

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
Bid Receiving Public Works and Government  
Services Canada/Réception des soumissions Travaux  
publics et Services gouvernementaux Canada  
800 Burrard Street, 2nd floor  
800, rue Burrard, 2e étage  
Vancouver  
British Columbia  
V6Z 0B9  
Bid Fax: (604) 775-9381

## **SOLICITATION AMENDMENT MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

### **Comments - Commentaires**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**  
Public Works and Government Services Canada -  
Pacific Region  
800 Burrard Street, 12th floor  
800, rue Burrard, 12e étage  
Vancouver  
British C  
V6Z 0B9

<b>Title - Sujet</b> Rock Bay Remediation Proj. Stage 3	
<b>Solicitation No. - N° de l'invitation</b> EZ899-142200/A	<b>Amendment No. - N° modif.</b> 003
<b>Client Reference No. - N° de référence du client</b>	<b>Date</b> 2014-02-18
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$PWY-026-7195	
<b>File No. - N° de dossier</b> PWY-3-36278 (026)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2014-03-03</b>	<b>Time Zone</b> Fuseau horaire Pacific Standard Time PST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Liu (PWY), Patty	<b>Buyer Id - Id de l'acheteur</b> pwy026
<b>Telephone No. - N° de téléphone</b> (604) 775-6227 ( )	<b>FAX No. - N° de FAX</b> (604) 775-6633
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> TC - Rock Bay, BC	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

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**Amendment 003****REQUEST FOR PROPOSAL**

\*\*\*\*\*

**Extension of Time for Proposals**

Rock Bay Remediation Project - Stage 3  
Victoria, BC

Solicitation No: EZ899-142200/A

Notice is hereby given that the time for reception of proposals previously due at 2:00 p.m. P.S.T. on 24 February 2014 is hereby extended to **2:00 p.m. P.S.T. on 03 March 2014.**

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**QUESTIONS AND ANSWERS****Question #22:**

During the mandatory conference and site meeting, one of the questions from the audience was regarding backfill (312333.01 2.1) and the requirement to screen out 2 mm size material. The person suggested that it was very difficult to screen 2mm material. Is screening of 2mm material required?

**Answer #22:**

The screening of 2mm material is a project requirement.

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**Question #23:**

There appears to be a discrepancy on the Unit Price Table. The estimated quantity for Item 12 Excavation and Loading for Direct Offsite Transport (61,568 T) does correspond with the estimated quantities for Items 19a to 19e Contaminated Waste Transport (70,416 T). Please clarify.

**Answer #23:**

The estimated quantity for Item 12 Excavation and Loading for Direct Offsite Transport in the Unit Price Table is incorrect. The correct estimated quantity for Item 12 Excavation and Loading for Direct Offsite Transport in the Unit Price Table is 70,416 T.

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**Question #24:**

There appears to be some missing test hole information. Can these be provided?

**Answer #24:**

The borehole logs for BH07-501 to 504 and 509 to 519 are attached to this Amendment.

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**Question #25:**

Please provide shear strength data from the field testing (vanes, both peak and remolded) and correlations for shear strength with the CPT, for the relevant holes.

**Answer #25:**

Vane data and CPT plots are provided in Specifications Appendix F "Geo-Environmental and Geotechnical Investigation Report - Marine Works Rock Bay Remediation Project Stage 3 Planning Victoria, BC". Interpreted correlations for shear strength are the responsibility of the Qualified Professional responsible for design.

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**Question #26:**

Was the location of test holes BH07-537 been omitted from the site plan?

**Answer #26:**

The location of BH07-537 is shown in Specifications Appendix F "Geo-Environmental and Geotechnical Investigation Report - Marine Works Rock Bay Remediation Project Stage 3 Planning Victoria, BC", Figure 3 "Borehole Location Plan", in the very southeastern corner of the Site.

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**Question #27:**

As a follow-up to the answer provided in Amendment No. 2 for Question #15 and #16, it appears that there has been an incorrect citation of project specifications. Please confirm that the citation at the end of the first sentence in the answer to Question # 15 and #16 is 013513.43 1.25.2.2 and not 013513.43 1.24

**Answer #27:**

The general disposition of all Contaminated Waste is described in 013513.43 1.24. This section describes that all Contaminated Waste with contaminants amenable to treatment must be treated prior to disposal.

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**Question #28:**

In the Request For Proposal 6.3.2.2, 6.3.2.3, and 6.3.2.4, what is the definition of a "completed" project?

**Answer #28:**

A project is considered complete when it meets the requirements of, or the equivalence of, GC5.6.

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**Question #29:**

In the Request For Proposal 6.3.2.7 what is considered "Design Work"? For example, there is no need in this project to design a Contaminated Material Treatment facility.

**Answer #29:**

In the Request For Proposal "Design" refers to the stage of the Work. For example, during the design stage of the Work, the Contractor must design a Cofferdam, and so the Proposal could describe the design process. As another example, the Contractor must design for soil treatment, and so the

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Proponent could describe how they plan to ensure the Treatment Facility can meet the project scope and schedule requirements, and that risks, quality, safety, communications, and environmental protection are addressed.

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Question #30:

In the Request For Proposal 6.3.2.8 what is considered "Construction Work". For example, there is no need in this project to construct a Contaminated Material Treatment facility.

Answer #30:

In the Request For Proposal "Construction" refers to the stage of the Work. For example, during the construction stage of the Work, the Contractor must construct a Cofferdam, and so the Proposal could describe the methodology of the construction process. As another example, the Contractor must treat soil during construction, and so the Proponent could describe how they are going to treat the soil (eg Treatment Facility process).

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**All other terms and conditions remain unchanged.**

Solicitation No. - N° de l'invitation

EZ899-142200/A

Client Ref. No. - N° de réf. du client

Amd. No. - N° de la modif.

003

File No. - N° du dossier

PWY-3-36278

Buyer ID - Id de l'acheteur

pw026

CCC No./N° CCC - FMS No/ N° VME

**NOTE TO PROPONENTS:** Use the mailing label below and affix it securely to the outside of the envelope or package containing your tender. For revisions to tenders submitted by facsimile (fax # (604) 775-9381), use this sheet as the cover sheet. Always ensure your company name, return address, tender number and closing date appear legibly on the outside of your bid submission.

**REAL PROPERTY CONTRACTING  
Public Works & Government Services Canada  
Room 219 - 800 Burrard Street  
Vancouver, B.C. V6Z 0B9**

**Requisition No.:** EZ899-142200/A  
**Tender Closing Date & Time:** March 3, 2014 @ 1400 P.S.T.  
**Project Description:** Rock Bay Remediation Project - Stage 3  
Victoria, BC

**ENVELOPE 1 - TECHNICAL COMPONENT**

**PL**

**REAL PROPERTY CONTRACTING  
Public Works & Government Services Canada  
Room 219 - 800 Burrard Street  
Vancouver, B.C. V6Z 0B9**

**Requisition No.:** EZ899-142200/A  
**Tender Closing Date & Time:** March 3, 2014 @ 1400 P.S.T.  
**Project Description:** Rock Bay Remediation Project - Stage 3  
Victoria, BC

**ENVELOPE 1 - PRICE COMPONENT**

**PL**

The abbreviations commonly employed on each “Record of Borehole”, on the figures and in the text of the report, are as follows:

## SAMPLE TYPES

<i>AS</i> auger sample	<i>FS</i> foil sample	<i>TP</i> thin-walled, piston
<i>CS</i> chunk sample	<i>RC</i> rock core	<i>WS</i> wash sample
<i>DO</i> drive open (split spoon)	<i>ST</i> slotted tube	
<i>DS</i> Denison type sample	<i>TO</i> thin-walled, open	

## PENETRATION RESISTANCES

Dynamic Penetration Resistance:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive uncased a 50 mm (2 in.) diameter, 60° cone attached to “A” size drill rods for a distance of 0.3 m (12 in.).

Standard Penetration Resistance, *N*:

The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) drive open sampler for a distance of 0.3 m (12 in.).

*WH* sampler advanced by static weight – weight, hammer

*PH* sampler advanced by pressure – pressure, hydraulic

*PM* sampler advanced by pressure – pressure, manual

## SOIL DESCRIPTION

Cohesionless Soils	
Relative Density	<i>N</i> Blows/0.30 m or Blows/ft.
Very loose	0 to 4
Loose	4 to 10
Compact	10 to 30
Dense	30 to 50
Very dense	Over 50

Cohesive Soils		
	<i>Cu</i>	
Consistency	kPa	psf
Very soft	0 to 12	0 to 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very stiff	100 to 200	2000 to 4000
Hard	over 200	over 4000

## SOIL TESTS

<i>C</i> consolidation test	<i>Q</i> undrained triaxial <sup>2</sup>
<i>G</i> organic content and mass loss on ignition	<i>R</i> consolidated undrained triaxial <sup>2</sup>
<i>H</i> hydrometer analysis	<i>S</i> drained triaxial
<i>M</i> sieve analysis	<i>U</i> unconfined compression
<i>MH</i> combined analysis, sieve and hydrometer <sup>1</sup>	<i>V</i> field vane test

NOTES:

<sup>1</sup>Combined analyses when 5 to 95 per cent of the material passes the No. 200 sieve.

<sup>2</sup>Undrained triaxial tests in which pore pressures are measured are shown as  $\bar{Q}$  and  $\bar{R}$ .

PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-501

SHEET 1 OF 4

CLIENT: Transport Canada

PROJECT: Rock Bay (Stage 3) - Uplands

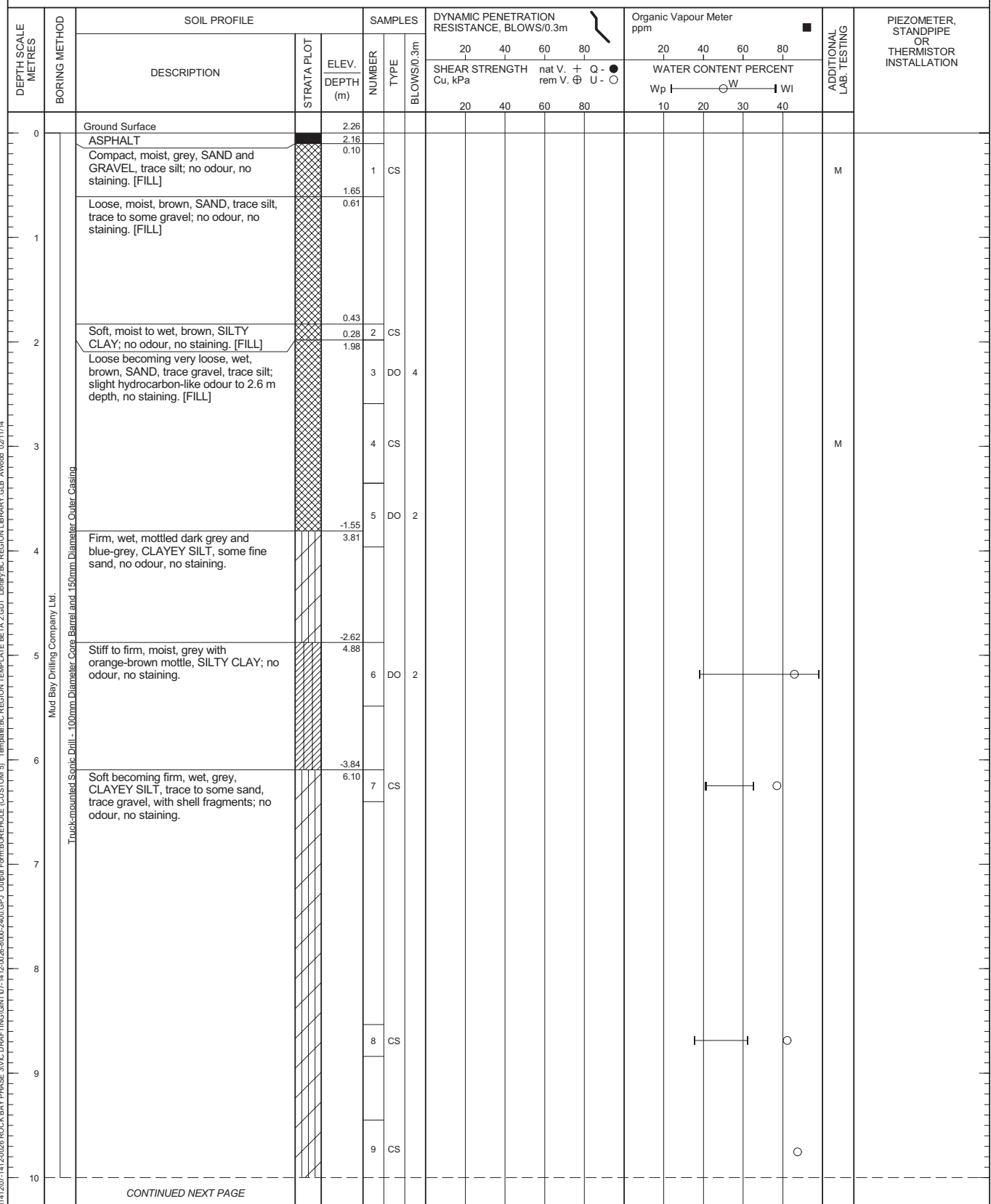
LOCATION: See Figure 2.

N: 5364548.36 E: 472717.10

DRILLING DATE: June 4-5, 2007

DATUM: Geodetic

INCLINATION: -90°



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DEPTH SCALE

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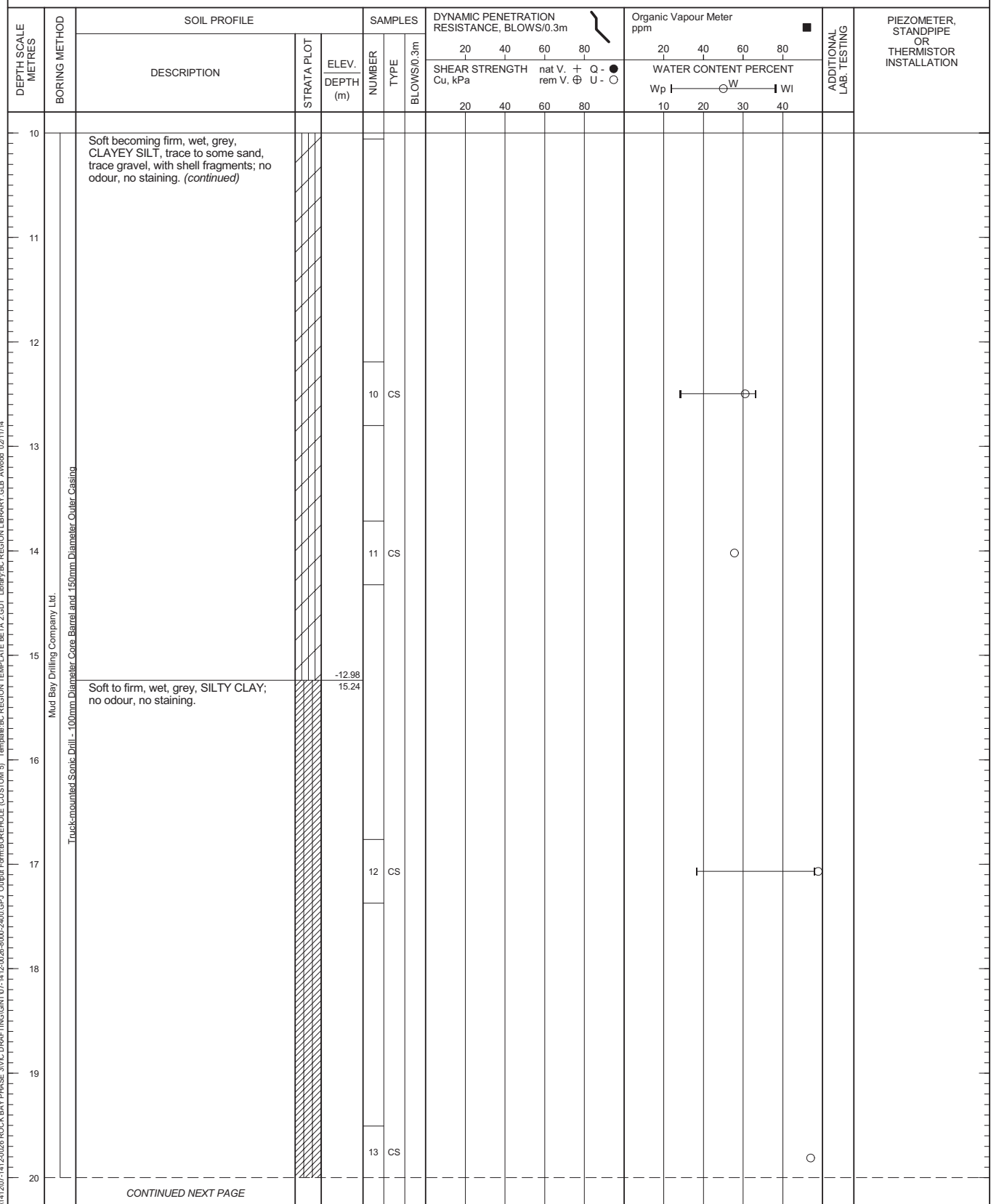
PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-501

SHEET 2 OF 4  
DATUM: GeodeticCLIENT: Transport Canada  
PROJECT: Rock Bay (Stage 3) - Uplands  
LOCATION: See Figure 2.  
N: 5364548.36 E: 472717.10

DRILLING DATE: June 4-5, 2007

INCLINATION: -90°



DEPTH SCALE

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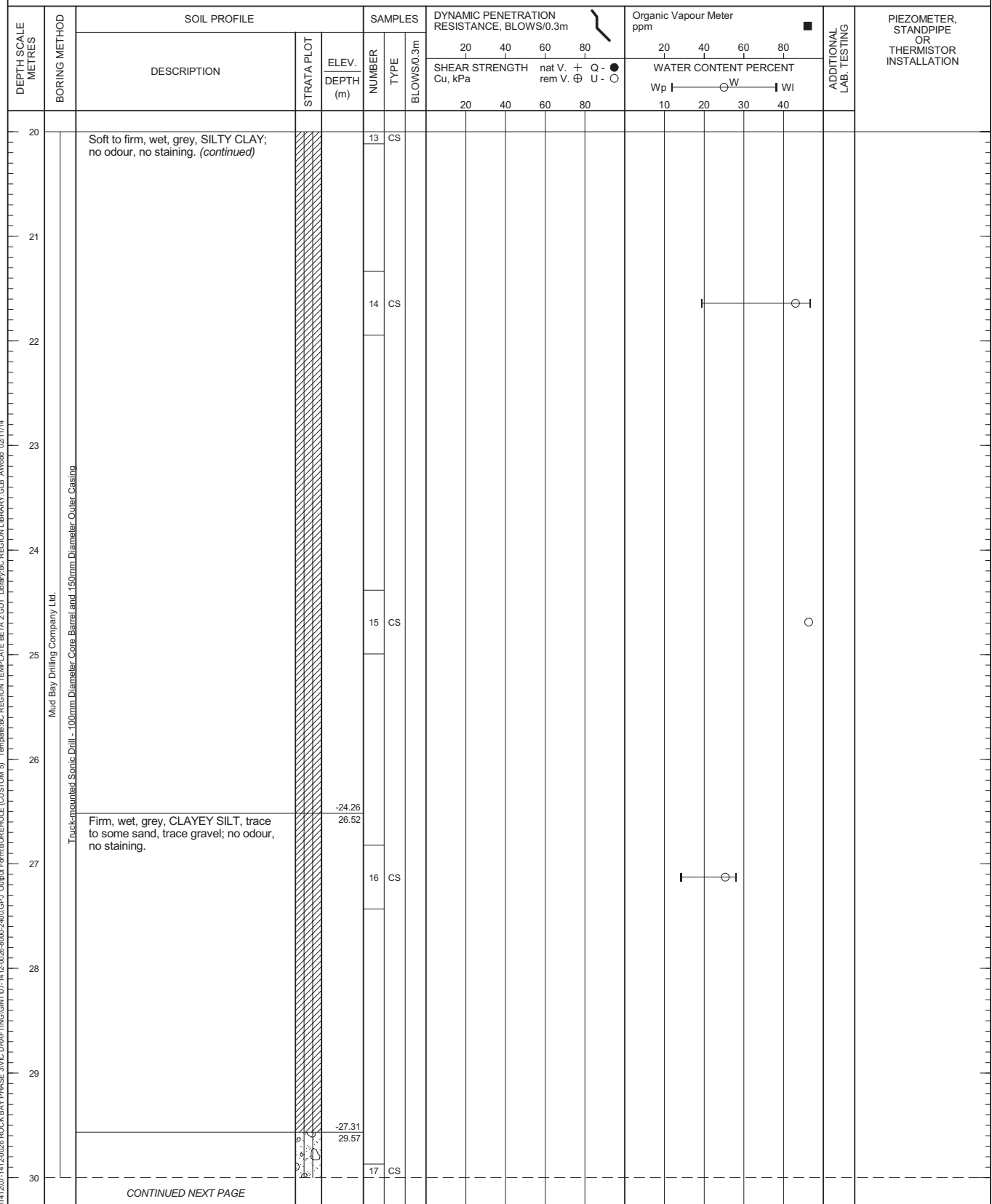
PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-501

SHEET 3 OF 4  
DATUM: GeodeticCLIENT: Transport Canada  
PROJECT: Rock Bay (Stage 3) - Uplands  
LOCATION: See Figure 2.  
N: 5364548.36 E: 472717.10

DRILLING DATE: June 4-5, 2007

INCLINATION: -90°



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DEPTH SCALE

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SHEET 4 OF 4  
DATUM: Geodetic

INCLINATION:  $-90^{\circ}$

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CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)

CLIENT: Transport Canada  
 PROJECT: Rock Bay (Stage 3) - Uplands  
 LOCATION: See Figure 2.  
 N: 5364577.13 E: 472745.25

# **RECORD OF BOREHOLE: BH07-502**

DRILLING DATE: June 5, 2007

SHEET 1 OF 3  
 DATUM: Geodetic

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m					Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION		
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT							
								20		60		nat V. + Q - rem V. ⊕ U - ○							
								Cu, kPa											
							20	40	60	80		20	40	60	80				
							20	40	60	80		Wp	W	Wi					
												10	20	30	40				
0		Ground Surface		2.20															
		CONCRETE		2.07															
		Wood debris, with wire. [FILL]		0.13															
1		No Sample Recovered		1.29 0.91															
2																			
									</										

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DEPTH SCALE

1 : 50

LOGGED: RSW/RM

CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-502

SHEET 2 OF 3  
DATUM: GeodeticCLIENT: Transport Canada  
PROJECT: Rock Bay (Stage 3) - Uplands  
LOCATION: See Figure 2.  
N: 5364577.13 E: 472745.25

DRILLING DATE: June 5, 2007

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa		nat V. + Q - ● rem V. ⊕ U - ○		WATER CONTENT PERCENT Wp I — W — I Wi		■		
							20	40	60	80	20	40			
10	Mud Bay Drilling Company Ltd. Truck-mounted Sonic Drill - 100mm Diameter Core Barrel and 150mm Diameter Outer Casing	Soft to firm, moist to wet, grey, SILTY CLAY, with shell fragments; no odour, no staining. (continued)													
11															
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16															
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18															
19															
20															
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DEPTH SCALE

1 : 50

LOGGED: RSW/RM

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PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-502





SHEET 3 OF 3

CLIENT: Transport Canada  
 PROJECT: Rock Bay (Stage 3) - Uplands  
 LOCATION: See Figure 2.  
 N: 5364577.13 E: 472745.25

DRILLING DATE: June 5, 2007

DATUM: Geodetic

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION										
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT													
								20		40		60				80		20		40		60		80	
								SHEAR STRENGTH Cu, kPa		nat V. + rem V. ⊕		Q - ● U - ○				Wp		W		Wi					
							20	40	60	80		10	20	30	40										
20	Mud Bay Drilling Company Ltd.  Truck-mounted Sonic Drill - 100mm Diameter Core Barrel and 150mm Diameter Outer Casing	Soft to firm, moist to wet, grey, SILTY CLAY, with shell fragments; no odour, no staining. <i>(continued)</i>																							
21				7	CS																				
22																									
23																									
24																									
25																									
26																									
27																									
28		Stiff becoming hard, moist, grey, SAND and SILT, some gravel, trace to some clay; no odour, no staining. [TILL-LIKE]		-25.54 27.74																					
29				8	CS																				
		Very dense, moist, grey, sandy GRAVEL, some silt, with cobbles.		-26.76 28.96																					
		BEDROCK		-27.06 29.26																					
30		End of Borehole.		-27.67 29.87																					

DEPTH SCALE

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PROJECT No.: 07-1412-0026-8000 (2400)

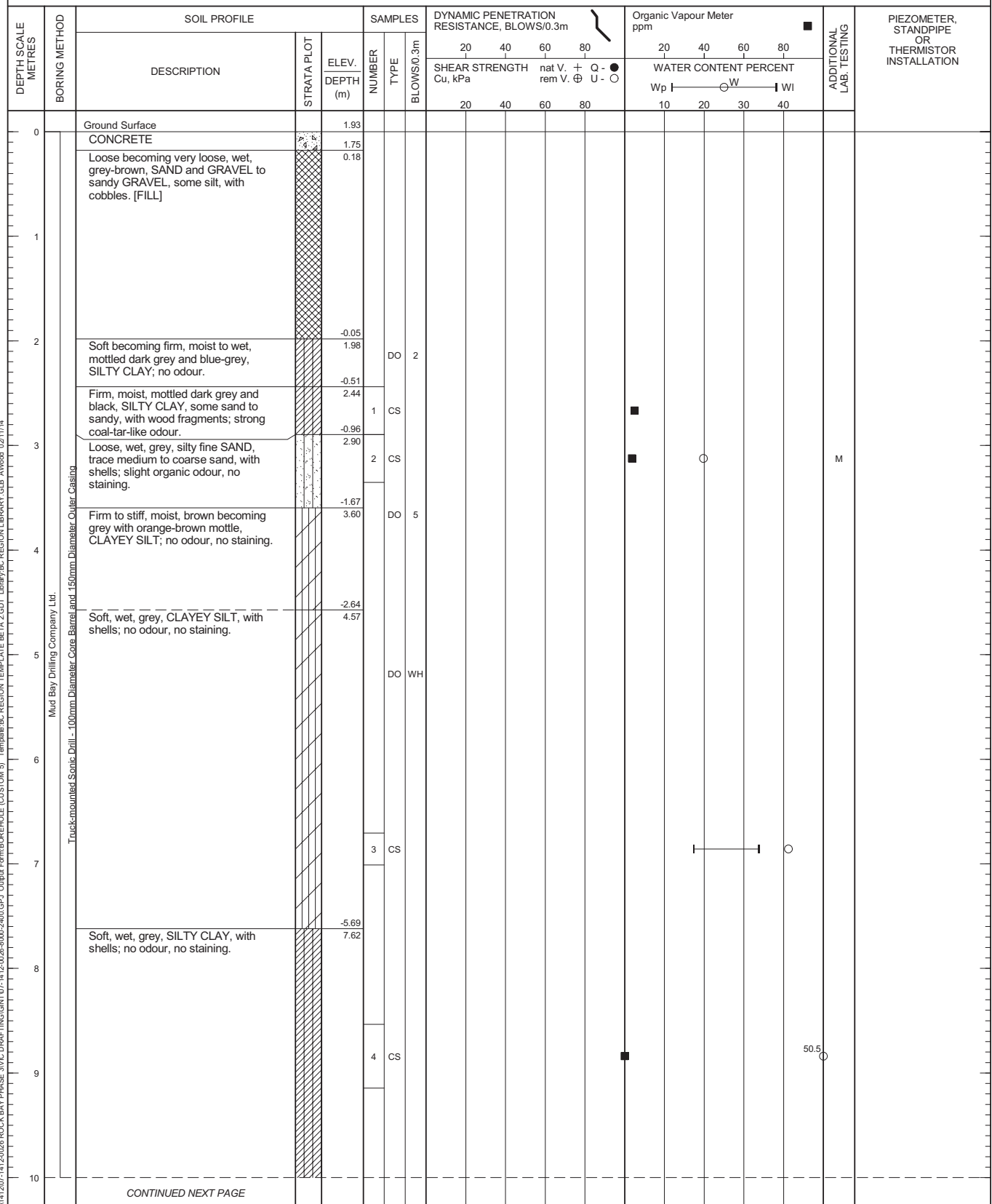
CLIENT: Transport Canada  
PROJECT: Rock Bay (Stage 3) - Uplands  
LOCATION: See Figure 2.  
N: 5364559.52 E: 472731.89

## RECORD OF BOREHOLE: BH07-503

DRILLING DATE: June 6, 2007

SHEET 1 OF 2  
DATUM: Geodetic

INCLINATION: -90°



DEPTH SCALE

1 : 50

LOGGED: RM

CHECKED: SEM


PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-503

SHEET 2 OF 2  
DATUM: GeodeticCLIENT: Transport Canada  
PROJECT: Rock Bay (Stage 3) - Uplands  
LOCATION: See Figure 2.  
N: 5364559.52 E: 472731.89

DRILLING DATE: June 6, 2007

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION										
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT													
								20		40		60				80		20		40		60		80	
								Cu, kPa		nat V. rem V.		+ V. ⊕				Q - U		Wp		W		Wi			
10	Mud Bay Drilling Company Ltd.  Truck-mounted Sonic Drill - 100mm Diameter Core Barrel and 150mm Diameter Outer Casing	Soft, wet, grey, SILTY CLAY, with shells; no odour, no staining. <i>(continued)</i>																							
11		Loose, wet, grey, fine SAND and SILT, trace to some clay, trace medium to coarse sand, trace fine gravel; no odour, no staining.		-8.74 10.67	5	CS																			
12																									
13		Firm, wet, grey, CLAYEY SILT, trace to some sand, trace gravel, with shell fragments; no odour, no staining.																							
				-10.87 12.80																					
14																									
15																									
16		End of Borehole.																							
				-13.92 15.85																					
17																									
18																									
19																									
20																									

DEPTH SCALE

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SHEET 1 OF 3  
DATUM: Geodetic

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File: E:\ACTIVE\2007\141\2\07-1412-0026 ROCK BAY PHASE 3\VIC DRAFTING\GINT\07-1412-0026-8000-2400.GPJ Output Form: BOREHOLE (CUSTOM 5) Template: BC REGION TEMPLATE BETA 2.GDT Library: BC REGION LIBRARY.GLB A\Wood 02/11/14

CHECKED: SEM



PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-504

SHEET 2 OF 3  
DATUM: GeodeticCLIENT: Transport Canada  
PROJECT: Rock Bay (Stage 3) - Uplands  
LOCATION: See Figure 2.  
N: 5364548.89 E: 472733.93

DRILLING DATE: June 6, 2007

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa		nat V. + Q - rem V. ⊕ U -		WATER CONTENT PERCENT Wp — W — Wi		■		
							20	40	60	80	20	40			
10	Mud Bay Drilling Company Ltd. Truck-mounted Sonic Drill - 100mm Diameter Core Barrel and 150mm Diameter Outer Casing	Soft becoming firm, wet, grey, CLAYEY SILT to SILTY CLAY, with shells above 11.6 m depth; no odour, no staining. (continued)													
11															
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DEPTH SCALE

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LOGGED: RM

CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-504

SHEET 3 OF 3  
DATUM: GeodeticCLIENT: Transport Canada  
PROJECT: Rock Bay (Stage 3) - Uplands  
LOCATION: See Figure 2.  
N: 5364548.89 E: 472733.93

DRILLING DATE: June 6, 2007

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION								
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT													
								20		40		60		80				20		40		60		80	
								Cu, kPa		nat V. rem V.		+ ⊕		Q - U				● ○		Wp		W		WI	
								20	40	60	80														
20		Soft becoming firm, wet, grey, CLAYEY SILT to SILTY CLAY, with shells above 11.6 m depth; no odour, no staining. (continued)																							
21																									
22																									
23						7	CS												○						
24																									
25	Mud Bay Drilling Company Ltd.																								
26	Truck-mounted Sonic Drill - 100mm Diameter Core Barrel and 150mm Diameter Outer Casing																								
27		Very stiff becoming hard, moist, grey, well-graded SAND and SILT, some gravel, trace to some clay; no odour, no staining. [TILL-LIKE]		-24.98																					
				27.13																					
28																									
		Very dense, moist, grey, sandy GRAVEL, some silt, with cobbles.		-26.20																					
				28.35																					
		BEDROCK		-26.50																					
				28.65																					
29				-26.96																					
		End of Borehole.		29.11																					
30																									

DEPTH SCALE

1 : 50

LOGGED: RM

CHECKED: SEM

SHEET 1 OF 2  
DATUM: Geodetic

INCLINATION:  $-90^{\circ}$

File: E:\ACTIVE\2007\141\2\07-1412-0026 ROCK BAY PHASE 3\VIC DRAFTING\GINT\07-1412-0026-8000-2400.GPJ Output Form: BOREHOLE (CUSTOM 5) Template: BC REGION TEMPLATE BETA 2.GDT Library: BC REGION LIBRARY.GLB A\Wood 02/11/14

CHECKED: SEM



PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-511

SHEET 1 OF 1

CLIENT: Transport Canada

PROJECT: Rock Bay (Stage 3) - Uplands

DRILLING DATE: June 11, 2007

DATUM: Geodetic

N: 5364607.02 E: 472746.75

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION								
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT													
								20		40		60		80				20		40		60		80	
								Cu, kPa		nat V. rem V. ⊕		+ Q - ● U - ○		Wp				W		WI					
								20	40	60	80														
0		Ground Surface		2.24																					
		CONCRETE		2.08																					
		Compact to loose, moist, brown, SAND and GRAVEL to sandy GRAVEL (fine and coarse gravel), some silt, with cobbles; no odour, no staining. [FILL]		0.15																					
1					1	CS												M							
2		Loose, wet, dark brown, WOOD WASTE, some sand, some silt, some gravel, with cobbles and construction debris (wire); hydrogen sulphide-like odour, no staining. [FILL]		0.41																					
		- 2.3 m to 2.4 m depth: Loose, wet, grey, SAND; no odour, no staining.		1.83		2	DO	10																	
3		Soft, wet, dark grey, fine SAND and SILT, trace clay, with wood debris; hydrogen sulphide-like odour. [FILL]		-0.66																					
		Very loose, wet, black, WOOD WASTE and silty SAND; hydrogen sulphide-like odour. [FILL]		-0.81																					
		Very loose, wet, light brown, SAWDUST. [FILL]		-0.96																					
4		Firm, wet, grey, fine SAND and SILT, trace clay; no odour, no staining.		3.20																					
		Stiff becoming firm, moist, mottled brown/orange-brown/grey, CLAYEY SILT, some sand; no odour, no staining.		-1.27		3	DO	3																	
				-1.73																					
5				3.51																					
				-1.73																					
6		Soft, wet, grey, SILTY CLAY; no odour, no staining.		3.96																					
				-3.55		5	CS																		
				5.79																					
7																									
8		End of Borehole.		-5.69		6	CS																		
				7.92																					
9																									
10																									

DEPTH SCALE

LOGGED: RSW

1 : 50

CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF BOREHOLE: BH07-514

SHEET 1 OF 2

CLIENT: Transport Canada  
 PROJECT: Rock Bay (Stage 3) - Uplands  
 LOCATION: See Figure 2.  
 N: 5364604.02 E: 472748.67

DRILLING DATE: June 18, 2007

DATUM: Geodetic

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION						
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT									
								Cu, kPa				nat V. + Q - ● rem V. ⊕ U - ○									
								20	40	60	80	20	40			60	80	20	40	60	80
0		Ground Surface		2.23																	
		CONCRETE		0.00																	
				1.90																	
		Compact, wet, grey to brown, SAND and GRAVEL to sandy GRAVEL, trace to some silt, with cobbles; no odour, no staining. [FILL]		0.33																	
1					1	GS															
2				0.09	2	DO	17														
		Loose to very loose, wet, grey to dark grey, SAND. [FILL]		2.13																	
		- with wood fibres and slight organic odour above 2.4 m depth - with wood fibres, black staining and slight hydrogen sulphide-like odour below 2.7 m depth.			3	GS															
3				-0.97																	
		Very loose, wet, brown, SAWDUST, with sand; strong hydrogen sulphide-like odour. [FILL]		3.20																	
		Soft, wet, grey, sandy SILT, trace clay; slight hydrocarbon-like odour.		-1.33	4	DO	3														
				3.56																	
4				-1.58																	
		Soft to firm, wet, blue-grey, CLAYEY SILT, trace sand; no odour, no staining.		3.81																	
5				-2.65	5	DO	7														
		Firm to stiff, moist, mottled brown and grey, SILTY CLAY; no odour, no staining.		4.88																	
6				-3.56																	
		Soft, wet, grey, SILTY CLAY; no odour, no staining.		5.79																	
		- trace sand, trace gravel, with shell fragments above 7.3 m depth			6	GS															
7																					
8																					
9																					
10																					
		CONTINUED NEXT PAGE																			

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DEPTH SCALE

1 : 50

LOGGED: RM

CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)




CLIENT: Transport Canada  
 PROJECT: Rock Bay (Stage 3) - Uplands  
 LOCATION: See Figure 2.  
 N: 5364604.02 E: 472748.67

# **RECORD OF BOREHOLE: BH07-514**

DRILLING DATE: June 18, 2007

SHEET 2 OF 2  
 DATUM: Geodetic

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m					Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION	
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa		nat V. + rem V. ⊕		Q - ● U - ○		WATER CONTENT PERCENT			
								20	40	60	80	20	40	60			80
							20	40	60	80							
10	Mud Bay Drilling Company Ltd.  Truck-mounted Sonic Drill - 100mm Diameter Core Barrel and 150mm Diameter Outer Casing	Soft, wet, grey, SILTY CLAY; no odour, no staining.  - trace sand, trace gravel, with shell fragments above 7.3 m depth <i>(continued)</i>															
				7	GS												
11																	
12																	
13																	
14					8	GS											
			Compact becoming very dense, moist, grey, well-graded silty SAND, some gravel to gravelly, with cobbles; no odour, no staining. [TILL-LIKE]		-11.95												
		14.17															
15																	
16																	
17																	
		BEDROCK		-14.84													
				17.07													
18																	
								</									

DEPTH SCALE

1 : 50

LOGGED: RM

CHECKED: SEM

SHEET 1 OF 2  
DATUM: Geodetic

INCLINATION:  $-90^{\circ}$

CHECKED: SEM

File: E:\ACTIVE\2007\1412\07-1412-0028 ROCK BAY PHASE 3\VC DRAFTING\GINT\07-1412-0028-8000-2400.GPJ Output Form: BOREHOLE (CUSTOM 5) Template: BC REGION TEMPLATE BETA 2.GDT Library: BC REGION LIBRARY.GLB AWood 02/11/14



PROJECT No.: 07-1412-0026-8000 (2400)

CLIENT: Transport Canada  
PROJECT: Rock Bay (Stage 3) - Uplands  
LOCATION: See Figure 2.  
N: 5364647.87 E: 472723.27

## RECORD OF BOREHOLE: BH07-517

DRILLING DATE: June 19, 2007

SHEET 2 OF 2  
DATUM: Geodetic

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa		nat V. + Q - rem V. ⊕ U - ○		WATER CONTENT PERCENT Wp I — W — I Wi				
								20	40	60	80	20	40	60		
10		Soft, wet, grey, SILTY CLAY; no odour, no staining. (continued)														
11																
12																
13																
14		Very dense, moist, grey, silty SAND, some gravel to gravelly; no odour, no staining. [TILL-LIKE]		-10.74 13.31												
		BEDROCK		-11.22 13.79												
				-11.45 14.02												
		End of Borehole.														
15																
16																
17																
18																
19																
20																

DEPTH SCALE

1 : 50

LOGGED: RM

CHECKED: SEM

SHEET 1 OF 2  
DATUM: Geodetic

DRILLING DATE: June 8, 2007

[illegible]

LOGGED: RSW

CHECKED: SEM

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SHEET 2 OF 2  
DATUM: Geodetic

DRILLING DATE: June 8, 2007

[illegible]

CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)

**RECORD OF MONITORING WELL: MW/BH07-512**

SHEET 1 OF 3

CLIENT: Transport Canada

PROJECT: Rock Bay (Stage 3) - Uplands

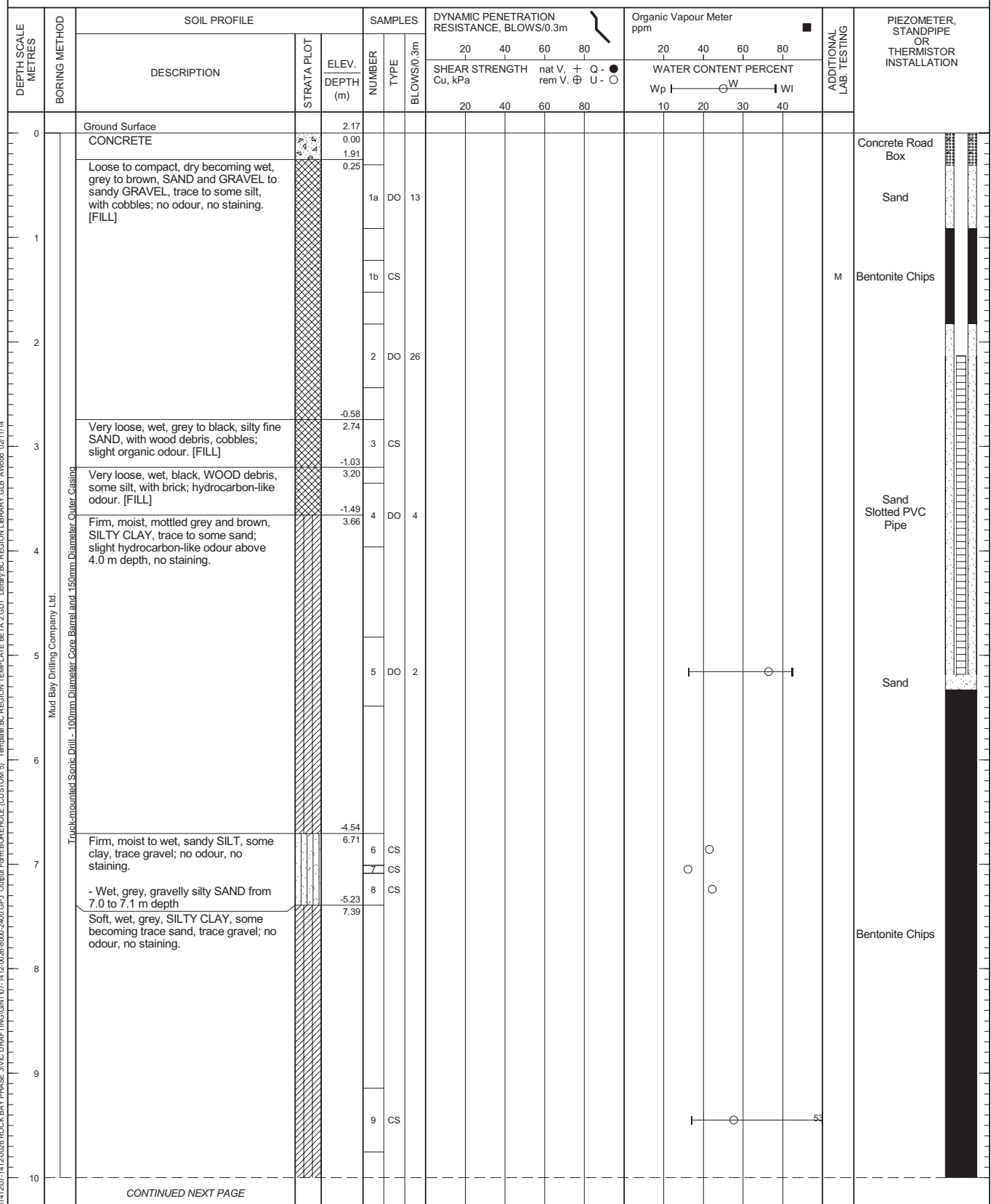
DRILLING DATE: June 15, 2007

DATUM: Geodetic

LOCATION: See Figure 2.

N: 5364595.95 E: 472746.46

INCLINATION: -90°



DEPTH SCALE

1 : 50

LOGGED: RSW

CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)

**RECORD OF MONITORING WELL: MW/BH07-512**

SHEET 2 OF 3

CLIENT: Transport Canada

PROJECT: Rock Bay (Stage 3) - Uplands

DRILLING DATE: June 15, 2007

DATUM: Geodetic

LOCATION: See Figure 2.  
N: 5364595.95 E: 472746.46

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		Organic Vapour Meter ppm		ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	nat V. + rem V. ⊕	Q - U - ○			WATER CONTENT PERCENT Wp — W — Wi
10	Mud Bay Drilling Company Ltd. Truck-mounted Sonic Drill - 100mm Diameter Core Barrel and 150mm Diameter Outer Casing	Soft, wet, grey, SILTY CLAY, some becoming trace sand, trace gravel; no odour, no staining. (continued)										
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												

CONTINUED NEXT PAGE

Bentonite Chips

DEPTH SCALE

1 : 50

LOGGED: RSW

CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)

## RECORD OF MONITORING WELL: MW/BH07-512

SHEET 3 OF 3

CLIENT: Transport Canada




PROJECT: Rock Bay (Stage 3) - Uplands

DRILLING DATE: June 15, 2007

DATUM: Geodetic

LOCATION: See Figure 2.  
N: 5364595.95 E: 472746.46

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION									
		DESCRIPTION	STRATA PLOT	ELEV.	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH				WATER CONTENT PERCENT													
				DEPTH (m)				20		40		60		80			20		40		60		80		
								Cu, kPa	nat V.	+ rem V.	⊕	Q - U -	●	○			Wp	W	WI	Wp	W	WI			
								20	40	60	80		10	20	30	40									
20		Dense becoming very dense, moist becoming dry, grey, silty gravelly SAND to silty SAND and GRAVEL, with cobbles; no odour, no staining. [TILL-LIKE]		-17.95																					
				20.12																					
				14a	CS																				
21																									
		BEDROCK		-19.17	14b	CS																			
				21.34																					
				-19.78	15	CS																			
22		End of Monitoring Well.		21.95																					
23																									
24																									
25																									
26																									
27																									
28																									
29																									
30																									

DEPTH SCALE

1 : 50

LOGGED: RSW

CHECKED: SEM

SHEET 1 OF 1  
DATUM: Geodetic

INCLINATION:  $-90^\circ$

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LOGGED: RM  
CHECKED: SEM

SHEET 1 OF 1  
DATUM: Geodetic

DRILLING DATE: June 19, 2007

CHECKED: SEM



SHEET 1 OF 2  
DATUM: Geodetic

DRILLING DATE: June 20, 2007

[illegible]

LOGGED: RM

CHECKED: SEM

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PROJECT No.: 07-1412-0026-8000 (2400)

**RECORD OF MONITORING WELL: MW/BH07-519**

SHEET 2 OF 2

CLIENT: Transport Canada

PROJECT: Rock Bay (Stage 3) - Uplands

DRILLING DATE: June 20, 2007

DATUM: Geodetic

LOCATION: See Figure 2.  
N: 5364653.17 E: 472746.76

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				Organic Vapour Meter ppm				ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION			
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	RESISTANCE, BLOWS/0.3m				WATER CONTENT PERCENT							
								SHEAR STRENGTH Cu, kPa		nat V. + rem V. ⊕		Q - ● U - ○		Wp ———— W ———— WI					
								20	40	60	80	20	40	60			80	10	20
10	Mud Bay Drilling Company Ltd. Truck-mounted Sonic Drill - 100mm Diameter Core Barrel and 150mm Diameter Outer Casing.	Firm to soft, moist to wet, grey, CLAYEY SILT; no odour, no staining. <i>(continued)</i>																	
				9	CS														
11																			
12																			
13				Compact becoming very dense, wet becoming moist, grey, silty SAND, trace to some gravel, trace clay, with cobbles; no odour, no staining. [TILL-LIKE]	-9.79 12.50	10	CS												
14																			
15		BEDROCK		-11.78 14.48		11	CS								M				
16		End of Monitoring Well.		-12.84 15.54															
17																			
18																			
19																			
20																			

DEPTH SCALE

1 : 50

LOGGED: RM

CHECKED: SEM

PROJECT No.: 07-1412-0026-8000 (2400)

**RECORD OF MONITORING WELL: MW07-513**

SHEET 1 OF 1

CLIENT: Transport Canada

PROJECT: Rock Bay (Stage 3) - Uplands

DRILLING DATE: June 15, 2007

DATUM: Geodetic

LOCATION: See Figure 2.

N: 5364579.23 E: 472747.18

INCLINATION: -90°

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE			SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m					Organic Vapour Meter ppm					ADDITIONAL LAB. TESTING	PIEZOMETER, STANDPIPE OR THERMISTOR INSTALLATION																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH					WATER CONTENT PERCENT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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DEPTH SCALE

1 : 50

LOGGED: RSW

CHECKED: SEM

SHEET 1 OF 1  
DATUM: Geodetic

DRILLING DATE: June 19, 2007

INCLINATION:  $-90^{\circ}$

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CHECKED: SEM