Refer to qualifier code and definition for explanation*

*Test results reported relate only to the samples as received by the laboratory.*

*UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.*

*Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.*

*ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.*





**Environmental Division**

# ALS Laboratory Group Quality Control Report

Workorder: L610446

Report Date: 03-APR-08

Page 1 of 4

Client: ENVIROCHEM SERVICES INC.  
310 EAST ESPLANADE  
NORTH VANCOUVER BC V7L 1A4

Contact: THOMAS FINNBOGASON

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>C-TOT-ORG-LECO-SK</b> <b>Soil</b>								
Batch	R647458							
WG746941-1	DUP	L610446-12						
Total Organic Carbon		1.0	1.0	J	%	0.1	0.4	02-APR-08
<b>HG-HOTP-CVAFS-VA</b> <b>Soil</b>								
Batch	R647438							
WG746619-4	CRM	VA-NRC-PACS2						
Mercury (Hg)			88		%		85-124	02-APR-08
WG746619-5	CRM	VA-NRC-MESS3						
Mercury (Hg)			99		%		73-128	02-APR-08
WG746619-1	MB							
Mercury (Hg)			<0.0050		mg/kg		0.005	02-APR-08
WG746619-2	MB							
Mercury (Hg)			<0.0050		mg/kg		0.005	02-APR-08
<b>MET-HOTP-MS-VA</b> <b>Soil</b>								
Batch	R647501							
WG746619-4	CRM	VA-NRC-PACS2						
Cadmium (Cd)			114		%		94-134	02-APR-08
Lead (Pb)			95		%		80-120	02-APR-08
WG746619-5	CRM	VA-NRC-MESS3						
Cadmium (Cd)			112		%		80-120	02-APR-08
Lead (Pb)			100		%		80-120	02-APR-08
WG746619-1	MB							
Cadmium (Cd)			<0.050		mg/kg		0.05	02-APR-08
Lead (Pb)			<2.0		mg/kg		2	02-APR-08
WG746619-2	MB							
Cadmium (Cd)			<0.050		mg/kg		0.05	02-APR-08
Lead (Pb)			<2.0		mg/kg		2	02-APR-08
<b>PAH-TUMB-H/A-MS-VA</b> <b>Soil</b>								
Batch	R642600							
WG741117-4	CRM	ALS PAH1 RM						
Acenaphthene			101		%		70-130	19-MAR-08
Acenaphthylene			107		%		70-130	19-MAR-08
Anthracene			102		%		70-130	19-MAR-08
Benz(a)anthracene			103		%		70-130	19-MAR-08
Benzo(a)pyrene			103		%		70-130	19-MAR-08
Benzo(b)fluoranthene			101		%		70-130	19-MAR-08

# ALS Laboratory Group Quality Control Report

Workorder: L610446

Report Date: 03-APR-08

Page 2 of 4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PAH-TUMB-H/A-MS-VA</b>		<b>Soil</b>						
<b>Batch</b>	<b>R642600</b>							
<b>WG741117-4</b>	<b>CRM</b>	<b>ALS PAH1 RM</b>						
Benzo(g,h,i)perylene			100		%		70-130	19-MAR-08
Benzo(k)fluoranthene			104		%		70-130	19-MAR-08
Chrysene			105		%		70-130	19-MAR-08
Dibenz(a,h)anthracene			105		%		70-130	19-MAR-08
Fluoranthene			104		%		70-130	19-MAR-08
Fluorene			102		%		70-130	19-MAR-08
Indeno(1,2,3-c,d)pyrene			102		%		70-130	19-MAR-08
Naphthalene			114		%		50-130	19-MAR-08
Phenanthrene			104		%		70-130	19-MAR-08
Pyrene			103		%		70-130	19-MAR-08
<b>WG741117-1</b>	<b>MB</b>							
Acenaphthene			<0.040		mg/kg		0.04	19-MAR-08
Acenaphthylene			<0.050		mg/kg		0.05	19-MAR-08
Anthracene			<0.050		mg/kg		0.05	19-MAR-08
Benz(a)anthracene			<0.050		mg/kg		0.05	19-MAR-08
Benzo(a)pyrene			<0.050		mg/kg		0.05	19-MAR-08
Benzo(b)fluoranthene			<0.050		mg/kg		0.05	19-MAR-08
Benzo(g,h,i)perylene			<0.050		mg/kg		0.05	19-MAR-08
Benzo(k)fluoranthene			<0.050		mg/kg		0.05	19-MAR-08
Chrysene			<0.050		mg/kg		0.05	19-MAR-08
Dibenz(a,h)anthracene			<0.050		mg/kg		0.05	19-MAR-08
Fluoranthene			<0.050		mg/kg		0.05	19-MAR-08
Fluorene			<0.050		mg/kg		0.05	19-MAR-08
Indeno(1,2,3-c,d)pyrene			<0.050		mg/kg		0.05	19-MAR-08
Naphthalene			<0.050		mg/kg		0.05	19-MAR-08
Phenanthrene			<0.050		mg/kg		0.05	19-MAR-08
Pyrene			<0.050		mg/kg		0.05	19-MAR-08
<b>Batch</b>	<b>R643222</b>							
<b>WG741117-5</b>	<b>DUP</b>	<b>L610446-8</b>						
Acenaphthene		<0.040	<0.040	RPD-NA	mg/kg	N/A	39	20-MAR-08
Acenaphthylene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Anthracene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Benz(a)anthracene		0.057	0.076	J	mg/kg	0.019	0.2	20-MAR-08

# ALS Laboratory Group Quality Control Report

Workorder: L610446

Report Date: 03-APR-08

Page 3 of 4

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
<b>PAH-TUMB-H/A-MS-VA</b>		<b>Soil</b>						
<b>Batch</b>	<b>R643222</b>							
<b>WG741117-5</b>	<b>DUP</b>	<b>L610446-8</b>						
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Benzo(b)fluoranthene		0.058	0.082	J	mg/kg	0.024	0.2	20-MAR-08
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Chrysene		<0.050	0.063	RPD-NA	mg/kg	N/A	39	20-MAR-08
Dibenz(a,h)anthracene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Fluoranthene		0.260	0.341	J	mg/kg	0.081	0.2	20-MAR-08
Fluorene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Indeno(1,2,3-c,d)pyrene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Naphthalene		<0.050	<0.050	RPD-NA	mg/kg	N/A	39	20-MAR-08
Phenanthrene		<0.050	0.059	RPD-NA	mg/kg	N/A	39	20-MAR-08
Pyrene		0.158	0.203	J	mg/kg	0.045	0.2	20-MAR-08
<b>PSA-PIPET+GRAVEL-SK</b>		<b>Soil</b>						
<b>Batch</b>	<b>R647539</b>							
<b>WG746943-1</b>	<b>DUP</b>	<b>L610446-20</b>						
% Gravel (>2mm)		<1	<1	RPD-NA	%	N/A	26	02-APR-08
% Sand (2.0mm - 0.063mm)		29	23		%	23	26	02-APR-08
% Silt (0.063mm - 4um)		62	67		%	7.8	26	02-APR-08
% Clay (<4um)		9	9	J	%	0	4	02-APR-08
<b>WG746943-2</b>	<b>IRM</b>	<b>FARM98</b>						
% Gravel (>2mm)			0		%		1-1	02-APR-08
% Clay (<4um)			26		%		20-30	02-APR-08

# ALS Laboratory Group Quality Control Report

Workorder: L610446

Report Date: 03-APR-08

Page 4 of 4

## Legend:

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Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

## Sample Parameter Qualifier Definitions:

---

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.



# CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

PAGE 1 OF 1

## SEND REPORT TO:

COMPANY: Envirochem Services Inc.  
ADDRESS: 310 East Esplanade  
CITY: North Vancouver PROV: B.C. POSTAL CODE: V6L 1A4  
CONTACT: Thomas Finnrogason TELEPHONE: 604-986-0233 #104  
PROJECT NAME#: Squamish Terminals - Berth 2  
SAMPLER: Duane Brothers/Tom Finnrogason  
ALSO CONTACT: Jerry Holzberger  
REPORT FORMAT: INVOICE FORMAT:  
☒ Hardcopy ☐ Fax #: ☐ E-mail (pdf format)  
☒ E-mail Specify file type: PDF and XL  
E-mail Address: E-mail Address:

☒ Routine Turn Around  
☐ Rush (Surcharges May Apply) Specify Due Date:

SAMPLE IDENTIFICATION	DATE / TIME COLLECTED		MATRIX
	YYYY-MM-DD	Time	
Envirochem - STL - Brth 2	1	AM	sed./soil
Envirochem - STL - Brth 2	2	AM	sed./soil
Envirochem - STL - Brth 2	3	AM	sed./soil
Envirochem - STL - Brth 2	4	AM	sed./soil
Envirochem - STL - Brth 2	5	AM	sed./soil
Envirochem - STL - Brth 2	6	AM	sed./soil
Envirochem - STL - Brth 2	7	AM	sed./soil
Envirochem - STL - Brth 2	8	AM	sed./soil
Envirochem - STL - Brth 2	9	AM	sed./soil
Envirochem - STL - Brth 2	10	AM	sed./soil
Envirochem - STL - Brth 2	11	AM	sed./soil
Envirochem - STL - Brth 2	12	AM	sed./soil
Envirochem - STL - Brth 2	13	AM	sed./soil
Envirochem - STL - Brth 2	14	AM	sed./soil
Envirochem - STL - Brth 2	15	AM	sed./soil

## RELINQUISHED BY:

NAME: DATE: TIME:  
OF: DATE: TIME:  
NAME: DATE: TIME:  
OF: DATE: TIME:

## RECEIVED BY:

NAME: DATE: TIME:  
OF: DATE: TIME:  
NAME: DATE: TIME:  
OF: DATE: TIME:

Special Instructions / Comments (billing details, QC reporting, etc.):

Disposal at Sea Criteria - Dredged Material - e-mail draft data to Tom and Duane asap.

Composite as indicated; Archive all remaining samples as discrete

FOR LAB USE ONLY Cooler Seal Intact? Yes No N/A

## Phosy, Krisna SSBC:EX

---

From: Willcox, Michael FLNR:EX  
Sent: Wednesday, September 1, 2010 2:28 AM  
To: Naito, Brian  
Subject: RE: Dredging and Repairs Squamish Terminals Berth 1 and 2

Brian, sorry for the delay S22 . Go ahead and send it. I'll give Land Remediation a heads up. As I recall, there were no significant concerns on Land Remediation's part last time.

Mike

-----Original Message-----

From: Naito, Brian [<mailto:Brian.Naito@dfo-mpo.gc.ca>]  
Sent: Tue 31/08/2010 9:32 PM  
To: Willcox, Michael ENV:EX  
Subject: RE: Dredging and Repairs Squamish Terminals Berth 1 and 2

Mike,

Fraser River Pile & Dredge's clamshell dredge equipment is heading to the site now with the intention of dredging on Thursday September 2.

Hope it is okay with you but I am going to send the SERC letter tomorrow (Wednesday Sep 1).

Brian

---

From: Naito, Brian  
Sent: Wed 25/08/2010 9:48 AM  
To: 'Willcox, Michael ENV:EX'  
Subject: RE: Dredging and Repairs Squamish Terminals Berth 1 and 2

Mike,

In the past, some members of the public in Squamish have raised concerns regarding dredging at Squamish Terminals as related to mercury issues.

Is there a need for BC Environment Land Remediation to review the dredging proposal or be advised that they may received complaints from the public?

Brian

---

From: Willcox, Michael ENV:EX [<mailto:Michael.Willcox@gov.bc.ca>]  
Sent: August 24, 2010 11:49 AM  
To: Naito, Brian; [bcarere@squamish.ca](mailto:bcarere@squamish.ca)  
Subject: RE: Dredging and Repairs Squamish Terminals Berth 1 and 2

Brian,

I agree with your proposal to send a SERC letter similar to the previous ones.

Thanks,

Mike

From: Naito, Brian [<mailto:Brian.Naito@dfo-mpo.gc.ca>]  
Sent: Monday, August 23, 2010 5:04 PM  
To: Willcox, Michael ENV:EX; [bcareere@squamish.ca](mailto:bcareere@squamish.ca)  
Subject: FW: Dredging and Repairs Squamish Terminals Berth 1 and 2

Brooke and Mike,

Attached is a new application to SERC for maintenance dredging and pile replacement at Squamish Terminals. Unless anyone has any objection, I suggest that I send a SERC letter, similar to the previous SERC letters for maintenance dredging plus additional mitigation measures for pile driving, to Squamish Terminals.

I look forward to your feedback.

Brian

Brian G. Naito  
Habitat Biologist | Biologiste de l'habitat  
Fisheries and Oceans Canada | Pêches et Océans Canada  
Oceans, Habitat and Enhancement | Océans, de l'habitat et de la mise valeur  
Lower Fraser Area | Le bas Fraser  
100 Annacis Parkway, Delta, BC V3M 6A2 | 100 Annacis Parkway, Delta (C.-B.) V3M 6A2  
[Brian.Naito@dfo-mpo.gc.ca](mailto:Brian.Naito@dfo-mpo.gc.ca)  
Telephone | Téléphone 604-666-8190  
Facsimile | Télécopieur 604-666-6627  
Government of Canada | Gouvernement du Canada

---

From: C Finnbogason [<mailto:cgfinnbogason@shaw.ca>]  
Sent: Mon 23/08/2010 4:47 PM  
To: Naito, Brian  
Cc: [BJebson@frpd.com](mailto:BJebson@frpd.com); [ron.anderson@sqterminals.com](mailto:ron.anderson@sqterminals.com)  
Subject: Dredging and Repairs Squamish Terminals Berth 1 and 2

Good Afternoon Brian,

Further to our discussion in July, Squamish Terminals Ltd. requests an extension of the SERC Letters of Advice (attached) to complete some additional dredging in Berth 2 in September. The additional dredging is required to satisfy some concerns raised by Marine Pilots regarding some "high points" in the dredge pocket of Berth 2; identified during soundings taken after the dredging completed in 2008. The volume anticipated to be removed will be under 8,000 cubic metres and will be disposed at sea under FRPD's DAS Permit. Squamish Terminals commits to comply with the conditions as stipulated in the SERC Letters of Advice issued in 2008.

Further, in conjunction with the aforementioned work Squamish Terminals requests approval to replace the two navigational marker dolphins located on each side of the entrance to Berth #2. The navigational markers consist of 3 creosote timber piles. FRPD will pull the existing timber piles and replace them with a single 36" pipe pile. The navigational light on top will be remounted onto the top of the new steel pipe.

Also Berth #1 has 10 damaged timber fender piles which need replacing. FRPD will pull the damaged piles and install new timber piles in the same locations. Please let me know if you need further information.

Regards,

Tom

See Our Outsourced Environmental Management Options!  
<<http://www.envirochem.com/page258.htm>>

Thomas W Finnbogason, BSc

Partner / Director

Envirochem Services Inc.

office: (604) 986-0233, extension 104

cell: (604) 805-1024

e-mail: [thomas@envirochem.com](mailto:thomas@envirochem.com) <<mailto:thomas@envirochem.com>>

visit us: [www.envirochem.com](http://www.envirochem.com)



## Phosy, Krisna SSBC:EX

---

**From:** Naito, Brian [Brian.Naito@dfo-mpo.gc.ca]  
**Sent:** Monday, August 23, 2010 5:04 PM  
**To:** Willcox, Michael FLNR:EX; bcarere@squamish.ca  
**Subject:** FW: Dredging and Repairs Squamish Terminals Berth 1 and 2  
**Attachments:** Squamish Terminals Berth 1 Maintenance Dredging SERC Draft (2) (2).doc; Squamish Terminals Berth 2 Maintenance Dredging DFO Comments.doc

Brooke and Mike,

Attached is a new application to SERC for maintenance dredging and pile replacement at Squamish Terminals. Unless anyone has any objection, I suggest that I send a SERC letter, similar to the previous SERC letters for maintenance dredging plus additional mitigation measures for pile driving, to Squamish Terminals.

I look forward to your feedback.

Brian

Brian G. Naito  
Habitat Biologist | Biologiste de l'habitat  
Fisheries and Oceans Canada | Pêches et Océans Canada  
Oceans, Habitat and Enhancement | Océans, de l'habitat et de la mise valeur  
Lower Fraser Area | Le bas Fraser  
100 Annacis Parkway, Delta, BC V3M 6A2 | 100 Annacis Parkway, Delta (C.-B.) V3M 6A2  
[Brian.Naito@dfo-mpo.gc.ca](mailto:Brian.Naito@dfo-mpo.gc.ca)  
Telephone | Téléphone 604-666-8190  
Facsimile | Télécopieur 604-666-6627  
Government of Canada | Gouvernement du Canada

---

**From:** C Finnbogason [<mailto:cqfinnbogason@shaw.ca>]  
**Sent:** Mon 23/08/2010 4:47 PM  
**To:** Naito, Brian  
**Cc:** [BJebson@frpd.com](mailto:BJebson@frpd.com); [ron\\_anderson@sqterminals.com](mailto:ron_anderson@sqterminals.com)  
**Subject:** Dredging and Repairs Squamish Terminals Berth 1 and 2

Good Afternoon Brian,

Further to our discussion in July, Squamish Terminals Ltd. requests an extension of the SERC Letters of Advice (attached) to complete some additional dredging in Berth 2 in September. The additional dredging is required to satisfy some concerns raised by Marine Pilots regarding some "high points" in the dredge pocket of Berth 2; identified during soundings taken after the dredging completed in 2008. The volume anticipated to be removed will be under 8,000 cubic metres and will be disposed at sea under FRPD's DAS Permit. Squamish Terminals commits to comply with the conditions as stipulated in the SERC Letters of Advice issued in 2008.

Further, in conjunction with the aforementioned work Squamish Terminals requests approval to replace the two navigational marker dolphins located on each side of the entrance to Berth #2. The navigational markers consist of 3 creo timber piles. FRPD will pull the existing timber piles and replace them with a single 36" pipe pile. The navigational light on top will be remounted onto the top of the new steel pipe.

Also Berth #1 has 10 damaged timber fender piles which need replacing. FRPD will pull the

damaged piles and install new timber piles in the same locations.  
Please let me know if you need further information.

Regards,

Tom

**See Our Outsourced Environmental Management Options!**

**Thomas W Finnbogason, BSc**

Partner / Director

Envirochem Services Inc.

office: (604) 986-0233, extension 104

cell: (604) 805-1024

e-mail: [thomas@envirochem.com](mailto:thomas@envirochem.com)

visit us: [www.envirochem.com](http://www.envirochem.com)



## SQUAMISH ESTUARY REVIEW COMMITTEE



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada



Ministry of  
Environment



Environment  
Canada

Environnement  
Canada

Mr. Thomas Finnbogason  
310 East Espanade  
North Vancouver, British Columbia  
V7L 1A4

July 15, 2008.

Dear Mr. Finnbogason:

### **Re: Squamish Terminals Ltd. – Proposed Berth 1 Maintenance Dredging**

Reference is made to the letter to the Squamish Estuary Review Committee (SERC) from T. Finnbogason of Envirochem Services Inc. dated April 10, 2008 regarding “Squamish Terminals Ltd. (STL) Berth 1 SERC Application dated August 2005” and attachments.

From the information provided, it is SERC’s understanding that Squamish Terminals Ltd. is proposing to conduct maintenance dredging of up to 4000 cubic metres of seabed material at their Berth 1 in the Squamish Estuary. The dredging will mainly utilize clamshell dredge equipment and the dredged material will be disposed of at sea.

Please be advised that, on the understanding that the foregoing points accurately reflect the subject proposal, it is the opinion of SERC that the potential adverse environmental impacts resulting from the works to conduct maintenance dredging at Squamish Terminals Ltd. Berth 1 in the Squamish Estuary can be mitigated through the application of appropriate criteria. In addition to those measures set out in the information provided, the following measures are intended to prevent or avoid any potentially harmful effects on the environment:

1. Squamish Terminals Ltd. acknowledges that all plans and specifications relating to the works have been duly prepared and reviewed by appropriate professionals working on its behalf. Squamish Terminals Ltd. further acknowledges that it is solely responsible for all design, safety and workmanship aspects of the works.
2. The works shall be as described above and as described in the letter to the Squamish Estuary Review Committee (SERC) from T. Finnbogason of Envirochem Services Inc. dated April 10, 2008 regarding “Squamish Terminals Ltd. (STL) Berth 1 SERC Application dated August 2005” and attachments.
3. Squamish Terminals Ltd. shall ensure that all work complies with the requirements of the *Fisheries Act* and any other applicable laws and regulations.
4. Dredging works must only be undertaken during the period from August 16 of any given year to February 15 of the following year.
5. Water-based machinery or equipment (e.g., barges, etc.) shall be located and firmly moored in deep water, far enough offshore to prevent any grounding on the intertidal foreshore or bed of the Squamish Estuary or

Howe Sound. The only exception to this condition is that use may be made of vertical spuds to hold barge(s) in place.

6. All equipment used on site must be in good repair and free of excess oil and grease.
7. Any dredged material to be ocean disposed must comply with the Canadian Environmental Protection Act's Disposal At Sea Regulations and Interim Contaminant Testing Guidelines. Squamish Terminals Ltd. should contact the Disposal At Sea Program at Environment Canada (Ph: 604-666-3606) for further information on the foregoing and to obtain a Disposal At Sea permit.
8. All works must be carried out in a manner that minimizes the direct or indirect release of sediment or sediment-laden water onto the intertidal foreshore of or into the waters of the Squamish Estuary or Howe Sound. In this regard, reference should be made to the water quality criteria for particulate matter as described in the British Columbia Water Quality Guidelines (Criteria): 2006 Edition produced by BC Ministry of Environment.
9. All work and activities at the site must be carried out such that there is no discharge, either direct or indirect, of construction waste, excavation waste, overburden, soil, paints, hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants), and any other deleterious substances (i.e., substances harmful to fish) or any substances deleterious to aquatic life onto the bank of or into the waters of the Squamish Estuary or Howe Sound.
10. There shall be no fuelling of equipment on or adjacent to the foreshore in association with the project. All hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants) kept at the site shall be appropriately contained and handled in compliance with all applicable guidelines, legislation, and best management practices.
11. An appropriate, spill prevention, containment, and cleanup contingency plan for hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants), and all other deleterious substances (i.e., substances harmful to fish) that may be used in association with the project, shall be put in place prior to works and activities commencing at the site. Appropriate containment and clean up materials shall also be kept available onsite throughout the course of works and activities on the project.
12. Squamish Terminals Ltd. should be reminded of its obligation to comply at all times with Section 36 of the *Fisheries Act*, which specifically prohibits the discharge of substances deleterious to fish or other aquatic life onto the intertidal foreshore of or into fish-bearing waters such as the Squamish Estuary or Howe Sound. Due diligence is required at all times to prevent such discharges, and adherence to the terms and conditions of this letter does not of itself relieve Squamish Terminals Ltd. of this ongoing obligation.
13. The works shall be carried out in such a manner so as to avoid any adverse impact on fish or fish habitat. If the harmful alteration, disruption or destruction of fish habitat occurs, the works will be in contravention of Section 35 of the *Fisheries Act*. If any such alteration occurs Fisheries & Oceans Canada reserves the right to immediately suspend or alter operations and Squamish Terminals Ltd. and/or their agent(s) or contractor(s) shall undertake, at their own expense, any remedial works deemed necessary by Fisheries & Oceans Canada to ensure a "no net loss" in the productive capacity of local fish habitat.
14. The Fisheries & Oceans Canada Conservation & Protection Field Supervisor in Squamish, B.C. (Ph: 604-892-3230 / Facs. 604-892-2378) shall be notified at least two (2) days in advance of the start of the proposed works.
15. A copy of this letter is to be provided to any contractor(s) prior to work commencing. In addition, a copy of this letter is to be retained on site at all times when the subject works are underway.

16. This letter of advice is valid for one (1) year from the date of this letter. After this time, if the subject works have not been completed, this letter will be void. This will ensure that the proposed works will conform to current habitat management policy, guidelines, and legislation.
17. It is understood that by proceeding with the subject works, Squamish Terminals Ltd. and/or its agents and/or contractors shall have indicated that they understand and have agreed to the foregoing conditions.

Please note that this letter of advice should not be taken to imply approval of the subject works in accordance with the habitat protection provisions of the *Fisheries Act* or any other federal or provincial legislation. If harmful alteration, disruption or destruction of fish habitat occurs as a result of a change in the plans for the subject proposed works, or failure to implement the additional measures specified above, contravention of subsection 35(1) of the *Fisheries Act* could occur.

Also please note that the above measures are based upon the anticipated potential environmental issues associated with the works based on the project information supplied. For non-environmental issues or approvals, or in cases where unforeseen issues not addressed above or elsewhere may arise during the course of the work, the responsible authority (ies) must be contacted directly.

Should you have any questions or require further information, please do not hesitate to contact the undersigned at Tel: (604) 815-5027.

Sincerely,

Peter Woods  
on behalf of SERC

cc: B. Naito, Fisheries and Oceans Canada  
M. Willcox, BC Environment  
V. Au, Environment Canada

J. Schellenberg, Transport Canada Navigable Waters Protection





## SQUAMISH ESTUARY REVIEW COMMITTEE



Fisheries and Oceans  
Canada

Pêches et Océans  
Canada



Ministry of  
Environment



Environment  
Canada

Environnement  
Canada

RE:

Mr. Thomas Finnbogason  
310 East Espanade  
North Vancouver, British Columbia  
V7L 1A4

April 24<sup>th</sup>, 2008

Dear Mr. Finnbogason:

**Re: Squamish Terminals Ltd. – Proposed Berth 2 Maintenance Dredging**

Reference is made to the letter to the Squamish Estuary Review Committee (SERC) from T. Finnbogason of Envirochem Services Inc. dated April 10, 2008 regarding “Squamish Terminals Ltd. (STL) Berth 2 SERC Application for Maintenance Dredging” and attachments. Reference is also made to the email sent to B. Naito of Fisheries and Oceans Canada by T. Finnbogason of Envirochem Services Inc. on April 18, 2008 regarding “STL Dredging Berth 2”.

From the information provided, it is SERC’s understanding that Squamish Terminals Ltd. is proposing to conduct maintenance dredging of up to 4000 cubic metres of seabed material at their Berth 2 in the Squamish Estuary. The dredging will mainly utilize clamshell dredge equipment and the dredged material will be disposed of at sea.

It is also SERC’s understanding that some dredging at Berth 2 is required as soon as possible in order to address immediate navigational / berthing requirements for ships. However, due to concerns from Fisheries and Oceans Canada with any dredging during the February 15 to August 15 fisheries sensitive period, Squamish Terminals Ltd. is planning to conduct the minimum dredging required to address Berth 2 navigational / berthing requirements (i.e. dredging only up to approximately 980 cubic metres of dredge material along the dock face) prior to August 15, 2008. The remaining dredging is planned to be conducted after August 15, 2008 but prior to February 15, 2009. Further, the dredging proposed during the fisheries sensitive period will be conducted such that the clamshell bucket will be deployed in a manner as to minimize excess water while loading, the dredged material will be loaded into a fully contained bottom dump scow, the dredging will be completed within 24 hours and an environmental monitor will be present during dredging to monitor fish presence and turbidity.

Please be advised that, on the understanding that the foregoing points accurately reflect the subject proposal, it is the opinion of SERC that the potential adverse environmental impacts resulting from the works to conduct maintenance dredging at Squamish Terminals Ltd. Berth 2 in the Squamish Estuary can be mitigated through the application of appropriate criteria. In addition to those measures set out in the information provided, the following measures are intended to prevent or avoid any potentially harmful effects on the environment:

1. Squamish Terminals Ltd. acknowledges that all plans and specifications relating to the works have been duly prepared and reviewed by appropriate professionals working on its behalf. Squamish Terminals Ltd. further acknowledges that it is solely responsible for all design, safety and workmanship aspects of the works.

2. The works shall be as described above and as described in the letter to the Squamish Estuary Review Committee (SERC) from T. Finnbogason of Envirochem Services Inc. dated April 10, 2008 regarding "Squamish Terminals Ltd. (STL) Berth 2 Application for Maintenance Dredging" and attachments and in the email sent to B. Naito of Fisheries and Oceans Canada by T. Finnbogason of Envirochem Services Inc. on April 18, 2008 regarding "STL Dredging Berth 2" and attachments.
3. Squamish Terminals Ltd. shall ensure that all work complies with the requirements of the *Fisheries Act* and any other applicable laws and regulations.
4. Dredging works must only be undertaken during the period from August 16 to February 15 of the following year with the exception of the proposed dredging of up to approximately 980 cubic metres of dredge material along the dock face of Berth 2 which is required to address immediate navigational / berthing requirements.

The above referenced dredging during the fisheries sensitive period of February 15 to August 15 of any given year shall only be conducted such that:

- the clamshell bucket will be deployed in a manner as to minimize excess water while loading;
- the dredged material will be loaded into a fully contained bottom dump scow;
- The dredging will be completed within 24 hours and;
- An environmental monitor is present, who shall monitor and direct all works at the site to ensure compliance with the *Fisheries Act*, and all other applicable legislation, guidelines, and best management practices; and compliance with the mitigation measures in this letter. The foregoing notwithstanding, this letter does not delegate any authority under the *Fisheries Act* to the environmental monitor. The environmental monitor must have written authority to modify or halt any construction activity as required to minimize impacts to fish or fish habitat and to ensure compliance with this letter.

Within 60 days of completion of the works, the environmental monitor shall complete and submit a monitoring report to the FREMP ERC. The report should include photographs and should outline the environmental monitor's observations of the effectiveness of the mitigation measures employed and documentation of any residual habitat impacts observed despite the best efforts of all concerned.

5. Water-based machinery or equipment (e.g., barges, etc.) shall be located and firmly moored in deep water, far enough offshore to prevent any grounding on the intertidal foreshore or bed of the Squamish Estuary or Howe Sound. The only exception to this condition is that use may be made of vertical spuds to hold barge(s) in place.
6. All equipment used on site must be in good repair and free of excess oil and grease.
7. Any dredged material to be ocean disposed must comply with the Canadian Environmental Protection Act's Disposal At Sea Regulations and Interim Contaminant Testing Guidelines. Squamish Terminals Ltd. should contact the Disposal At Sea Program at Environment Canada (Ph: 604-666-3606) for further information on the foregoing and to obtain a Disposal At Sea permit.
8. All works must be carried out in a manner that minimizes the direct or indirect release of sediment or sediment-laden water onto the intertidal foreshore or into the waters of the Squamish Estuary or Howe Sound. In this regard, reference should be made to the water quality criteria for particulate matter as described in the British Columbia Water Quality Guidelines (Criteria): 2006 Edition produced by BC Ministry of Environment.

9. All work and activities at the site must be carried out such that there is no discharge, either direct or indirect, of construction waste, excavation waste, overburden, soil, paints, hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants), and any other deleterious substances (i.e., substances harmful to fish) or any substances deleterious to aquatic life onto the bank of or into the waters of the Squamish Estuary or Howe Sound.
10. There shall be no fuelling of equipment on or adjacent to the foreshore in association with the project. All hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants) kept at the site shall be appropriately contained and handled in compliance with all applicable guidelines, legislation, and best management practices.
11. An appropriate, spill prevention, containment, and cleanup contingency plan for hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants), and all other deleterious substances (i.e., substances harmful to fish) that may be used in association with the project, shall be put in place prior to works and activities commencing at the site. Appropriate containment and clean up materials shall also be kept available onsite throughout the course of works and activities on the project.
12. Squamish Terminals Ltd. should be reminded of its obligation to comply at all times with Section 36 of the *Fisheries Act*, which specifically prohibits the discharge of substances deleterious to fish or other aquatic life onto the intertidal foreshore of or into fish-bearing waters such as the Squamish Estuary or Howe Sound. Due diligence is required at all times to prevent such discharges, and adherence to the terms and conditions of this letter does not of itself relieve Squamish Terminals Ltd. of this ongoing obligation.
13. The works shall be carried out in such a manner so as to avoid any adverse impact on fish or fish habitat. If the harmful alteration, disruption or destruction of fish habitat occurs, the works will be in contravention of Section 35 of the *Fisheries Act*. If any such alteration occurs Fisheries & Oceans Canada reserves the right to immediately suspend or alter operations and Squamish Terminals Ltd. and/or their agent(s) or contractor(s) shall undertake, at their own expense, any remedial works deemed necessary by Fisheries & Oceans Canada to ensure a "no net loss" in the productive capacity of local fish habitat.
14. The Fisheries & Oceans Canada Conservation & Protection Field Supervisor in Squamish, B.C. (Ph: 604-892-3230 / Facs. 604-892-2378) shall be notified at least two (2) days in advance of the start of the proposed works.
15. A copy of this letter is to be provided to any contractor(s) prior to work commencing. In addition, a copy of this letter is to be retained on site at all times when the subject works are underway.
16. This letter of advice is valid for one (1) year from the date of this letter. After this time, if the subject works have not been completed, this letter will be void. This will ensure that the proposed works will conform to current habitat management policy, guidelines, and legislation.
17. It is understood that by proceeding with the subject works, Squamish Terminals Ltd. and/or its agents and/or contractors shall have indicated that they understand and have agreed to the foregoing conditions.

Please note that this letter of advice should not be taken to imply approval of the subject works in accordance with the habitat protection provisions of the *Fisheries Act* or any other federal or provincial legislation. If harmful alteration, disruption or destruction of fish habitat occurs as a result of a change in the plans for the subject proposed works, or failure to implement the additional measures specified above, contravention of subsection 35(1) of the *Fisheries Act* could occur.

Also please note that the above measures are based upon the anticipated potential environmental issues associated with the works based on the project information supplied. For non-environmental issues or approvals, or in cases where unforeseen issues not addressed above or elsewhere may arise during the course of the work, the responsible authority (ies) must be contacted directly.

Should you have any questions or require further information, please do not hesitate to contact the undersigned at Tel: (604) 815-5027.

Sincerely,

Peter Woods  
on behalf of SERC

cc: B. Naito, Fisheries and Oceans Canada  
M. Willcox, BC Environment  
J. Brydon, Environment Canada

J. Schellenberg, Transport Canada Navigable Waters Protection

## Phosy, Krisna SSBC:EX

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**From:** Naito, Brian [Brian.Naito@dfo-mpo.gc.ca]  
**Sent:** Wednesday, September 1, 2010 6:43 AM  
**To:** thomas@envirochem.com  
**Cc:** Willcox, Michael FLNR:EX; Brooke Carere  
**Subject:** SERC Letter - Dredging and Repairs Squamish Terminals Berth 1 and 2  
**Attachments:** Squamish Terminals Maintenance Dredging and Pile Replacement Sep0110.pdf

Tom,

Please see the attached letter regarding the above subject.

Brian G. Naito  
Habitat Biologist | Biologiste de l'habitat  
Fisheries and Oceans Canada | Pêches et Océans Canada  
Oceans, Habitat and Enhancement | Océans, de l'habitat et de la mise valeur  
Lower Fraser Area | Le bas Fraser  
100 Annacis Parkway, Delta, BC V3M 6A2 | 100 Annacis Parkway, Delta (C.-B.) V3M 6A2  
[Brian.Naito@dfo-mpo.gc.ca](mailto:Brian.Naito@dfo-mpo.gc.ca)  
Telephone | Téléphone 604-666-8190  
Facsimile | Télécopieur 604-666-6627  
Government of Canada | Gouvernement du Canada  
<<Squamish Terminals Maintenance Dredging and Pile Replacement Sep0110.pdf>>





Oceans, Habitat and Enhancement Branch  
Lower Fraser Area  
Unit 3 - 100 Annacis Parkway  
Delta, BC V3M 6A2

September 01, 2010

Thomas W Finnbogason  
Envirochem Services Inc.  
310 East Espanade  
North Vancouver, BC V7L 1A4

**Re: Squamish Terminals Ltd. – Proposed Berth 2 Maintenance Dredging of “High Spots” and Berth 1 and 2 Dolphin/Pile Replacement**

Dear Mr. Finnbogason:

Reference is made to your email sent to me on August 23, 2010 regarding “Dredging and Repairs Squamish Terminals Berth 1 and 2”.

From the information provided, it is the Squamish Estuary Review Committee (SERC)’s understanding that Squamish Terminals Ltd. is proposing to conduct the following works:

- Maintenance dredging of “high spots” in their Berth 2. The dredging will involve utilization of clamshell dredge equipment to dredge up to 8,000 cubic metres with the dredged material disposed of at sea.
- Replacement of two navigational marker dolphins located on each side of the entrance to Berth #2. The navigational markers consist of 3 treated timber piles which will be removed and replaced with a single 36" pipe pile. The navigational light on top will be remounted onto the top of the new steel pipe.
- Replacement of 10 damaged timber fender piles at Berth 1. The damaged piles will be removed with new timber piles installed in the same locations.

Please be advised that, on the understanding that the foregoing points accurately reflect the subject proposal, it is the opinion of SERC that the potential adverse environmental impacts resulting from the works to conduct maintenance dredging of “high spots” in Squamish Terminals Ltd. Berth 2, replace two navigational marker dolphins located on each side of the entrance to Berth #2 and replace 10 damaged timber fender piles at Berth 1 in the Squamish Estuary can be mitigated through the application of appropriate criteria. In addition to those measures set out in the information provided, the following measures are intended to prevent or avoid any potentially harmful effects on the environment:

1. Squamish Terminals Ltd. acknowledges that all plans and specifications relating to the works have been duly prepared and reviewed by appropriate professionals working on its behalf. Squamish Terminals Ltd. further acknowledges that it is solely responsible for all design, safety and workmanship aspects of the works.

2. The works shall be as described above and as described in the email sent to B. Naito of Fisheries and Oceans Canada by Thomas W Finnbogason of Envirochem Services Inc. on August 23, 2010 regarding "Dredging and Repairs Squamish Terminals Berth 1 and 2".
3. Squamish Terminals Ltd. shall ensure that all work complies with the requirements of the *Fisheries Act* and any other applicable laws and regulations.
4. Dredging works must only be undertaken during the period from August 16 of any given year to February 15 of the following year.
5. Water-based machinery or equipment (e.g., barges, etc.) shall be located and firmly moored in deep water, far enough offshore to prevent any grounding on the intertidal foreshore or bed of the Squamish Estuary or Howe Sound. The only exception to this condition is that use may be made of vertical spuds to hold barge(s) in place.
6. All equipment used on site must be in good repair and free of excess oil and grease.
7. For any extraction of existing piles that have been treated with creosote or other preservatives or coatings, reasonable efforts are to be applied to remove the entire length of the pile from the intertidal foreshore or subtidal riverbed of the Squamish Estuary or Howe Sound.
8. If steel pipe piles over 18 inches in diameter will be used and will be installed using a diesel hammer, air hammer, or similar powered hammer equipment instead of using a vibratory or drop hammer, Fisheries and Oceans Canada (B. Naito at Ph: 604-666-8190) is to be contacted immediately as additional requirements will need to be applied in order to protect fisheries resources. The in-water installation of steel pipe piles over 18 inches in diameter by means of a diesel hammer, air hammer, or similar powered hammer equipment can result in high underwater sound levels (peak pressures) capable of injuring or killing fish.
9. Any steel pipe piles or other open-ended piles must be capped to prevent entry of wildlife. Experience has shown very high bird mortality associated with entrapment within open-ended piles.
10. All applicable legislation, guidelines, and best management practices shall be employed with respect to the application of wood preservatives and other coatings. Wood preservatives are to be applied at an established upland wood preservation facility and are to be applied in the dry, sufficiently in advance of the installation of the treated timber to allow the preservative to completely absorb and prevent leaching into the aquatic environment. A minimum of 45 days curing time is generally required to satisfy these criteria. This condition applies to initial construction and to subsequent maintenance. Reference should be made to Fisheries and Oceans Canada "Guidelines to Protect Fish and Fish Habitat From Treated Wood Used In Aquatic Environments in the Pacific Region" (Hutton, K.E. and S.C. Samis. 2000. Can. Tech. Rep. Fish. Aquat. Sci. 2314: vi + 34 p).
11. For any dredged material to be disposed of at sea, Squamish Terminals Ltd. or its agent(s) or contractor(s) shall only dredge/load any dredged material under a valid Disposal At Sea Permit pursuant to the provisions of Part 7, Division 3 of the *Canadian Environmental Protection Act*, 1999.
12. All works must be carried out in a manner that minimizes the direct or indirect release of sediment or sediment-laden water onto the intertidal foreshore or into the waters of the Squamish Estuary or Howe Sound. In this regard, reference should be made to the water quality criteria for

particulate matter as described in the British Columbia Water Quality Guidelines (Criteria): 2006 Edition produced by BC Ministry of Environment.

13. All work and activities at the site must be carried out such that there is no discharge, either direct or indirect, of construction waste, excavation waste, overburden, soil, paints, hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants), and any other deleterious substances (i.e., substances harmful to fish) or any substances deleterious to aquatic life onto the bank of or into the waters of the Squamish Estuary or Howe Sound.
14. There shall be no fuelling of equipment on or adjacent to the foreshore in association with the project. All hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants) kept at the site shall be appropriately contained and handled in compliance with all applicable guidelines, legislation, and best management practices.
15. An appropriate, spill prevention, containment, and cleanup contingency plan for hydrocarbon products (e.g., fuel, oil, hydraulic fluid, lubricants), and all other deleterious substances (i.e., substances harmful to fish) that may be used in association with the project, shall be put in place prior to works and activities commencing at the site. Appropriate containment and clean up materials shall also be kept available onsite throughout the course of works and activities on the project.
16. Squamish Terminals Ltd. should be reminded of its obligation to comply at all times with Section 36 of the *Fisheries Act*, which specifically prohibits the discharge of substances deleterious to fish or other aquatic life onto the intertidal foreshore of or into fish-bearing waters such as the Squamish Estuary or Howe Sound. Due diligence is required at all times to prevent such discharges, and adherence to the terms and conditions of this letter does not of itself relieve Squamish Terminals Ltd. of this ongoing obligation.
17. The works shall be carried out in such a manner so as to avoid any adverse impact on fish or fish habitat. If the harmful alteration, disruption or destruction of fish habitat occurs, the works will be in contravention of Section 35 of the *Fisheries Act*. If any such alteration occurs Fisheries & Oceans Canada reserves the right to immediately suspend or alter operations and Squamish Terminals Ltd. and/or their agent(s) or contractor(s) shall undertake, at their own expense, any remedial works deemed necessary by Fisheries & Oceans Canada to ensure a "no net loss" in the productive capacity of local fish habitat.
18. The Fisheries & Oceans Canada Conservation & Protection Field Supervisor in Squamish, B.C. (Ph: 604-892-3230 / Facs. 604-892-2378) shall be notified at least two (2) days in advance of the start of the proposed works.
19. A copy of this letter is to be provided to any contractor(s) prior to work commencing. In addition, a copy of this letter is to be retained on site at all times when the subject works are underway.
20. This letter of advice is valid for one (1) year from the date of this letter. After this time, if the subject works have not been completed, this letter will be void. This will ensure that the proposed works will conform to current habitat management policy, guidelines, and legislation.
21. It is understood that by proceeding with the subject works, Squamish Terminals Ltd. and/or its agents and/or contractors shall have indicated that they understand and have agreed to the foregoing conditions.

Please note that this letter of advice should not be taken to imply approval of the subject works in accordance with the habitat protection provisions of the *Fisheries Act* or any other federal or provincial legislation. If harmful alteration, disruption or destruction of fish habitat occurs as a result of a change in the plans for the subject proposed works, or failure to implement the additional measures specified above, contravention of subsection 35(1) of the *Fisheries Act* could occur.

Also please note that the above measures are based upon the anticipated potential environmental issues associated with the works based on the project information supplied. For non-environmental issues or approvals, or in cases where unforeseen issues not addressed above or elsewhere may arise during the course of the work, the responsible authority (ies) must be contacted directly.

If you have any questions or require further information, please do not hesitate to contact me at Ph (604) 666-8190.

Sincerely,

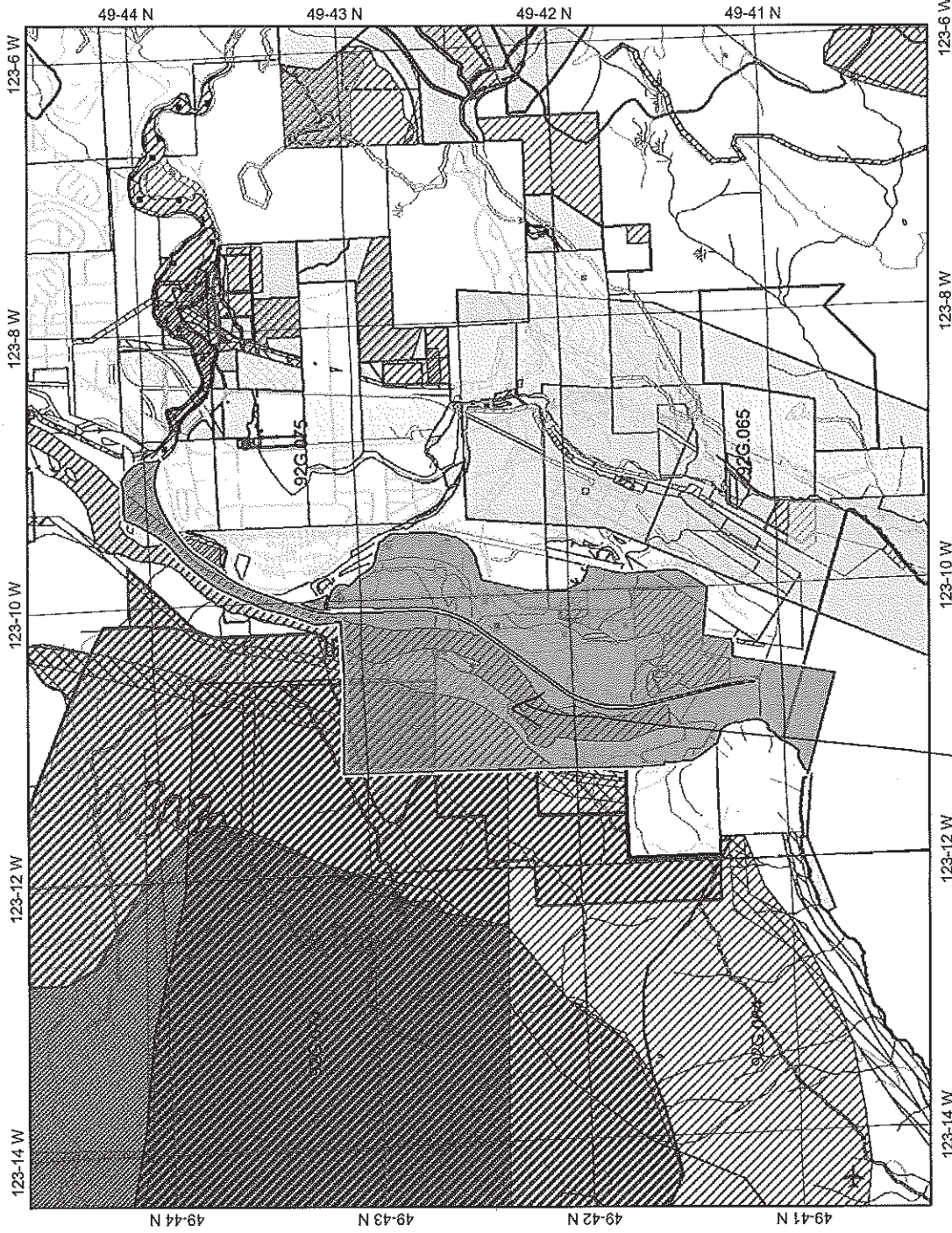


Brian G. Naito  
Habitat Biologist

cc: B. Carere, District of Squamish (Via Email: [bcarere@squamish.ca](mailto:bcarere@squamish.ca))  
M. Willcox, BC Environment (Via Email: [michael.willcox@gov.bc.ca](mailto:michael.willcox@gov.bc.ca))



# DISTRICT LOTS 610, 3639, 4268, 4270, 4274, 4275, 7949, GROUP 1, BLOCK G O



Map center: 49° 42' 26" N, 123° 10' 9" W

4.8 km.

3.2

1.6

0

This map is a user generated static output from an internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: DISTRICT LOTS 610, 3639, 4268, 4270, 4274, 4275, 7949, GROUP 1; BLOCK G OF DISTRICT LOTS 486, 4272, 6931 AND 7949, GROUP 1; THOSE PARTS OF DISTRICT LOTS 486, 609, 4261, 4271, 4272 AND 4273, GROUP 1 THAT PART OF THE NORTHWEST 1/4, SECTION 3, TOWNSHIP 50, AND THAT

## Legend

- ☐ Interest Parcels
- ☐ Provincial Park
- ☐ Crown Grant
- ☐ Application
- ☐ Lease
- ☐ Development Agreement
- ☐ Licence
- ☐ Permit
- ☐ Reserve
- ☐ Right of Way
- ☐ Transfer of Admin / Control
- ☐ Inactive Disposition Transaction
- ☐ OIC Ecological Reserve
- ☐ Dominion Patent
- ☐ Inventory Site
- ☐ Uncoded / Unknown
- ☐ IP\_SID=671808
- ☐ Transportation - Points (TRIM)
- ☐ Helipad
- ☐ Transportation - Lines (TRIM)
- ☐ Airfield
- ☐ Airport
- ☐ Airstrip
- ☐ Airport/Abandoned
- ☐ Ferry Route
- ☐ Road (Gravel Undivided) - 1 Lane
- ☐ Road (Gravel Undivided) - 2 Lanes
- ☐ Road (Gravel Undivided) - UIC - 1 Lane
- ☐ Road (Gravel Undivided) - UIC - 2 Lanes
- ☐ Road (Paved Undivided) - Not Elevated - 1 Lane Each Way
- ☐ Road (Paved Undivided) - Not Elevated - 2 Lanes Each Way
- ☐ Road (Paved Divided) - UIC - Not Elevated - 2 Lanes Each Way
- ☐ Road (Paved Divided) - Not Elevated - 1 Lane

Scale: 1:55,832

File 2409171

Transfer of Administration To MOE  
Nov 11 2006



# District Lot 4271 Group 1 New Westminster District

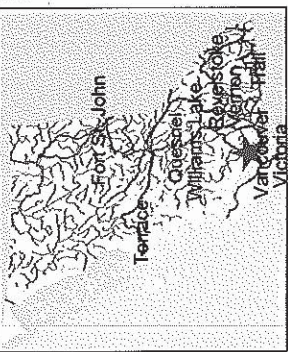


This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: CROWN GRANT  
Stage: C  
Legal Desc.: DISTRICT LOT 4271, GROUP 1, NEW WESTMINSTER DIST. (Legal Desc populated from related PIN(s))

## Legend

- Interest Parcels
  - Provincial Park
  - Crown Grant
  - Application
  - Lease
  - Development Agreement
  - Licence
  - Permit
  - Reserve
  - Right of Way
  - Transfer of Admin / Control
  - Inactive Disposition Transaction
  - OTC Ecological Reserve
  - Dominion Patent
  - Inventory Site
  - Uncoded / Unknown
- Survey Parcels
  - Primary
  - Indian Reserves Primary
  - Mineral Claim
  - Timber Licence
  - Subdivision
  - Indian Reserves Subdivision
  - Right of Way
  - Unknown
  - PIN\_SID=7141120
- Transportation - Points (TRIM)
  - Helipad
- Transportation - Lines (TRIM)
  - Airfield
  - Airport
  - Airtrip
  - Airport Abandoned
  - Ferry Route
  - Road (Gravel Undivided) - 1 Lane
  - Road (Gravel Undivided) - 2 Lanes





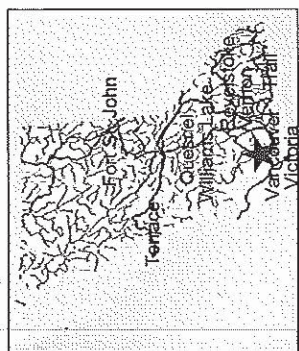
# DISTRICT LOT 3220, GROUP 1, NEW WESTMINSTER



Map center: 49° 41' 3" N, 123° 10' 13" W

Notes: Type: CROWN GRANT  
 Stage: C  
 Legal Desc.: DISTRICT LOT 3220, GROUP 1, NEW WESTMINSTER DIST

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.



## Legend

- Interest Parcels**
  - Provincial Park
  - Crown Grant
  - Application
  - Lease
  - Development Agreement
  - Licence
  - Permit
  - Reserve
  - Right of Way
  - Transfer of Admin / Control
  - Inactive Disposition Transaction
  - OIC Ecological Reserve
  - Dominion Patent
  - Inventory Site
  - Uncoded / Unknown
- Survey Parcels**
  - Primary
  - Indian Reserves Primary
  - Mineral Claim
  - Timber Licence
  - Subdivision
  - Indian Reserves Subdivision
  - Right of Way
  - Unknown
  - PIN\_SID=7436440
- Transportation - Points (TRIM)**
  - Helipad
- Transportation - Lines (TRIM)**
  - Airfield
  - Airport
  - Airstrip
  - Airport Abandoned
  - Ferry Route
  - Road (Gravel Undivided) - 1 Lane
  - Road (Gravel Undivided) - 2 Lanes



Scale: 1:17,069



# DISTRICT LOT 4272, GROUP 1, NEW WESTMINSTER

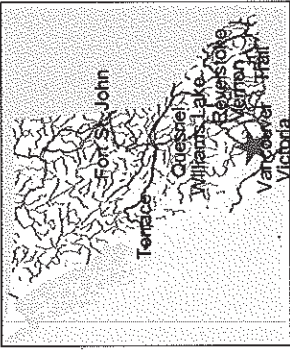


0 400 800 1200 m.

Map center: 49° 41' 32" N, 123° 10' 17" W

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Notes: Type: CROWN GRANT  
Stage: C  
Legal Desc.: DISTRICT LOT 4272, GROUP 1, NEW WESTMINSTER DIST



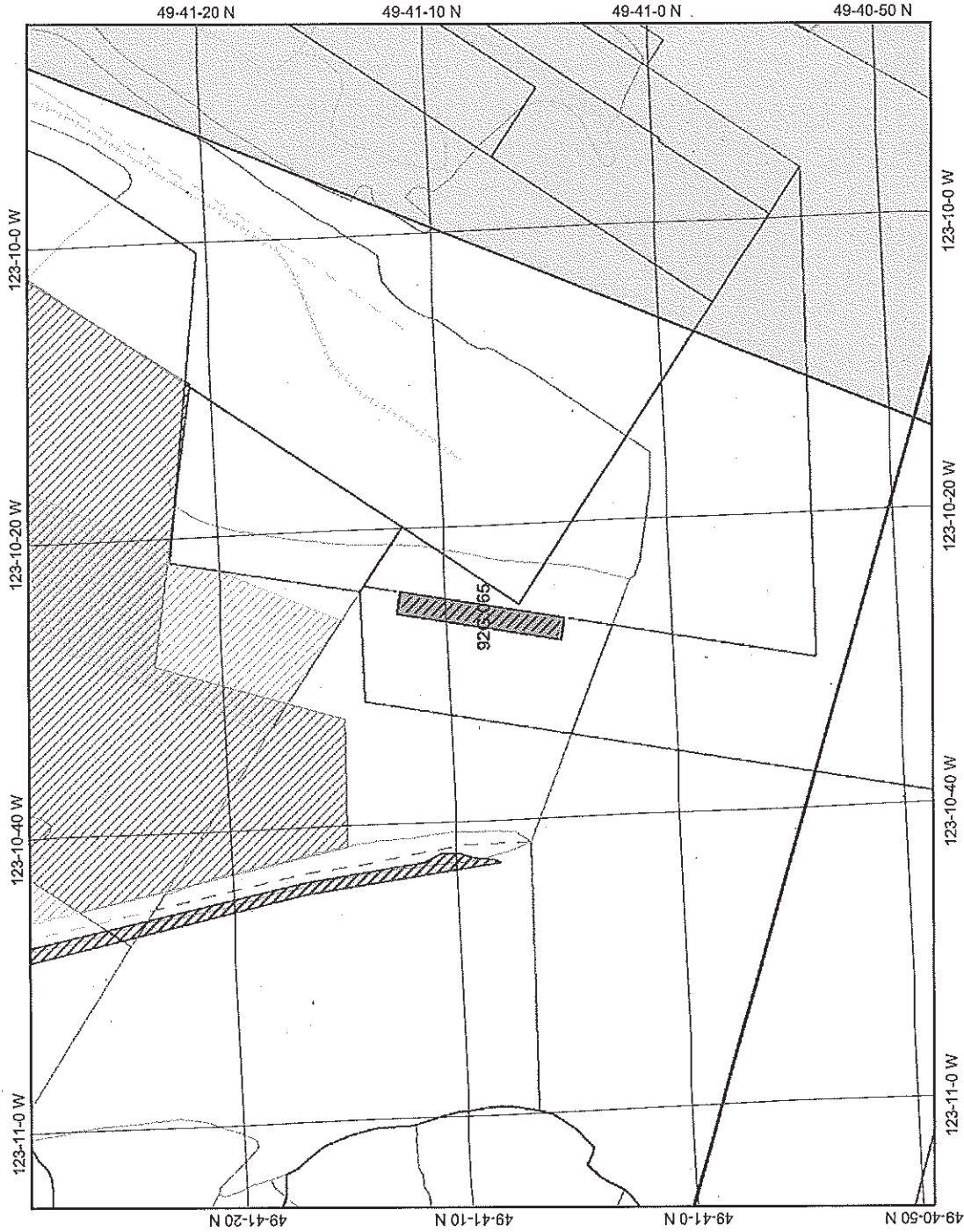
## Legend

- Interest Parcels**
  - Provincial Park
  - Crown Grant
  - Application
  - Lease
  - Development Agreement
  - Licence
  - Permit
  - Reserve
  - Right of Way
  - Transfer of Admin / Control
  - Inactive Disposition Transaction
  - OIC Ecological Reserve
  - Dominion Patent
  - Inventory Site
  - Uncoded / Unknown
  - Survey Parcels
- Primary**
  - Indian Reserves Primary
  - Mineral Claim
  - Timber Licence
  - Subdivision
  - Indian Reserves Subdivision
  - Right of Way
  - Unknown
  - PIN\_SID=7141250
- Transportation - Points (TRIM)**
  - Helipad
- Transportation - Lines (TRIM)**
  - Airfield
  - Airport
  - Airstrip
  - Airport Abandoned
  - Ferry Route
  - Road (Gravel Undivided) - 1 Lane
  - Road (Gravel Undivided) - 2 Lanes



Scale: 1:13,512

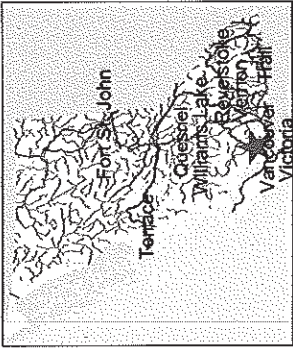
# DISTRICT LOT 7642, GROUP 1, NEW WESTMINSTER



Map center: 49° 41' 8" N, 123° 10' 26" W

Notes: File: 2403700  
Type: LEASE  
Stage: T  
Client: SQUAMISH TERMINALS LTD.

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.



## Legend

### Interest Parcels

Provincial Park

Crown Grant

Application

Lease

Development Agreement

Licence

Permit

Reserve

Right of Way

Transfer of Admin / Control

Inactive Disposition Transaction

OIC Ecological Reserve

Dominion Patent

Inventory Site

Uncoded / Unknown

IP\_SID=171427

Transportation - Points (TRIM)

Transportation - Lines (TRIM)

Helipad

Airfield

Airport

Airstrip

Airport Abandoned

Ferry Route

Road (Gravel Undivided) - 1 Lane

Road (Gravel Undivided) - 2 Lanes

Road (Gravel Undivided) - U/C - 1 Lane

Road (Gravel Undivided) - U/C - 2 Lanes

Road (Paved Divided) - Not Elevated - 1 Lane Each Way

Road (Paved Divided) - Not Elevated - 2 Lanes Each Way

Road (Paved Divided) - U/C - Not Elevated - 2 Lanes Each Way

Road (Paved Undivided) - Not Elevated - 1 Lane

Road (Paved Undivided) - Not Elevated - 2 Lanes

Road (Paved Undivided) - Not Elevated - 1 Lane

Road (Paved Undivided) - Not Elevated - 2 Lanes

Road (Paved Undivided) - Not Elevated - 1 Lane

Road (Paved Undivided) - Not Elevated - 2 Lanes

Road (Paved Undivided) - Not Elevated - 1 Lane

Road (Paved Undivided) - Not Elevated - 2 Lanes

Road (Paved Undivided) - Not Elevated - 1 Lane

Road (Paved Undivided) - Not Elevated - 2 Lanes

Road (Paved Undivided) - Not Elevated - 1 Lane

Scale: 1:8,678



## Anderson, Keith FLNR:EX

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**From:** Anderson, Keith FLNR:EX  
**Sent:** Wednesday, June 8, 2011 8:48 AM  
**To:** Anderson, Keith FLNR:EX  
**Subject:** 2409171 TRANSFER OF ADMINISTRATION/CONTROL

2409171  
**Type:** TRANSFER OF ADMINISTRATION/CONTROL  
**Stage:** T  
**Client:** MINISTRY OF ENVIRONMENT  
**Legal Desc.:** DISTRICT LOTS 610, 3639, 4268, 4269, 4270, 4274, 4275, 7949, GROUP 1; BLOCK G OF DISTRICT LOTS 486, 4272, 6931 AND 7949, GROUP 1; THOSE PARTS OF DISTRICT LOTS 486, 609, 4261, 4271, 4272 AND 4273, GROUP 1; THAT PART OF THE NORTHWEST 1/4, SECTION 3, TOWNSHIP 50, AND THAT PART OF THE NORTH 1/2 OF THE SOUTHEAST 1/4, SECTION 10, TOWNSHIP 50, PLAN 1728, TOGETHER WITH UNSURVEYED FORESHORE OR LAND COVERED BY WATER BEING PART OF THE BED OF SQUAMISH RIVER AND HOWE SOUND, GROUP 1, ALL OF NEW WESTMINSTER DISTRICT

Keith Anderson  
Manager, Authorizations  
South Coast Region  
***Ministry of Forests, Lands  
and Natural Resource  
Operations***

Suite 200, 10428 153rd Street  
Surrey BC V3R 1E1

phone 604-586-4323 Fax 604-586-5429

Visit website at <http://www.al.gov.bc.ca/clad>



PROVINCE OF BRITISH COLUMBIA

ORDER OF THE MINISTER OF AGRICULTURE AND LANDS

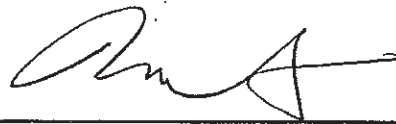
Ministerial Order No.

M 254

I, Pat Bell, Minister of Agriculture and Lands, order that the administration of District Lots 610, 3639, 4268, 4269, 4270, 4274, 4275, 7949, Group 1; Block G of District Lots 486, 4272, 6931 and 7949, Group 1; those parts of District Lots 486, 609, 4261, 4271, 4272 and 4273, Group 1; that part of the Northwest 1/4, Section 3, Township 50, and that part of the North 1/2 of the Southeast 1/4, Section 10, Township 50, Plan 1728, together with unsurveyed foreshore or land covered by water being part of the bed of Squamish River and Howe Sound, Group 1, all of New Westminster District, containing 673.06 hectares, more or less, shown outlined in red on sketch attached, be transferred to the Ministry of Environment for fish and wildlife conservation purposes for a term of sixty (60) years.

Nov 3/06

Date



for Minister of Agriculture and Lands

Nov 5/06

Date



Minister of Environment

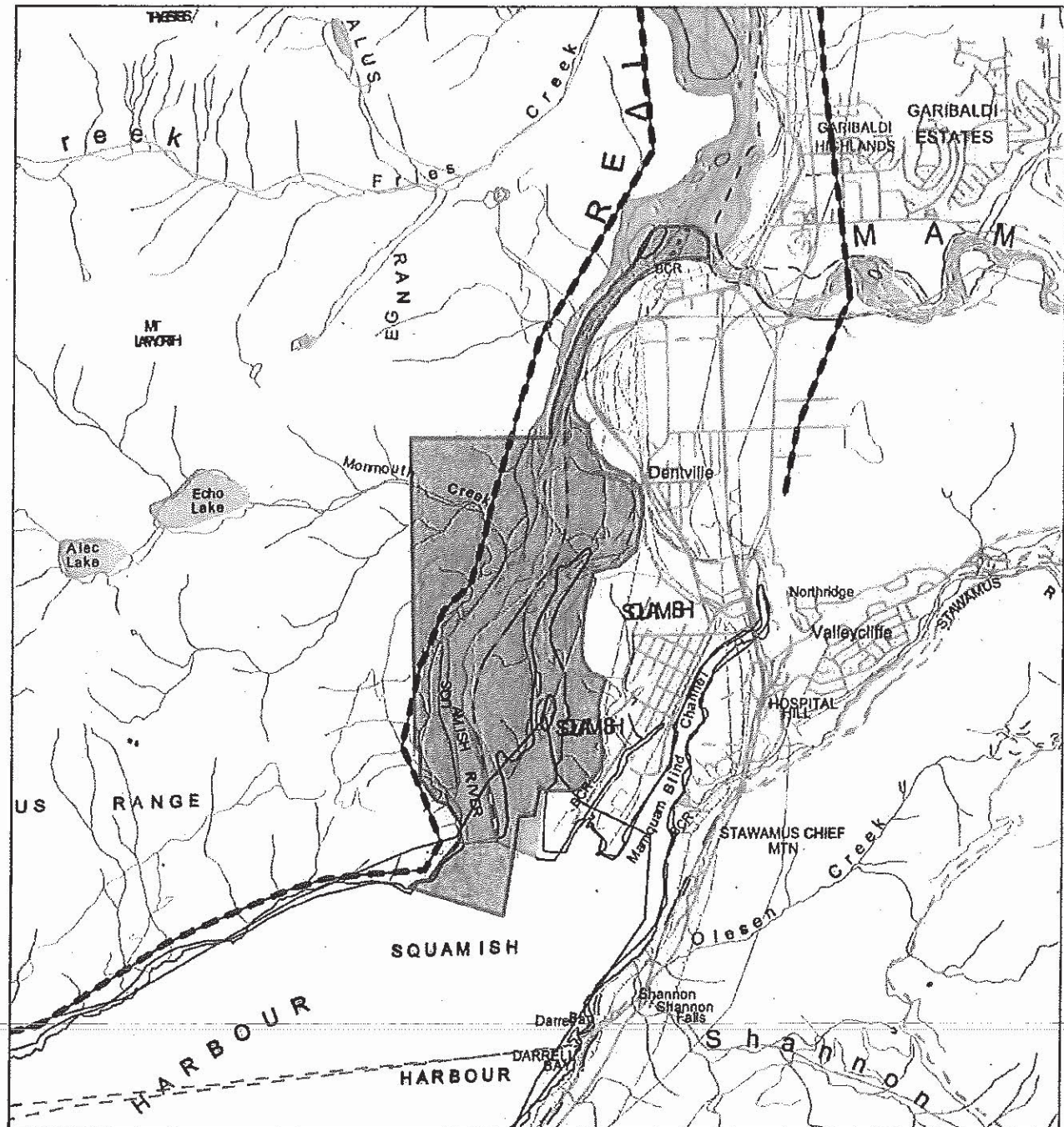
*(This part is for administrative purposes only and is not part of the Order)*

**Authority under which Order is made:**

Act and section:- Land Act, RSBC 1996, Chapter 245, section 106(2)

Other (specify):-





Scale: 1: 53,641



Wildlife Management Area

Page \_\_\_\_ of \_\_\_\_