

## **PROJECT** Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

BORING NO. SHEET

FILE NO.

FD-109 1 of 12 48138.27

	18 Che	Enginee mell Dr rd, New		e 0330I			New Bedfo	ord, Massachusetts		CHKD. BY	J. Trottier	-		
Drill	ng Co er ged E				erren George, Inc E. Thomas E. Thibodeau	l. <sub>.</sub>		Boring Location Mudline El. Date Start	northing 2696353 -33.04 12/20/00		GVD  2/27/00	-		
Prilli Drillin	Rig: ng Metl	hamme Acker / hod;	er free fall AD II Truci 5-inch (P	ing from a hei k Rig W) flush joint	or driven 24 inches wi ight of 30 Inches. drill casing. 4-inch (h ammer free falling from	-tW) flus	sh joint drill casing.	Date Time Depth Ekey.						
Đ E P	Casing				RMATION			SAMPLE D	ESCRIPTION (ASTM D	2488)	STRATUM	E		
T H	Blows (R)	Type & No.	PENIREC (inches)	DEPTH (leet)	BLOWS PER 6 INCHES	SP1 N-Value					DESCRIPTION	K S		
1	woc						Advance PW drill	casing to 2 ft.						
								•	•					
2	woc	S-1	24/6	2-4	WOR/24		Organic soil (OH) black to dark gray Advance PW drill	<i>j</i> .	silt, 5% fine sand, strong	organic odor,	ORGANIC			
3	woc						Advance PVV dilli	casing to 4 it.						
	woc	S-2	24/18	4-6	WOR/18-8		S-28: Silty sand ( 15% silt, subroun	d sand and gravel, g	and, 35% medium sand,	35% fine sand, 5% gravel,				
5	woc						Advance PW drill Advance 3-7/8 in.	•			5.5 ft.			
6	woc	S-3	24/6	6-8	15-12-10-11	22	Silty sand with g		arse sand, 20% mediu	m sand, it to subangular sand and grave	MARINE SAND	1		
7	37						Advance PW drill Advance 3-7/8 in.	-						
8	35							·	£	·	GLACIO FLUVIAL			
9	21													
1											,			
	D to 4 5 to 10 11 to 3 31 to 5	Very L - Loos 0 - Med 0 - Den	oose e fium Dens	The Cartie	0 to 2 - Very Sc 3 to 4 - Soft 5 to 6 - Medium 9 to 15 - Stiff 16 to 30 - Very Over 30 - Hard	जी n Stiff Stiff	1. \$ d 2. U d 3. UO 4. PE 5. RE	lenotes split-barrel sam tenotes 3-inch O.D. und denotes 3-inch Osterb N denotes penetration i C denotes recovered le T denotes Standard Pei	pler. fisturbed sample, erg undisturbed sample. ength of sampler. ngth of sample.	7. PID denotes Photolonia 8. PPM denotes paris per 9. PP denotes Pocket Per 10. FVST denotes field va 11. RQD denotes Rock Q 12. R denotes core run nu	million. netrometer. ne shear test. uality Designation.	0.055 0.1973		

- 1) Sample description based on laboratory classification. Refer to GeoTesting Express Report dated March 5, 2001. Laboratory description presented in bold.
  2) RQD biased low due to recovery of less than 100%.
- 3) 4)



## BORING NO. **PROJECT** SHEET 2 of 12 Remedial Design For Operable Unit 01

2							New Bedford H	larbor Superfund	Site		FILE NO.	48138.27	
	18 Che	Engineer nell Dri nl New		• 03 301			New Bedfor	rd, Massachusett	\$		CHKD. BY	J. Trottier	_
Dril	ing C	». —	литропт	Wa	пеп George, Inc E. Thomas E. Thibodeau	;. 	M	ioring Location Iudline El. Pate Start	northing 26 -33.04 12/20/0		easting 814480 Datum Date End	NGVD 12/27/00	 - -
Drill	ipler. Rig: ng Met	hamm Acker	er free fall AD II Truc	ing from a hei k Rig	r driven 24 inches wi ght of 30 inches, drill casing, 4-inch (I			Dale	Groundwate Time	er Readings Not Ap Depth	pplicable for Offshore Be Elev	orings Stabilization Time	_
Cas D E	ng driv		a 300 lb. c	≫nter hole hai	mmer free falling from	n a heig	ht of 24 inches.	SAMPLE (	DESCRIPTION	(ASTM D2488)		STRATUM	R
P H H	Casing Blows (n)	Type & No.	PENFEC (inches)	DEPTH (reet)	BLOWS PER 6 INCHES	SPT N-Value						DESCRIPTION	X S
11	20												
	2.0	5-4	24/10	11-13	8-8-6-14	14	Well-graded grav	vel with silt and sa I, 18% medium sa		-	own.		1
12	22						Subangular sand : Advance PW drill i Advance 3-7/8 in.	casing to 16 ft.					
4.2	25						1		•			GLACIO FLUVIAL	
13	35											·	
14	29												
15	27						1 ''	in. of material in bo specific gravity = 1.	_		trilling mud to remove drilling mud.		
	21												
16	28	S-5	11/2	16-16.9	18-75/5		ł.	ad permeability test oon refusal on prob			,		
17	109/6						Advance PW drill of Advance 3-7/8 in.	casing to 16.5 ft. roller bit to 17.5 ft,	Probable cobb	ole from 17 to 17	7,5 ft.	17.0 ft.	
												COBBLE 17.5 ft.	
18	40						Advance PW drill o Mix additional ben Advance 3-7/8 in. r	tonite drilling mud,	specific gravity	= 1.09.		ļ	
19	57											GLACIO FLUVIAL	
											,		
20		Action 1		V-112 122	-850 TESTEE			·   -   -   -   -   -   -   -   -   -		ZZZZZ			
!	5 to 10 11 to 3 31 to 5 Over 5	) - [)en: ) - Very	ium Dense	9	0 to 2 - Very So 3 to 4 - Soft 5 to 8 - Mediun 9 to 15 - Stiff 16 to 30 - Very Over 30 - Hard	n Stiff Stiff	2. U de 3. UO d 4. PEN 5. REC	enotes split-barrel san enotes 3-inch O.D. un denotes 3-inch Ostert I denotes penetration C denotes recovered k denotes Standard Pe	disturbed sample. perg undisturbed s length of sampler. ength of sample.	sample.	7. PID denotes Photo 8. PPM denotes part 9. PP denotes Pocke 10. FVST denotes fic 11. RQD denotes Ro 12. R denotes core r	is per million. et Penetrometer. eld vane shear test. ock Quality Designation.	
		Samp			on laboratory clas covery of less than			esting Express Rep	oort dated Marci	h 5, 2001. Labo	ratory description pre	esented in bold.	



Nobis Engineering

PROJECT	
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Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

FILE NO.

BORING NO. FD-109 SHEET 3 of 12 48138.27

J. Trottier

New Bedford, Massachusetts CHKD, BY Concord, New Hampshire 03301 Boring Co. Warren George, Inc. Boring Location northing 2696353 easting 814480 Driller E. Thomas Mudline Et -33.04Datum NGVD Date Start Logged By E. Thibodeau 12/20/00 Date End 12/27/00 Sampler: 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb. automatic Groundwater Readings Not Applicable for Offshore Borings Stabilization Tim hammer free falling from a height of 30 inches. Date Time Depth Elev Acker AD II Truck Rig orilling Method: 6-inch (PW) flush joint drill casing. 4-inch (HW) flush joint drill casing. 6-inch (PW) flush joint drill casing driven with a 300 lb. center hole hammer free falling from a height of 24 inches. Drilling Method: SAMPLE INFORMATION SAMPLE DESCRIPTION (ASTM D2488) STRATUM Ε м Blows (II) DESCRIPTION BLOWS PER 6 INCHES SPT K Type 21 53 24/10 21-23 S-6 12-14-15-17 Well-graded gravel with silt and sand (GW-GM); 62% gravel, 1 6% coarse sand, 13% medium sand, 12% fine sand, 7% silt, brown. Subangular sand and gravel. 22 57 Advance PW drill casing to 23 ft. Advance 3-7/8 in, roler bit to 23 ft, with bentonite drilling mud to remove material from casing. Flush casing with water to remove drilling mud. 23 63 Perform constant head permeability test at 23 ft. S-7 24/6 23-25 40-59-16-14 75 Poorly graded gravel with silt and sand (GP-GM); 12% coarse sand, 16% medium sand, 15% fine sand, 48% gravel, 9% silt, brown. Subround to subangular sand and gravel. 24 100 Advanced sampler past probable cobble from 23 to 24 ft. Advanced PW drill casing to 25 ft. Pushed probable cobble with casing. Mix additional bentonile drilling mud. Advance 3-7/8 in. roller bit to 26 ft, past cobble. **GLACIO** FLUVIAL 25 95 26 64 Unable to keep hole open, Advance PW drill casing to 27 ft. Mix additional bentonite drilling mud, specific gravity = 1.09. Advance 3-7/8 in. roller bit to 27 ft. 27 113 S-8 24/10 27-29 14-14-14-12 Poorly graded sand with silt and gravel (SP-SM); medium dense, 10% coarse sand, 40% medium sand, 20% fine sand, 20% gravel, 10% silt, subrounded to subangular sand and 28 60 Advance PW drill casing to 31.5 ft; casing refusal. Top of bedrock 31.5 ft. Advance 3-7/8 in. roller bit to 32 ft. 29 52 58 30 0 to 4 - Very Loose 0 to 2 - Very Soft 7. PID denotes Photoionization Detector S denotes split-barrel sampler 5 to 10 - Loose 3 to 4 - Soft 2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts per million. 11 to 30 - Medium Dense 5 to 8 - Medium Stiff 9. PP denotes Pocket Penetrometer. UO denotes 3-inch Osterberg undisturbed sample. 31 to 50 - Dense 9 to 15 - Stiff 4. PEN denotes penetration length of sampler. 10. FVST denotes field vane shear test 16 to 30 - Very Stiff Over 50 - Very Dense REC denotes recovered length of sample. 11. RQD denotes Rock Quality Designation. Over 30 - Hard 6. SPT denotes Standard Penetration Test 12. R denotes core run number. REMARKS:

1) Sample description based on laboratory classification. Refer to GeoTesting Express Report dated March 5, 2001. Laboratory description presented in bold.

RQD biased low due to recovery of less than 100%.

4)

## **PROJECT** Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

BORING NO. SHEET

FD-109

FILE NO.

4 of 12 48138.27

1	18 Che	nell Di	ive				New Bedfor	d, Massachusetts	3		CHKD. BY	J. Trottier
<u> </u>	Conco	rd, New	Hampshir	re 03301							<u></u>	
Boi	ring C	o.		Wa	rren George, Inc	; <b>.</b>	В	oring Location	northing 26	96353	easting 814480	)
Dni		_			E. Thomas			udline Ef.	-33.04		Datum	NGVD
Loç	ged E	3y			E. Thibodeau		D:	ate Start	12/20/0	0	Date End	12/27/00
San	pler.				or driven 24 inches wi	th a 140	) lb. automatic				plicable for Offshore	
Duil	Rig:		er free fal AD II Truc		ght of 30 inches.			Date	Time	Depth	Elev.	Stabilization Time
Drill	ing Met	hod:	5-inch (P	W) flush joint	drill casing. 4-inch (I	HW) flus	sh joint drill casing.					
Cas	ing driv	en with	a 300 lb.	center hole ha	mmer free falling fro	m a heig	pht of 24 inches	<u> </u>		Ŀ		<del> </del>
Ę	l		SA	MPLE INFO	RMATION			SAMPLE D	DESCRIPTION	(ASTM D2488)		STRATUM
P T	Casing Blows	Туре	PENREC	DEPTH	BLOWS PER 6 INCHES	SPT	1				•	DESCRIPTION
н	<i>(#)</i>	a No.	(wiches)	(teet)	de ono i ex vinoi eo	N-Value						Descriii Ficit
1		<u> </u>			ļ <u> </u>	<del> </del>	1	roller bit to 32,5 ft.	-	ate possible wea	thered bedrock.	
┕	ļ			<u> </u>	<u></u> .	<b>├</b> —	Telescope NW dril	II casing to 33 ft. (s	pin).			GLACIO
l	Í	<u> </u>	ļ	<u> </u>		<b> </b>	-					FLUVIAL
31	90	Ь—		<b>├</b>		⊢	1					
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}	123	<u> </u>	1	<del> </del>		1	1					31.5 ft.
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32					ļ <u>.</u>	├	-					BEDROCK
		<del> </del>				┢	1		-			
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						7					with the regular States and accessing to a company of the regular states of	
	0 to 4	•			0 to 2 - Very So	oft		notes split-barrel san				notoionization Detector
	5 to 10		e dium Dens	se i	3 to 4 - Soft 5 to 8 - Medium	n Stiff		enotes 3-inch O.D. und denotes 3-inch Osterb			PPM denotes a     PP denotes Po	cket Penetrometer.
	31 to 5				9 to 15 - Stiff		4. PEN	denotes penetration	length of sample			s field vane shear test.
	Over 5	0 - Ver	y Dense		16 to 30 - Very			denotes recovered le				Rock Quality Designation.
<u> </u>	55144				Over 30 - Hard		6. SPT	denotes Standard Pe	netration Test.		12. R denotes cor	e run number.

- REMARKS:

  1) Sample description based on laboratory classification. Refer to GeoTesting Express Report dated March 5, 2001. Laboratory description presented in bold.
  2) RQD biased low due to recovery of less than 100%.
  3)
  4)



18 Chenell Drive

Concord New Hampshire 03301

## **PROJECT**

# Remedial Design For Operable Unit 01 New Bedford Harbor Superfund Site

New Bedford, Massachusetts

BORING NO. SHEET FD-109 5 of 12

FILE NO. CHKD. BY 48138.27 J. Trottier

Conco	ra, new numperin	100,00									
Boring C	o	Wa	arren George, Ir	nc.	Boring Loc	ation	northing 26	96353	easting 81448	30	
Driller			E. Thomas		Mudline El		-33.04		Datum	NGVD	_
Logged I	Зу		E. Thibodeau		Date Start		12/20/0	<u> </u>	Date End	12/27/00	_
Sampler:			oler driven 24 inches	with a 1	40 lb, automatic	Contra				Offshore Borings	
Drill Rig:	Acker AD II Truck		eight of 30 inches.			Date	Time	Depth	Elev.	Stabilization Time	<u></u>
Drilling Me Casing driv		W) flush joi enterhole	nt drill casing. 4-inc hammer free falling	h (HW) f from a h	lush joint drill casing. sight of 24 inches			ļ	-		
						D.	OCK CORE DE	CODIDI	ON	<u> </u>	R
			RE INFORMATIC	<u> </u>		, ,	OCK CORE DE	ESCRIP II	ON	•	Į m
DEPTH (feet)	VISUAL REPRESENTATION	CORE	CORE INTERVAL	CORE							K S
	0.75	R1	32.5-33.5	6.5	Begin R1 at 32.5 ft.						
				min.	Fresh, hard, gray medium to	fine graine	d GNEISS. La	ow angle fo	oliation (approx	. 10-15 degrees).	
			,		REC = 92%; RQD = 80% (g	ood).					
33.0					Water return color: rust.						1
	h i										
				i							
00.5								7			
33.5			20 5 04 5	┼	33.4 ft.: Mechanical break in			mak duni			- 1
			33.5-34.5	5	33.5 ft.: Pause advancemen	nt of core Ki	to advance F	tyv driii ca:	sing to achieve	better casing seal.	- 1
		ř		min.							
34.0											ı
<u> </u>				İ							
					34.2 ft.: Mechanical break in	rock core.					
-											
34.5					34.4 and 34.5 ft.: Primary joi	nts: low and	ile, rough, plai	nar, discol	ored, and open		
			34.5-35.5	4.5	34.5 ft.: Loss of water return	noted.					
				min.	34.4 to 34.8 ft.: Discoloration	of rock con	e noted.				-
	8 W. A			1							-
35.0					OF A B . Del (alab law a	-la	_1				1
					35.1 ft.; Primary joint: low ar break.	igie, rougn,	pianar, partiali	y discolore	eo, and iight. P	ossible mechanical	
				İ	bleak.						
35.5	1000			1							
	\$ 97/a		35.5-36.5	4	35.5 ft.: Primary joint: horizo	ntal, rough,	planar, discolo	ored, and o	орел.		
				min.	35.5 to -35.7 ft.: Secondary	joint: mode	atly dipping to	high angl	e, smooth, plar	nar, discolored,	
	100				and open.						ı
36.0	المنتفية			1	35.6 to 36.1 ft.: Distinct disco		•	-			
	A According				36.0 ft.: Primary joint: low an	gie, rough, :	stepped, disco	lored, and	l open. Possibl	e mechanical	
					break.	1	-1				-
36.5				ì	36.2 and 36.3 ft.: Mechanica	i break in to	CK COTE.				1
30.3			36.5-37.5	5.5							
			00.0 07.0		36.6 to 37.2 ft.: Quartz/felds;	oarvein. Da	ark oray to mill	cv white/pi	nk in color. (pe	gmatic)	-
	Laval						<b>3</b>	, ,	<b></b>	<b>9</b>	
37.0	1864						,				-
			٠	1							-
				i	37.2 ft.: Primary joint: low an	gle, rough,	undulating, dis	scolored, a	and tight.		
37.5		e Gestion stores			End R1 at 37.5 ft.	N. 20-20-08-2-		TWO COMES IN	arteleti ili espera	eren er ann er er er er	ALL PARTY
0 to 4	- Very Loose	A CHARLES	0 to 2 - Very S	oft	1; S denotes split-	barrel sample	arienska (falskafa). Fr		7. PID denotes	Photoionization Detector	
5 to 10	Loose		3 to 4 - Soft		2. U denotes 3-inc	th O.D. undist	urbed sample.	. 1	8. PPM denote	s parts per million.	
	30 - Medium Dens 30 - Dense	e	5 to 8 - Mediu 9 to 15 - Stiff	m Stiff	3, UO denotes 3-i 4, PEN denotes p	-		mple.		Pocket Penetrometer. tes field vane shear test.	
	i0 - Dense i0 - Very Dense	Ì	• 16 to 30 - Ven	y Stiff	5. REC denotes re		- •			tes fleid vane snear test. es Rock Quality Designatio	on.
	•		Over 30 - Han		6. SPT denotes St					core run number.	
	ARKS: Sample descrit	otion base	ed on laboratory o	dassific	ation. Refer to GeoTesting E	xpress Ren	ort dated Marc	:h 5, 2001.	Laboratory des	scription presented in b	old.
								,			

2) RQD biased low due to recovery of less than 100%.
3)
4)

Nobis
Nobis Engineering

18 Chenell Drive

## **PROJECT**

Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

New Bedford, Massachusetts

BORING NO.

FD-109

SHEET FILE NO. 6 · of 12 48138.27

CHKD. BY

J. Trottier

Boring C	ота, <i>New натры</i> ит О		arren George, In	ю.	Boring Loca	ation	northing 26	96353	easting 8144	80	
Driller			E. Thomas		Mudline El.		-33.04		Datum	NGVD	
Logged I			E. Thibodeau		Date Start		12/20/0		Date End	12/27/00	
	hammer free fall	ing from a l	pler driven 24 inches height of 30 inches.	with a 1	40 lb, automatic	Date	Groundwater Time	r Readings Depth	Not Applicable to Elev.	r Offshore Borings Stabilization Tir	me
Drill Rig: Drilling Me	Acker AD II Truck thod: 5-inch (P	k Rig W) flush jol	int drill casing. 4-incl	h (HW) f	lush joint drift casing. eight of 24 inches.						
Casing driv	/en with a 300 lb,				eight of 24 inches.		01.0000.00	C ODIDTU		<u> </u>	R
		CORE	RE INFORMATIO	1	İ	RO	CK CORE DE	SUKIPII	JN		, L
DEPTH (teet)	VISUAL REPRESENTATION	HUN	CORE INTERVAL	TIME							K
	1 April 1 Apri	R2	37.5-38.5	4.5 min.	Begin R2 at 37.5 ft. Fresh, hard, gray, medium to	fine graine	d GNEISS TO	nw angle f	inliation (annm	r 10-20 degrees)	
-		:		,,,,,,	No natural joints/fractures or	_		-			] 2
38.0					No water return noted during	R2.					. [
				İ							
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38.5				<u> </u>							
	42000 10000		38.5-39.5	4 min.							
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40.5			40.5-41.5	4							
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41.5			41.5-42.5	2.5						•	
			17.0 12.0	min.							
42.0											
											- 1
40.5					5.400.4058						ļ
42.5	. <u>1                                   </u>	WHEN			End R2 at 42.5 ft.			anion.	version in	neveriari (ali	717
	- Very Loose ) - Loose		0 to 2 - Very So 3 to 4 - Soft	oft	1. S denotes split-l 2. U denotes 3-inc					Photoionization Detector s parts per million.	(
	30 - Medium Dens 50 - Dense	<b>.e</b>	5 to 8 - Mediur 9 to 15 - Stiff	n Stiff	3. UO denotes 3-in 4. PEN denotes pe	ch Osterberg	undisturbed sar	mple.		Pocket Penetrometer. tes field vane sheer test.	
	50 - Very Dense		16 to 30 - Very		5. REC denotes re-	covered lengt	h of sample.		11, RQD denot	es Rock Quality Designa	
REM	ARKS:		Over 30 - Hard	j	6. SPT denotes Sta	andard Penetr	ration Test.		12. R denotes	core run number.	
1)	Sample descrip		ed on laboratory of recovery of less th		ation. Refer to GeoTesting Ex	press Repo	ort dated Marc	h 5, 2001.	Laboratory de	scription presented in	bold.
3)	TOTAL DISSECTION	** 445 IV	ioootei y ui less li	ICHI IU	· · · · ·						
4)											



## PROJECT

## Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

BORING NO. SHEET

FD-109 7 of 12

FILE NO.

48138.27

CHKD, BY J. Trottier

Delirary Co.   Warm George, Inc.   Boring Location   Delirary Co.   Delirary Co		nell Drive	03301			New	Bedford, Mass	achusetts	<u> </u>		CHKD, BY	J. Trottier	
Differ   E. Thorness							B : 1	···	- 11 00	00050			
Logged by   E. Thibodegus   Dale Start   12/27/00   Dale End   12/27/00   Dale Company   12/27		o			c.		-						—
Decided   Deci	,	·.——				<del> </del>	-						
Color	Loggea E	у	<u>E.</u>	Inibodeau		<del></del>	Date Start		12/20/0	<u> </u>	Date End	12/27/00	
Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Frock Rg   Acta AD   Acta					with a 1	40 ib. automati	c	D					
Core in Front Note and the best of the coarse 4. Head of the coars				nt of 30 inches.				Date	time	Deptn	Elev.	Stabilization Fim	Ю
CORE INFORMATION   CORE   CORE INFORMATION   CORE	Dritting Met	nod: 5-inch (PV	V) flush joint d	rifi casing. 4-inch	(HW) f	ush joint drill ca	asing.						
Comparison   Com	Casing univ	95 WILL A 300 ID, C				Bigit of 24 mon	103.		<u>-</u>			<del></del>	R
2	!	Ļ	CORE	INFORMATIO	N	1		RO	CK CORE DE	SCRIPTI	ON		E
Marchanical break in rock core.			RUN		CORE TIME				····				K S
43.0   43.5-44.5   4   43.5-44.5   4   43.5-44.5   4   44.5-45.5   5   44.0   44.5-45.5   5   5   7   7   7   7   7   7   7	f 1		R3	42.5-43.5	4.5	~							- 1
43.5 44.5 45.5 46.5 47.5 4.5 47.0 ft.: Slightly weathered zone; minor discoloration noted. 44.5 45.5 46.5 4 min. 45.6 to 47.0 ft.: Slightly weathered zone; minor discoloration noted. 45.7 ft.: Primary joint low angle, smooth, planar, discolored, and open. 45.6 to 47.0 ft.: Slightly weathered zone; minor discoloration noted. 45.7 ft.: Primary joint low angle, smooth, planar, discoloration noted. 45.7 ft.: Primary joint low angle, smooth, planar, discoloration noted. 45.7 ft.: Primary joint low angle, smooth, planar, discoloration noted. 45.7 ft.: Primary joint low angle, smooth, planar, discoloration noted. 46.5 and 46.4 ft.: Mechanical break in rock core. 46.3 and 46.4 ft.: Mechanical breaks in rock core. 47.0 it.: Mechanical breaks in rock core. 47.0 it.: Mechanical breaks in rock core. 47.0 it.: Mechanical break in rock core. 48.3 it.: Mechanical break in rock core. 47.0 it.: Mechanical break in rock core. 47.0 it.: Mechanical break in rock core. 47.0 it.: Mechanical break in rock core. 47.0 it.: Mechanical break in rock core. 47.0 it.: Mechanical break in rock core. 47.0 it.: Mechani				J	min.	Fresh to slig	ihtly weathered, i	nard, gray, n	nedium to fine	grained,	GNEISS. Low a	angle foliation	
43.5 41.5 4 43.5 44.5 4 4 43.5 41. Mechanical break in rock core.  43.6 ft.: Mechanical break in rock core.  43.8 ft.: Mechanical break in rock core.  44.0 ft.: Primary joint fow angle, smooth, planar, discolored, and open.  44.5 45.5 5 min.  44.9 ft.: Mechanical break in rock core.  45.5 46.5 4 min.  45.6 to 47.0 ft.: Slightly weathered zone; minor discoloration noted. 45.7 ft.: Primary joint low angle, smooth, planar, discolored, and open.  46.2 ft.: Mechanical break in rock core.  46.3 and 46.4 ft.: Mechanical break in rock core.  47.0 ft.: Mechanical break in rock c				1		(approx. 10	degrees). REC	= 90%; RQD	) = 90% (good	/excellent	l).		2
43.5 ft.: Mechanical break in rock core.  43.6 ft.: Mechanical break in rock core.  44.0 ft.: Primary joint low angle, smooth, planar, discolored, and open.  44.5 ft.: Mechanical break in rock core.  44.9 ft.: Mechanical break in rock core.  45.6 to 47.0 ft.: Slightly weathered zone; minor discoloration noted.  45.7 ft.: Primary joint low angle, smooth, planar, discolored, and open.  46.2 ft.: Mechanical break in rock core.  46.3 and 46.4 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Guartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  3 to 4. Set 10 to 2. Very Set 3 to 4. Set 10 to 2. Very Set 10 to 2. Very Set 10 to 3. Nedium Derse 3 to 50. Derse 5 to 9. Nedium Derse 3 to 50. Derse 7 to 50. Perse 7 to 50. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 17. Retended Peretration length of sample.  REMARKS:	43.0			· i		No water ret	tum noted during	R2.					Į.
43.5 ft.: Mechanical break in rock core.  43.6 ft.: Mechanical break in rock core.  44.0 ft.: Primary joint low angle, smooth, planar, discolored, and open.  44.5 ft.: Mechanical break in rock core.  44.9 ft.: Mechanical break in rock core.  45.6 to 47.0 ft.: Slightly weathered zone; minor discoloration noted.  45.7 ft.: Primary joint low angle, smooth, planar, discolored, and open.  46.2 ft.: Mechanical break in rock core.  46.3 and 46.4 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Guartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  3 to 4. Set 10 to 2. Very Set 3 to 4. Set 10 to 2. Very Set 10 to 2. Very Set 10 to 3. Nedium Derse 3 to 50. Derse 5 to 9. Nedium Derse 3 to 50. Derse 7 to 50. Perse 7 to 50. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 16 to 30. Very Set 17. Retended Peretration length of sample.  REMARKS:				ŀ									- 1
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## 4.5 ##	43.5					43.4 ft.: Mec	chanical break in	rock core.					
44.5 45.5 5 min.  44.5 45.5 5 min.  44.9 ft.: Mechanical break in rock core.  44.9 ft.: Mechanical break in rock core.  45.6 to 47.0 ft.: Slightly weathered zone; mirror discoloration noted.  45.7 ft.: Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft.: Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft.: Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft.: Primary joint: low angle, smooth, planar, discoloration noted.  45.8 ft.: Mechanical break in rock core.  46.2 ft.: Mechanical break in rock core.  47.0		h	1	43.5-44.5	4	1							- !
44.5 ft. Primary joint: low angle, smooth, planar, discolored, and open.  44.5 ft. Primary joint: low angle, smooth, planar, discolored, and open.  45.5 min.  45.5 ft. Primary joint: low angle, smooth, planar, discolored, and open.  45.5 ft. Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft. Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft. Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft. Primary joint: low angle, smooth, planar, discoloration noted.  46.5 ft. Mechanical break in rock core.  46.3 and 46.4 ft. Mechanical break in rock core.  47.0 ft. Mechanical break in rock core.  47.0 ft. Wechanical break in rock core.  47.0 ft. Wechanical break in rock core.  47.0 ft. Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  91.1 S denotes spit-barrel sampler.  5 to 9 - Medium Dense 31 to 90 - Donne 31 to 90 - D			Ì		min.	43,6 ft.: Mec	hanical break in	rock core.					1
44.5 ft. Primary joint: low angle, smooth, planar, discolored, and open.  44.5 ft. Primary joint: low angle, smooth, planar, discolored, and open.  45.5 min.  45.5 ft. Primary joint: low angle, smooth, planar, discolored, and open.  45.5 ft. Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft. Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft. Primary joint: low angle, smooth, planar, discoloration noted.  45.7 ft. Primary joint: low angle, smooth, planar, discoloration noted.  46.5 ft. Mechanical break in rock core.  46.3 and 46.4 ft. Mechanical break in rock core.  47.0 ft. Mechanical break in rock core.  47.0 ft. Wechanical break in rock core.  47.0 ft. Wechanical break in rock core.  47.0 ft. Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  91.1 S denotes spit-barrel sampler.  5 to 9 - Medium Dense 31 to 90 - Donne 31 to 90 - D						j							- [
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46.0  46.7 ft.: Primary joint: low angle, smooth, planar, discolored, and open.  46.2 ft.: Mechanical break in rock core.  46.3 and 46.4 ft.: Mechanical breaks in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  6 to 10 - Loose 5 to 10 - Loose 11 to 30 - Medium Derse 31 to 50 - Derse Over 50 - Very Dense Over 50 - Very Dense Over 50 - Very Dense REMARKS:  45.6 to 47.0 ft.: Slightly weathered zone; minor discoloration noted.  47.0 ft.: Mechanical break in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  7. PID denotes Photoionization Detector 8 PPM denotes parts per million. 9. PP denotes Procket Penetrometer. 10. FVST denotes prediction length of sample. 10. FVST denotes fled vane shear test, 11. RCD denotes Rock Quality Designation. 12. R denotes core run number.													ł
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46.0  46.1  46.1  46.2  46.5  47.0  47.0  47.0  48.5  47.0  48.5	45.5												
46.0  46.2 ft.: Mechanical break in rock core.  46.3 and 46.4 ft.: Mechanical break in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  0 to 4 - Very Loose 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense Over 50 - Very Dense Over 30 - Hard  45.7 ft.: Primary joint low angle, smooth, planar, discolored, and open.  46.2 ft.: Mechanical break in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes split-barrel sampler. 2. U denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch O.D. undisturbed sample. 4. PEN denotes parteration length of sampler. 5. REC denotes recovered length of sample. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Qualify Designation.  REMARKS:	1	hand	- 1	45.5-46.5									1
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46.5 ft.: Mechanical break in rock core.  46.3 and 46.4 ft.: Mechanical break in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler.  5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Civer 50 - Very Dense  Over 30 - Hard  46.2 ft.: Mechanical break in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler. 2. U denotes 3-inch Col. Dundisturbed sample. 3. Loo denotes 3-inch Col. Dundisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 11. RCD denotes Rock Quality Designation. 12. R denotes core run number.						45.7 ft.: Prim	nary joint: low and	gle, smooth,	planar, discol	ored and	open.		
46.5 and 46.4 ft.: Mechanical breaks in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Quartz/fieldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes split-barrel sampler.  5 to 10 - Loose 11 to 30 - Medium Dense 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense  16 to 30 - Very Stiff Over 30 - Hard  46.5 and 46.4 ft.: Mechanical breaks in rock core.  47.0 ft.: Mechanical break in rock core.  47.0 to 47.1 ft.: Quartz/fieldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes split-barrel sampler. 2. U denotes split-barrel sampler. 3. U.O denotes 3-inch Osterberg undisturbed sample. 9 to 15 - Stiff 4. PEN denotes penetration length of sampler. 10. FVST denotes field vane shear test, 11. R0D denotes Rock Quality Designation. 12. R denotes core run number.	46.0												
47.0 ft.: Mechanical break in rock core. 47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler. 5 to 10 - Loose 11 to 30 - Medium Dense 31 to 50 - Dense Over 50 - Very Dense 15 to 30 - Very Stiff Over 30 - Hard Over 30 - Hard Over 30 - Hard Over 30 - Hard Over 30 - Hard Over 30 - Hard Over 30 - Hard Over 30 - Hard  45. Mechanical break in rock core. 47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  7. PID denotes Photoionization Detector 2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 12. R denotes core run number.			1										- 1
47.0 ft.: Mechanical break in rock core. 47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler. 5 to 10 - Loose 11 to 30 - Medium Dense 11 to 30 - Medium Dense 31 to 4 - Soft 31 to 50 - Dense Over 50 - Very Dense 16 to 30 - Very Stiff Over 50 - Very Dense 17. PID denotes Photoionization Detector 8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer. 4. PEN denotes 9-inch O.D. undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 10. FVST denotes field vane shear test, 10. FVST denotes Rock Quality Designation. 11. RQD denotes core run number.  REMARKS:			ſ			46,3 and 46.	4 ft: Mechanical	breaks in ro	ock core.				
47.0 ft.: Mechanical break in rock core. 47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler. 5 to 10 - Loose 11 to 30 - Medium Dense 11 to 30 - Medium Dense 31 to 4 - Soft 31 to 50 - Dense Over 50 - Very Dense 16 to 30 - Very Stiff Over 50 - Very Dense 17. PID denotes Photoionization Detector 8. PPM denotes parts per million. 9. PP denotes Pocket Penetrometer. 4. PEN denotes 9-inch O.D. undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 10. FVST denotes field vane shear test, 10. FVST denotes Rock Quality Designation. 11. RQD denotes core run number.  REMARKS:			1	- 1									- 1
47.0 ft.: Mechanical break in rock core. 47.0 to 47.1 ft.: Quartz/feldspar vein, Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler. 5 to 10 - Loose 11 to 30 - Medium Dense 11 to 30 - Medium Dense 5 to 8 - Medium Stiff 3. UO denotes 3-inch O.D. undisturbed sample. 11 to 30 - Dense Over 50 - Very Dense 10 to 30 - Very Stiff Over 30 - Hard  10 S denotes recovered length of sample. 11 ROD denotes Rock Quality Designation. 12 R denotes core run number.  REMARKS:	46.5	1435											
47.0 ft.: Mechanical break in rock core. 47.0 to 47.1 ft.: Quartz/feldspar vein, Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes split-barrel sampler. 5 to 10 - Loose 11 to 30 - Medium Dense 11 to 30 - Medium Dense 5 to 8 - Medium Stiff 3. UO denotes 3-inch O.D. undisturbed sample. 11 to 30 - Dense 11 to 50 - Dense 12 to 4 - Sciff 13 to 50 - Dense 14		HEDA	- 1	46.5-47.5									-1
47.0 ft.: Mechanical break in rock core. 47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler. 5 to 10 - Loose 10 to 2 - Very Soft 1. S denotes spit-barrel sampler. 2. U denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 11. ROD denotes Rock Quality Designation. 12. R denotes core run number.  REMARKS:		1970 H			mên.								
47.0 ft.: Mechanical break in rock core. 47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler. 5 to 10 - Loose 10 to 2 - Very Soft 1. S denotes spit-barrel sampler. 2. U denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch O.D. undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 3. UO denotes 3-inch Osterberg undisturbed sample. 4. PEN denotes penetration length of sampler. 5. REC denotes recovered length of sample. 11. ROD denotes Rock Quality Designation. 12. R denotes core run number.  REMARKS:			- 1										
47.0 to 47.1 ft.: Quartz/feldspar vein. Dark gray to pink in color.  End R3 at 47.5 ft.  1. S denotes spit-barrel sampler.  5 to 10 - Loose 3 to 4 - Soft 2. U denotes 3-inch O.D. undisturbed sample. 31 to 30 - Medium Dense 5 to 8 - Medium Stiff 3. UO denotes 3-inch Osterberg undisturbed sample. 31 to 50 - Dense 9 to 15 - Stiff 4. PEN denotes pertration length of sampler. 4. PEN denotes Protectionization Detector 8. PPM denotes parts per million. 9. PP denotes Protectorineter. 9. PP denotes Protectorineter. 10. FVST denotes Protect Field varies hear test. 11. RQD denotes Rock Quality Designation. 12. R denotes core run number.	47.0			Į									ļ
End R3 at 47.5 ft.    O to 4 - Very Loose   O to 2 - Very Soft   1. S denotes split-barrel sampler.   7. PID denotes Photoionization Detector   5 to 10 - Loose   3 to 4 - Soft   2. U denotes 3-inch O.D. undisturbed sample.   8. PPM denotes parts per million.   9. PP denotes parts per million.   9. PP denotes parts per million.   9. PP denotes Pocket Penetrometer.   11 to 30 - Medium Dense   9 to 15 - Stiff   4. PEN denotes penetration length of sampler.   10. FVST denotes field vane shear test.   10. FVST denotes Rock Quality Designation.   11. ROD denotes Rock Quality Designation.   12. R denotes core run number.   12. R denotes core run number.   12. R denotes core run number.   13. Rod denotes core run number.   14. Rod denotes core run number.   14. Rod denotes core run number.   15. Remarks:		4.34		ļ									ı
0 to 4 - Very Loose 0 to 2 - Very Soft 1. S denotes split-barrel sampler. 7. PID denotes Photoionization Detector 5 to 10 - Loose 3 to 4 - Soft 2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts per million. 9. PP denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 10. FVST denotes Rock Quality Designation. 11. RQD denotes core run number. 12. R denotes core run number.						47.0 to 47.1	rt: Quartz/reidsp	arvein. Dai	rk gray to pink	in color.			i
0 to 4 - Very Loose 0 to 2 - Very Soft 1. S denotes split-barrel sampler. 7. PID denotes Photoionization Detector 5 to 10 - Loose 3 to 4 - Soft 2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts per million. 9. PP denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 10. FVST denotes Rock Quality Designation. 11. RQD denotes core run number. 12. R denotes core run number.	47.5		j			F. 4 DO -4 47	7 F B						
0 to 4 - Very Loose 0 to 2 - Very Soft 1. S denotes split-barrel sampler. 7. PID denotes Photoionization Detector 5 to 10 - Loose 3 to 4 - Soft 2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts per million. 9. PP denotes parts per million. 9. PP denotes parts per million. 9. PP denotes Pocket Penetrometer. 11 to 30 - Medium Dense 5 to 8 - Medium Stiff 3. UO denotes 3-inch Osterberg undisturbed sample. 9. PP denotes Pocket Penetrometer. 10. FVST denotes field vane shear test. 10. FVST denotes field vane shear test. 11. RQD denotes Rock Quality Designation. 11. RQD denotes core run number. REMARKS:	THE COMPANY PROPERTY AND ADDRESS.		0.000	anangasyana	in the state of	End R3 at 4/	7.5 ft.	YANGOLOGIAN OLO		277225191	T-THE SETTING A		212 Ke Vo
5 to 10 - Loose 3 to 4 - Soft 2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts per million. 9. PP denotes parts per million. 9. PP denotes parts per million. 9. PP denotes parts per million. 9. PP denotes parts per million. 9. PP denotes Pocket Penetrometer. 10. FVST denotes field varie shear test, 10. FVST denotes field varie shear test, 11. RQD denotes Rock Quality Designation. 12. R denotes core run number.  REMARKS:		Very Loose	COMPANY AND DES	0 to 2 - Very Sc	randeki. M	ong sing day day day day day day day day day day	1. S denotes split-t	arrel sampler			7. PID denotes f	Photoionization Detector	Sec. 11.23
31 to 50 - Dense 9 to 15 - Stiff 4. PEN denotes penetration length of sampler. 10. FVST denotes field vane shear test, Over 50 - Very Dense 16 to 30 - Very Stiff 5. REC denotes recovered length of sample. 11. RQD denotes Rock Quality Designation. Over 30 - Hard 6. SPT denotes Standard Penetration Test, 12. R denotes core run number.  REMARKS:	5 to 10	- Loose	j	3 to 4 - Soft		]	2. U denotes 3-incl	o O.D. undistu	rbed sample.	j			
Over 50 - Very Dense 16 to 30 - Very Stiff 5. REC denotes recovered length of sample. 11. RQD denotes Rock Quality Designation. Over 30 - Hard 6. SPT denotes Standard Penetration Test, 12. R denotes core run number.  REMARKS:			,		Stiff			_		nple.			
Over 30 - Hard 6. SPT denotes Standard Penetration Test, 12. R denotes core run number.  REMARKS:					, Tút?					l		· · · · · · · · · · · · · · · · · · ·	ion
REMARKS:	OVE: 51	- Tory Delise		•	-(m)			_	-				N.41.
									_				

2) RQD biased low due to recovery of less than 100%.

3) 4)

### PROJECT

Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

SHEET FILE NO. FD-109 of 12

BORING NO.

48138.27

New Bedford, Massachusetts CHKD, BY 18 Chenell Drive J. Trottier Concord, New Hampshire 03301 Boring Co. Warren George, Inc. **Boring Location** easting 814480 northing 2696353 Driller E. Thomas Mudline El. -33.04 Datum NGVD Date Start Logged By E. Thibodeau 12/20/00 Date End 12/27/00 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb. automatic Groundwater Readings Not Applicable for Offshore Borings hammer free falling from a height of 30 inches. Date Time Stabilization Time Depth Elev. Drill Rig: Acker AD II Truck Rig
Orilling Method: 5-inch (PW) flush joint drill casing. 4-inch (HW) flush joint drill casing.
Casing driven with a 300 lb. center hole hammer free talking from a height of 24 inches. Drilling Method: CORE INFORMATION ROCK CORE DESCRIPTION CORE CORE INTERVAL CORE R4 47.5-48.5 Begin R4 at 47.5 ft. Fresh to slightly weathered, hard, gray, medium to fine grained GNEISS. REC = 100%; RQD = 85% (good). 48.0 No water return noted during R4. 47.5 to 47.6 ft.: Weathered zone; discoloration noted. 48.4 ft.: Mechanical break in rock core. 48.5 48.5-49.5 3.5 49.0 48.9 ft.: Primary joint: low angle, rough, planar, discolored, and tight. 48.9 to 49.5 ft.: Weathered zone. Mechanical break at 49.1 ft. Rock has been weathered to a residual soil along mechanical break; material is friable. 49.5 49.5-50.0 49.6 ft.: Primary joint: low angle, to horizontal, smooth, planar, discolored, and tight. Possible mechanical break. 50.0 50.2 ft.: Mechanical break in rock core. 50.5 50.0-50.5 5 min 51.0 51.3 ft.: Mechanical break in rock core. 51.5 50.5-51.0 52.0 52.3 ft.: Mechanical break in rock core 52.4 to 52.5 ft.: Quartz/feldspar vein. Dark gray/pink in color. 52.5 ft.: Primary joint: low angle, smooth, planar, discolored, and open. End R4 at 52.5 ft. 0 to 4 - Very Loose S denotes split-barrel sampler. 0 to 2 - Very Soft 7. PID denotes Photoionization Detector 5 to 10 - Loose 3 to 4 - Soft 2. U denotes 3-inch O.D. undisturbed sample. 8. PPM denotes parts per million. 11 to 30 - Medium Dense 5 to 8 - Medium Stiff UO denotes 3-inch Osterberg undisturbed sample. PP denotes Pocket Penetrometer. 31 to 50 - Dense 9 to 15 - Stiff PEN denotes penetration length of sampler. 10. FVST denotes field vane shear test. Over 50 - Very Dense 16 to 30 - Very Stiff REC denotes recovered length of sample. 11, RQD denotes Rock Quality Designation, Over 30 - Hard SPT denotes Standard Penetration Test. 12. R denotes core run number. REMARKS:

- 1) Sample description based on laboratory classification. Refer to GeoTesting Express Report dated March 5, 2001. Laboratory description presented in bold.
- RQD biased low due to recovery of less than 100%.
- 3) 4)



### **PROJECT**

Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

BORING NO.

FD-109

SHEET FILE NO.

of 12 48138.27

	mell Drive	02207			New Bedford, Mass	achusetts_		<del></del>	CHKD. BY	J. Trottier	
	rd, New Hampshire				Daving Lan	- 4:		~^^			
Boring Co Driller	э	Wa	arren George, Inc E. Thomas	<u>;.                                    </u>	Boring Loca Mudline El.		northing 26 -33.04		easting 81448 Datum	NGVD	
Logged E	3v		E. Thibodeau		Date Start		12/20/0		Date End	12/27/00	
			pler driven 24 inches v	with a 1		r			Not Applicable for		
		ling from a h	eight of 30 Inches.			Date	Time	Depth	Elev.	Stabilization Tim	Ю
Drill Rig: Drilling Met	hod; 5-inch (Pl	€Rig W)flushjoir	nt drill casing. 4-inch hammer free <u>falling</u> fr	(HW) fr	lush joint drill casing.						
Casing drive	an with a 300 lb, o	]			eight of 24 inches.	L	<u>ـــــ</u>	<u> </u>			R
		COF	RE INFORMATION	<u> </u>	}	RO	CK CORE DE	SCRIPTI	ON		E
DEPTH (feet)	VISUAL REPRESENTATION	CORE	CORE INTERVAL	CORE		-					K   K
	N	R5	52.5-53.5		Begin R5 at 52.5 ft.	17					十
				min'.	Fresh, very hard, gray, medi		rained GNEISS	S. Low ar	ngle foliation (ap	prox. 10 degrees).	
		1 1	1 1	i '	REC = 97%; RQD = 93% (e)						2
53.0		1 1	1 1		No water return noted during	-					
			1. 1	i '	52.5 to 52.7 ft.: Secondary jo				nar, discoloreo, a	and open.	- 1
	100	1.	1	i '	53.0 to 53.2 ft.: Quartz/feldsp 53.2 ft.: Mechanical break in		их угауин к п	I COÍOL			
53.5		1. 1	1 - 1	'	00.2 10. 10.00 0	, , ,					
		<del></del>	53.5-54.5	5.5							
		<b>i</b> j	1		53.9 ft:: Mechanical break in	rock core.					
			i 'I	!	ļ <sup>-</sup>						1
54.0		1 1	1	, '							
. 1		( )	1 1	'			•				1
			1. 1	i '	54.3 ft.; Mechanical break in	rock core.					
		1 1	1			-					
54.5	1		54.5-55.5	6		4					
- 1		1.	54.555.5	inin.							İ
$\neg \neg$		l J	ı J								
55.0		1 1	1	$F^{-1}$	55.0 ft.: Mechanical break in	rock core.					
	1550	1 1		i !	55.0 to 55.1 ft.: Quartz/feldsp	oar vein. Dar	'k gray/pink in	color.			-
			. 1	i '							ĺ
	197	1 . 1	<i>i</i> [	ا ا	55.3 ft.: Mechanical break in	rock core.					
55.5	Ked	$\longmapsto$	55.550.5	<u> </u>		•		3.5			
Ţ		(	55.5-56.5	7 min.	55.7 ft.: Mechanical break in	ràck core		-			ĺ
			i I	FFIRE	33.7 It., Mischanical Disak in	JOUR GOSE					
56.0		1 1	r` l	, I							
	at the	1 . 1		!	56.0 to 56.1 ft.:Quartz/feldsp	ar vein. Dar	k gray/pink in	color.			
		l· I	, , , , , , , , , , , , , , , , , , ,	1						,	
	British 1	1 1	ı ·	, 1		in the second					
56.5		<u> </u>		ل	56.4 to 56.5 ft.:Quartz/feldsp	ar vein: Dar	k gray/pink in	color.			
		1 1	56.5-57.5	6.5			. •				
		[· ]	i	min.							
57.0				i. I	Perform single packer test fro	nm 47.5 to 5	ાં 7-5 ਜਿ. ્ેંા	. 5"			
<del></del>		1 ]		ا ۽ آر	Perform single packer test fro			•			
I		`	ı	, !	End R5 at 57.5 ft.	TV*.	7	-			
$\overline{}$		1 1	r	. 1	Bottom of exploration at 57.5						\
57.5		1. 3	<i>L</i> 4		Grout completed boring to m	udline with o	ement/benton	ite slurry	, specific gravity	= 1.40.	
0 to 4	· Very Loose	THE PERSON NAMED IN	0 to 2 - Very So		: 1:S denotes split-	barnel sample		THE REAL PROPERTY.	7 PID denotes	Photoionization Detector	
	- Loose	ļ	3 to 4 - Soft	и	2. U denotes 3-inc	h O.D. undistu	urbed sample.	· "	8. PPM denotes	s parts per million.	
	0 - Medium Dens	se j	5 to 8 - Medium	ı Stiff	3. UO denotes 3-in			nple.	1	Pocket Penetrometer.	
	0 - Dense 0 - Very Dense	i	9 to 15 - Stiff 16 to 30 - Very 5	Stiff	4, PEN denotes pe 5∴REC denotes re	_				tes field vane shear test, es Rock Quality Designat	ion.
			Over 30 - Hard		6, SPT denotes St	_				ore run number,	
1)			ed on laboratory cla recovery of less tha		ation. Refer to GeoTesting Ex 0%.	xpress Repo	ort dated March	h 5, 2001.	. Laboratory des	cription presented in	bold.



18 Chenell Drive Concord, New Hampshire 03301

### **PROJECT**

Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site New Bedford, Massachusetts

SHEET FILE NO.

FD-109 10 of 12 48138.27

CHKD, BY

BORING NO.

J. Trottier

Boring Co. Warren George, Inc. E. Thomas Driller Logged By E. Thibodeau

**Boring Location** Mudline El. Date Start

northing 2696353 -33.04 12/20/00

easting 814480 Datum Date End

NGVD 12/27/00

2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb. automatic

Sampler: 2-inch U.D. Spirioarrel sampler driven 24 inches with a 140 lb. automatic harmone free falling from a height of 30 inches.

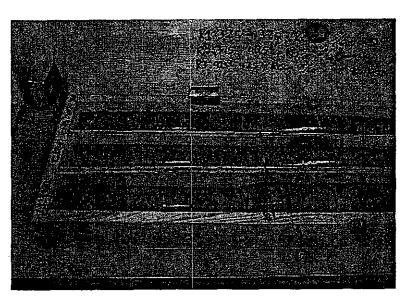
Drill Rig: Acker AD II Truck Rig

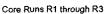
Drilling Method: 5-inch (PW) flush joint drill casing. 4-inch (HW) flush joint drill casing.

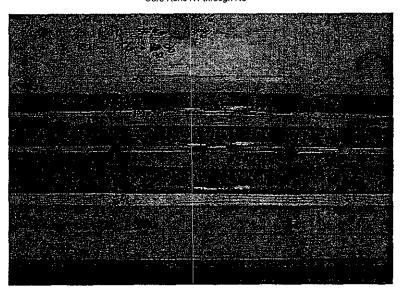
Casing driven with a 300 lb. center hole harmoner free falling from a height of 24 inches.

Groundwater Readings Not Applicable for Offshore Borings Stabilization Time Elev

### **ROCK CORE PICTURES**







Core Runs R1 through R3

### REMARKS:

- 1) Sample description based on laboratory classification. Refer to GeoTesting Express Report dated March 5, 2001. Laboratory description presented in bold.
- 2) RQD biased low due to recovery of less than 100%.

M:\Reports\Active\48138.21\Field Forms\Fd-109\Picture

4)



18 Chenell Drive Concord, New Hampshire 03301

### **PROJECT**

Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

New Bedford, Massachusetts

BORING NO.

FD-109 of 12

SHEET FILE NO.

48138.27

CHKD, BY

J. Trottier

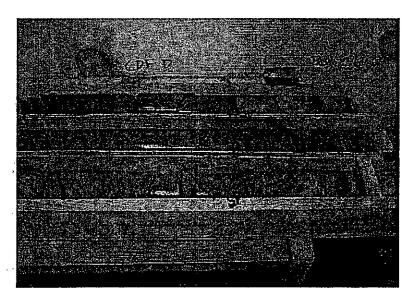
Boring Co.	Warren George, Inc.	Boring Location	northing 2696353	easting 81448	0
Driller	E. Thomas	Mudline El.	-33.04	Datum	NGVD
Logged By	E. Thibodeau	Date Start	12/20/00	Date End	12/27/00

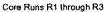
2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb, automatic hammer free falling from a height of 30 inches. Acker AD II Truck Rig

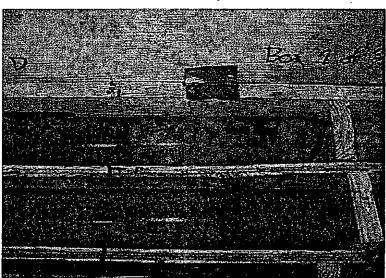
Drilling, Method: 5-inch (PW) flush joint drill casing, 4-inch (HW) flush joint drill casing. Casing driven with a 300 lb. center hole hammer free falling from a height of 24 inches.

Groundwater Readings Not Applicable for Offshore Borings
Time Depth Elev. Stabilizati

**ROCK CORE PICTURES** 







Quartz/feldspar vein (pegmatic) noted in bottom of R1

## REMARKS:

- 1) Sample description based on laboratory classification. Refer to GeoTesting Express Report dated March 5, 2001. Laboratory description presented in bold.
- 2) RQD biased low due to recovery of less than 100%.
- 3) 4)



## 18 Chenell Drive Concord, New Hampshire 03301

### **PROJECT**

Remedial Design For Operable Unit 01

New Bedford Harbor Superfund Site

New Bedford, Massachusetts

BORING NO. SHEET

FD-109 12 of 12

FILE NO.

48138.27

CHKD, BY

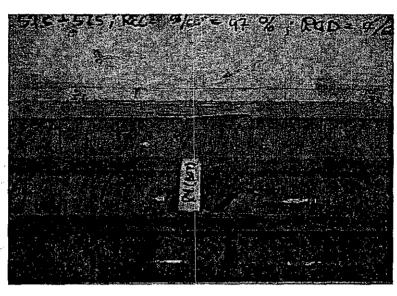
J. Trottier

Boring Co. easting 814480 Warren George, Inc. Bonng Location northing 2696353 Mudline El. Driller E. Thomas -33.04 Datum NGVD Logged By E. Thibodeau Date Start 12/20/00 Date End 12/27/00 Sampler: 2-inch O.D. split-barrel sampler driven 24 inches with a 140 lb. automatic hammer free falling from a height of 30 inches.

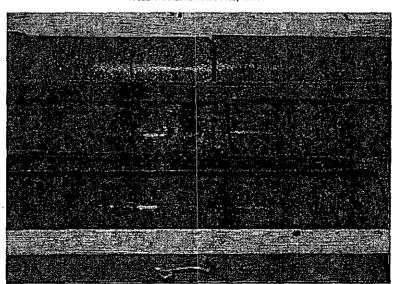
Drill Rig: Acker AD ll Truck Rig

Drilling Method: 5-inch (PW) flush joint drill casing. 4-inch (HW) flush joint drill casing. Casing driven with a 300 lb. center hole hammer free falling from a height of 24 inches. Groundwater Readings Not Applicable for Offshore Borings Elev. Stabilization Time

ROCK CORE PICTURES



Weathered zone noted in top of R4



Quartz/feldspar vein noted in R5

## REMARKS:

- 1) Sample description based on laboratory classification. Refer to GeoTesting Express Report dated March 5, 2001. Laboratory description presented in bold. 2) RQD biased low due to recovery of less than 100%.
- 3)